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University Students' Attitudes towards Distance and Hybrid Education after February 6, 2023 Earthquake in Türkiye

Türkiye'de 6 Şubat 2023 Depremi Sonrası Üniversite Öğrencilerinin Uzaktan ve Hibrit Eğitime Yönelik Tutumları

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Abstract. The aim of the mixed-method study is to examine the reactions and reflections of Turkish university students in response to the sudden shift to online and hybrid education due to the February 6, 2023, earthquake in Türkiye. The participants (N=352) were university students from a Turkish state university. 228 students were studying English in a one-year preparatory program, while the rest were students from the faculties of pedagogy (N= 61), literature (N=56), and science (N=7). Data were collected from an adapted questionnaire and a survey measuring students' attitudes toward online and distance education after the earthquake. The Distance Education Evaluation Scale was used as a data collection tool. The scale items were analysed through a Mann-Whitney U test, while content analysis and CLAN (Computerized Language Analysis) program were used to analyze the survey responses. The findings indicated that university students had mostly unfavourable responses to the transition from face-to-face to online education after the devastating disaster. These reactions were primarily attributed to cognitive, psychological, and social factors. The male students, the 1st year prep program students, and the students who the earthquake had impacted had notably more pessimistic dispositions towards online education.
Keywords: *"Online education"," Hybrid Education", "Students' attitudes", "Earthquake aftermath".*

Öz. Karma araştırma yöntemi kullanılarak yürütülen bu çalışmanın amacı Türkiye'de 6 Şubat 2023 tarihinde meydana gelen deprem sebebiyle geçilen çevrimiçi ve hibrit eğitime yönelik üniversite öğrencilerinin tutumlarını belirlemektir. Araştırmanın katılımcılarını bir devlet üniversitesinden 352 öğrenci oluşturmaktadır. Bu öğrencilerin 228'i İngilizce hazırlık programına; 61'i Eğitim; 56'sı Edebiyat ve 27'si Fen Fakültesine devam etmektedir. Araştırmada verilerin elde edilme sürecinde Uzaktan Eğitim Değerlendirme Ölçeğinden uyarlanan maddeler kullanılmıştır. Veriler Mann-Whitney U testi ile CLAN (Bilgisayarlı Dil Analizi) programı kullanılarak analiz edilmiştir. Araştırma bulgularına göre öğrencilerin depremin ardından yüz yüze eğitimden uzaktan eğitme geçişle ilgili olumsuz bir tutum geliştirdikleri belirlenmektedir. Bu olumsuz tutumun bilişsel, psikolojik ve sosyal faktörlere bağlı olduğu görülmektedir. Hazırlık sınıfındaki öğrenciler, erkek öğrenciler ile depremden etkilenen öğrencilerin çevrimiçi eğitime yönelik daha karamsar tutum içinde oldukları tespit edilmiştir.
Anahtar Kelimeler: *"Çevrimiçi eğitim", "Hibrit Eğitim", "Öğrenci tutumları", "Deprem sonrası".*

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Genişletilmiş Özet

Giriş. Deprem, salgın ve savaş gibi felaketler eğitim de dahil olmak üzere tüm toplumun faaliyetleri etkilemektedir. 6 Şubat 2023'te Türkiye'yi yıkıma uğratan iki büyük deprem, Richter ölçeğinde 7.8 ve 7.5 ölçeğinde meydana gelmiştir. Binlerce kişi hayatını kaybetmiş ya da yaralanmış ve milyonlarca insan yaşadığı şehirden başka yerlere göç etmek zorunda kalmıştır. Yüzyılım felaketi olarak nitelenen bu deprem eğitim kurumlarını da etkilemiştir. Türkiye genelinde tüm yükseköğretim kurumları çevrimiçi/uzaktan ve daha sonra hibrit eğitime geçmek zorunda kalmıştır. Öğrencilerin öğrenmelerinin doğrudan etkileyen bu geçiş sürecine ilişkin farklı araştırmalar yapılmıştır. Bu çalışma da üniversite öğrencilerinin çevrimiçi ve hibrit eğitime hızla geçişe ilişkin tutumlarını belirlemeyi amaçlamaktadır.

Bu çalışma için aşağıdaki araştırma sorularına yanıt aranmaktadır:

RQ1. Öğrencilerin cinsiyetlerine bağlı olarak çevrimiçi eğitime yönelik tutumlarında anlamlı bir fark var mıdır?

RQ2. Öğrencilerin bölümlerine bağlı olarak çevrimiçi eğitime yönelik tutumlarında anlamlı bir fark var mıdır?

RQ3. Öğrencilerin depremden etkilenip etkilenmediklerine bağlı olarak online eğitime yönelik tutumlarında anlamlı bir farklılık var mıdır?

RQ4. Öğrencilerin depremin eğitimlerine etkisi hakkındaki düşünceleri nelerdir?

Yöntem. Araştırmanın katılımcılarını bir devlet üniversitesinden 352 öğrenci oluşturmaktadır. Bu öğrencilerin 228'i İngilizce hazırlık programına 61'i Eğitim; 56'sı Edebiyat ve 27'si Fen Fakültesine devam etmektedir. Araştırma verileri Uzaktan Eğitim Değerlendirme Ölçeğinden uyarlanan maddeler ile açık uçlu sorular kullanılarak elde edilmiştir. Ölçek maddelerinin analizinde Mann-Whitney U testi açık uçlu soruların yanıtlarının analizinde içerik analizi ve CLAN (Computerized Language ANalysis) programı kullanılmıştır. Çalışmanın güvenilirliği ve geçerliliği hem nicel hem de nitel olarak desteklenmiştir. Açık uçlu soruların yanıtlarının analizinde, verilerin iki bağımsız kodlayıcısı arasındaki tutarlılığı belirlemek için Kappa istatistiği kullanılmıştır. Nitel çalışmalarda standart kodlama, farklı kaynaklardan gelen verilerin karşılaştırılması ve bulguların farklı bakış açılarıyla analiz edilmesi önemlidir.

Bulgular. Ölçek maddelerinin analizi gruplar arasında anlamlı farklılıklar ortaya çıkarmıştır.

1) Kız öğrencilerin uzaktan eğitim ile verilen derslerin uygulama programları hakkında erkek öğrencilere göre anlamlı derecede daha fazla farkındalığa ve bilgiye sahiptir.

2) İngilizce Hazırlık programı öğrencilerinin, edebiyat, eğitim ve fen fakültelerindeki öğrencilerle karşılaştırıldığında, çevrimiçi eğitimin hem teknik hem de pedagojik yönlerine önemli ölçüde daha fazla olumsuz tutum geliştirdikleri görülmektedir.

3) Depremden maddi ve manevi olarak etkilenen öğrencilerin, depremden etkilenmeyen öğrencilerle karşılaştırıldığında, çevrimiçi oturumlara erişilebilirlik, internet bağlantıları ve akademik programları takip etme gibi çevrimiçi eğitimin teknik yönlerine ilişkin olumsuz düşüncelerinin önemli ölçüde daha fazla olduğu saptanmaktadır.

Açık uçlu soruların yanıtlarından elde edilen istatistiksel bulgular, olumsuz duygular (f=37), zorluklar ve problemler (f=34), psikoloji (f=25), konsantrasyon (f=23), üzüntü (f=22) ile aile ve

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arkadaşlarla (f=21) ilgili kelimelerin sıklığının yüksek olduğunu göstermiştir. İçerik analizi, depremin öğrencilerin eğitimi hakkında bilişsel, duygusal ve sosyal etkilerini ortaya koymuştur.

Depremin öğrencilerin eğitimleri üzerindeki bilişsel etkileri ders ve sınavlara odaklanma, çevrimiçi eğitime uyum sağlamada öğrenme süreci, internet bağlantısında aksamalar ve diğer dikkat dağıtıcı faktörlerden dolayı çevrimiçi eğitimin etkisinin düşük olması gibi sorunlarla ilgilidir. Depremin öğrencilerin eğitimi üzerindeki duygusal etkileri arasında yaşadıkları depresyon ve kayıpları için hissettikleri derin endişe ve üzüntü nedeniyle çevrimiçi derslere katılma motivasyonunun düşük olması yer almıştır. Depremin öğrencilerin eğitimi üzerindeki sosyal etkisi, öğrencilerin sosyal yaşamlarına daha çok deprem bölgesindeki aileleri için endişelenme ve online eğitim döneminde arkadaşlarından ayrılma gibi olumsuz sonuçları yansıtmıştır. Depremin öğrencilerin eğitimi üzerindeki sosyal etkisi deprem bölgelerindeki aileleri için endişelenme ve arkadaşlarından ayrılma gibi sebeplerden kaynaklanan olumsuz sonuçlar olarak belirlenmiştir.

Yorum ve Sonuç. Bu çalışmanın bulguları, çevrimiçi eğitimin bir seçim değil, bir zorunluluk olduğu benzer bağlamlarda yapılan araştırmalarla uyumludur. Yöneticiler, üniversitelerde çevrimiçi eğitimin sürdürülmesi için teknik desteği iyileştirme ve güvenilir altyapı sağlama konularına daha fazla ilgi göstermeliler. Afetlerden etkilenen öğrencilere uyum sürecinde ilgili yetkililer ve uzmanlar tarafından maddi ve psikolojik destek sağlanmalıdır. Ayrıca, öğretim elemanlarının çevrimiçi eğitime uygun teknik ve pedagojik becerilerini geliştirmeleri ve mevcut bilgilerini güncellemeleri için seminer çalışmalarına önem verilmelidir.

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Introduction

Regrettably, all facets of society, particularly education, are impacted by extreme situations and disasters, including earthquakes, pandemics, and conflicts. On February 6, 2023, Turkey was struck by two enormous earthquakes, the first measuring 7.8 on the Richter scale and the second measuring 7.5. Numerous individuals were killed or injured, and millions were compelled to evacuate their residences. Regrettably, this catastrophe resulted in an immediate transition from the conventional in-person format to online/distance teaching, and subsequently to hybrid education for all universities in Turkey. Distance education was instituted during holidays following the earthquake and epidemic to sustain educational continuity. Disaster situations, such as earthquakes, can impede education owing to infrastructural challenges, the psychological and social conditions of students, as well as technical, institutional, and political factors. An effective distant education approach necessitates a confluence of these elements (Koç, 2023).

The research (Cakici & Aksoy, 2023; Elhaty & Elhadary, 2023; Koç, 2023; Tokpınar, Yılmaz, Yılmaz & Değermenci, 2023) on this unexpected and tragic situation has revealed various attitudes of university students towards the new form of education. The objective of this study is to give insight into the issue and examine the reactions and reflections of Turkish university students in response to the abrupt transition to online and hybrid education.

Literature Review

Different instructional methods and techniques have been offered to teachers and students throughout the history of education. It seems that one of these methods and approaches is distance education applications for a while. Distance learning programs are conducted to serve students who cannot be in physical classrooms for various reasons. Distance learning is not a new practice in the world of education. Distance education first started with printed course materials being sent to students by mail. Then, television and radio broadcasts were used in distance education processes (Maureen & Newvine, 2006).

The introduction of the internet into our lives and advances in digital technologies have caused distance education to be organized online. Johnston (2020, p. 4) defines distance learning as follows: “A self-directed, autonomous learning experience using technology that networks students with resources, instructors, and other teachers, potentially without a formal institution, where students have great autonomy and flexibility but less direct teacher contact and direction." As it can be seen, online education and distance education are used synonymously.

The growth of the internet, which enables access to information and improved communication between people, has fundamentally changed the face of education. Opportunities in distance education have moved instructional processes beyond school walls. Distance education utilizes the internet to access educational resources, facilitate communication with instructors and peers, and enhance learning experiences. It is predominantly web-based and mobile learning,

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offering equitable educational opportunities in challenging circumstances (Koç, 2023). As a result, teacher-student interaction has been redefined by the progress of distance learning systems that include interactive video email and the world wide web (Trending, 1997; Katz, 2000). Online learning is an instructional technique that allows teachers and students to have different technology-driven methods (Valentine, 2002). Online learning creates a virtual platform that facilitates learning in the absence of face-to-face meetings in a classroom (Dobbs, Carmen & Lindberg, 2017).

The pedagogical features of the fundamental course management systems include collaboration and communication, content generation and distribution, management utilities, learning utilities, and assessment utilities (Online Learning, 2005). The five categories pertaining to the key components of an educational event specifically designed and created for distance learning are as follows: learning objectives and content presentation, interaction, evaluation, and measurement; learning environment and tools, as well as student support systems and services (Ragan, 1999).

The pedagogical aspects of online learning include many instruments for learning, such as communication and collaboration features, enhanced material and delivery methods, measurement capabilities, and technical and administrative services. The primary objectives of these elements are to enhance the exchange of information among students and their peers, students and the educational material, learners and technology, and students and instructors (Seok, Kinseli, DaCosta & Tung, 2010). Efficient online learning encompasses the use of online teaching and learning methods, the evaluation of various areas of research, principles, prototypes, theories, ethics, and benchmarks to ensure high-quality online course design, teaching, and learning (Er & Farhady, 2023; Hodges, Moore, Lockee, Trust & Bond, 2020; Bozkurt & Sharma, 2020).

Students in an online learning environment are no longer reliant only on teachers for learning, since topic knowledge and information are readily available. In order to achieve success in online teaching and learning, both teachers and students must assume new roles within the teaching and learning dynamic. Teachers should demonstrate a willingness to inspire and empower their pupils to take ownership of their own understanding (Illinois Online Network, 2023).

Students are also obligated to fulfil specific tasks in online education programs. Utilising technology is only a singular, although significant, component of online education. Successful online students not only need technological proficiency but also must possess other abilities such as self-management, effective communication, and efficient time management (Roper, 2007; Fidalgo, Thormann, Kulyk & Lencastre, 2020).

The phenomena of digital transformation have been noticed in universities for some years, as documented by Kopp, Gröblinger, and Adams (2019) and Leszczyński, et al. (2018). Nevertheless, the COVID-19 epidemic has expedited the trend of digitalising education and the proliferation of online learning. Following the government's announcement of the physical shutdown of schools as a measure to curb the fast worldwide and communal spread of the epidemic, colleges have no choice but to resort to online learning as the only alternative. Distance education was reintroduced in higher

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education in Turkey during the spring semester of 2022 after the severe earthquakes that struck the nation's southeastern region, causing significant damage.

Previous research

Prior research has focused on several areas of learning when comparing student evaluations in online and traditional face-to-face learning settings. Several studies assess students' views of successful learning by measuring the course's overall quality or student satisfaction using various methods (Rovai, Ponton, Derrick & Davis, 2006; Sun, Tsai, Finger, Chen & Yeh, 2008). Additional studies investigate the factors that drive students to engage in online courses, such as their beliefs on flexibility or convenience (Vachris, 1999; Wuensch, Aziz, Ozan, Kishore, & Tabrizi 2008; Young & Norgard 2006). Previous research has also included additional characteristics such as peer or teacher engagement, including interaction and learning support (Daugherty & Funke 1998; Lieblein, 2000; Mullen & Tallent-Runnels, 2006).

The students, overall, expressed high levels of satisfaction with both their instructors and the online courses. Drennan, Kennedy, and Pisarski (2005) conducted research involving 250 students and discovered that student happiness was affected by favourable impressions of technology and autonomous learning settings. Therefore, students' reactions to an online learning environment may vary based on their proficiency and attitudes. Haas and Senjo (2004) conducted a survey of 187 faculty members from different colleges in California. The results revealed that while most faculty members had a favourable attitude towards technology, a much smaller number incorporated technology-based teaching approaches into their courses. Passig and Levin (2000) discovered that the use of multimedia methods enables students to acquire knowledge in a particular topic while also developing skills in navigating a simulated and artificially created setting.

However, when the implementation of distance learning becomes mandatory due to disasters such as wars, pandemics, or earthquakes, the reflections of the students might differ. Both the COVID-19 pandemic and the earthquake that occurred on February 6th in Turkey have caused significant disruptions to education and led to higher rates of unemployment. Students and instructors faced the challenge of adjusting to new learning and working methods. Both calamities have resulted in increased social isolation from loved ones, as well as significant levels of stress, anxiety, and depression (Elhaty & Elhadary, 2023).

In the specific context of the earthquake in Turkey on February 6th, the study indicates that university students have varying views towards online education and a preference for face-to-face education. For instance, a semi-structured interview conducted with seven students from the Faculty of Sports Sciences revealed that face-to-face education would be more advantageous for them than online education. Based on the findings, theoretical lessons may be effectively delivered using online platforms; however, practical lessons should be given in person or in a setting that closely resembles real-life situations (Çakıcı & Aksoy, 2023). A subsequent study which included university students who had undergone pedagogical formation training following the earthquake, revealed that ‘distance education’ was relatively effective. After the earthquake, the classroom management process

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identified several positive aspects of distance education courses, including “motivation”, “positive classroom atmosphere and interaction”, and “effective course presentation by instructors”. Conversely, adverse situations that arose included “difficulty concentrating during the course” and “anxiety-provoking attitudes”. Following the occurrence of an earthquake, the benefits of distance education in online courses were identified as the ability to record and track courses, the availability of course content and documents within the system, and the cost and time efficiency. Conversely, the drawbacks included the intensity of courses scheduled on the same days and issues related to internet and system reliability (Yücel, 2023). The questionnaire results from a study conducted with first-year dentistry students who transitioned to online education after an earthquake indicate that due to the extensive subject matter and the difficulty in comprehending the content, it is crucial to deliver theoretical and practical lessons in a traditional face-to-face setting rather than online (Tokpınar, Yılmaz, Yılmaz & Değermenci, 2023). Similarly, a paper using a mixed-method approach, including associate degree students from the child development department, examined the impact of distance education after the earthquake in Türkiye. The findings suggested that online education was less successful than traditional face-to-face education, mostly due to the earthquake. The level of happiness that students experience with distance education varies greatly based on the presence of technology resources. The students reported experiencing challenges as a result of the detrimental psychological impact of the earthquake and the issues with infrastructure. The primary benefit of distance education is its flexible learning environment and the ability to access course recordings. However, they were at a disadvantage due to their insufficient participation in online education apps throughout the classes (Koç, 2023).

However, the study has also shown variations in university students' perspectives on the type of education based on their gender, grade level, and the individual impact of the earthquake on the students themselves. The results regarding gender showed that female medical secretariat students exhibited a statistically significant preference for the face-to-face education model (Hoşgör, Güngördü, & Hoşgör, 2023). Additionally, gender differences were observed in terms of male students' more consistent attitudes and female students' more consistent participation (Nistor, 2013). The research findings also indicate that university students who resided in state dormitories, did not experience the loss of relatives, and did not have their houses damaged in the earthquake displayed a preference for face-to-face education (Hoşgör, Güngördü & Hoşgör, 2023). Furthermore, it was noted that there were notable disparities between the students who experienced the earthquake and those who did not. The former group reported a greater number of adverse consequences associated with online education (Yücel, 2023). Furthermore, research conducted in the context of COVID-19 showed that the grade level of students has an impact on their attitude towards distance education. The study conducted by Kaban (2021) revealed that 4th grade students exhibited considerably higher scores on the Attitude Scale towards Distance Education compared to students in lower grade levels. Furthermore, it was observed that male students had more positive attitudes towards distance education than their female counterparts.

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Research questions

The following Research Questions were posed for the present study:

RQ1. Is there a significant difference in students' attitudes toward online education depending on their gender?

RQ2. Is there a significant difference in students' attitudes toward online education depending on their major?

RQ3. Is there a significant difference in students' attitudes toward online education depending on whether they have been affected by the earthquake or not?

RQ4. What are students' reflections on the impact of the earthquake on their education?

Methodology

The research approach for this study was Mixed method research, which integrates data collection and analysis techniques from both quantitative and qualitative paradigms within a single research paper (Fraenkel & Wallen, 2009, p. 557). Mixed Method Research is favored as it offers a deeper understanding of research issues when both approaches are utilized together rather than individually (Fraenkel & Wallen, 2009).

Participants

The participants (N=352) were selected via convenient sampling (Cohen, Manion & Morrison, 2000) that is availability and accessibility were the main criteria for reaching the participants. The participants were university students from a Turkish state university. 228 students were studying English in a one-year preparatory program, while the rest were students from the faculties of pedagogy (N=61), literature (N=56), and science (N=7). Table 1 below gives detailed information about the profiles of the participants.

Table 1.
Information about students' profile

GENDER	N	MAJOR	N	AGE
Female	192	Prep. Program	228	Mean = 21,17
Male	160	Pedagogy	61	Min= 18
Total	352	Literature	56	Max = 64
		Science	7	
		Total	352	

For the confidentiality of the participants, codes instead of names will be used in the present study. S1, S2, S3... Sn will represent Student1, Student2, Student3… Student n, respectively.

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Data collection tools and procedures

Data were collected from a questionnaire and a survey (Wei & Moyer, 2008) via Google Forms. 352 students completed the questionnaires, while 163 students completed the survey. The questionnaire and the survey were conducted after the devastating earthquake in Turkey on the 6th of February, 2023. The students completed the questionnaire and the survey, online through Google Forms while taking the online/distance form of instructions in the second term. In the first semester, face-to-face education was followed. However, in the second term, due to the devastating earthquake in Turkey, on the 6th of February 2023, the participants, as well as all university students in Turkey, had to shift to online education.

The questionnaire was adapted from a previous study (Özkul, Kırnık, Dönük, Altunhan & Altunkaynak, 2020) collecting data from a scale about teachers' views on distance education applications. Permission to use the questionnaire has been received by the authors (Özkul, Kırnık, Dönük, Altunhan & Altunkaynak, 2020) via e-mail, and ethical permission has been declared as well. The questionnaire was in students' native language (Turkish) and consisted of background items and 15 items measuring students' attitudes toward online / distance education. A Likert scale was used for the responses of the attitude items. Students had to choose from 1- strongly disagree to 5- completely agree. Items 1-6 are about the technical aspects and accessibility to online sessions, while items 7-15 are related to the pedagogical side of online education and the learning process of the students (See App. for the Turkish version of the questionnaire). Table 2 below displays the English translation of the attitude items:

Table 2.
English version of the attitude items of the questionnaire

1. I can access the courses given by distance education at any time.
2. I can access the courses given by distance education wherever I want.
3. It is easy for me to access the courses given by distance education.
4. I have information about the application schedules of the courses given by distance education.
5. I use the preferred online platforms (Zoom, Discord, Sakai, etc.) effectively in distance education.
6. When I have difficulties in accessing courses given by distance education, I get technical support.
7. Distance education is efficient in terms of learning processes.
8. The distance education process increases my motivation to learn.
9. I evaluate my own learning process by means of the distance education.
10. Distance learning is in line with my learning characteristics.
11. The distance education process encourages me to learn new things.
12. Distance learning makes it easier for me to learn on a long-term basis.
13. Distance education courses contribute to my personal and professional development.
14. The instructional design of the courses given by distance education is effective.
15. Distance education enriches the learning process.

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The survey questions were included in the background information part of the questionnaire. In the survey part, the following questions were asked to the students (See App. A for the Turkish version of the questions).

1*) Were you affected morally and/or financially by the February 6, 2023 earthquake in Turkey?*
2) If you were affected by the February 6, 2023 earthquake in Turkey, how was this reflected in your education? Can you briefly explain?

Prior to data collection, ethical permission was obtained from Dokuz Eylul University Social Sciences and Humanities Ethical Committee (with the reference number E-87347630-659-601826) on 16/05/2023 before collecting the data.

Data analysis

Test of normality (Kolmogorov-Smirnov, Shapiro-Wilk normality tests) reported significant results ($p < .05$) and, therefore, non-normal distribution for questionnaire items (Greasley, 2008). That is why a non-parametric test such as the Mann-Whitney U Test was used for the analysis of questionnaire responses (Urdan, 2005).

For the analysis of the survey responses, content analysis (Saldaña, 2021) and CLAN (Computerized Language ANalysis) Program (MacWhinney, 2000) were used. Content analysis elicited qualitative findings, such as categorizations of concepts/codes into themes to answer the research questions. Two independent coders analysed the survey data. After comparisons and negotiations, the final codes were elicited upon agreement between the two coders. On the other hand, CLAN program was used to produce descriptive statistics results such as frequency of semantically and morphologically related words in survey data. The codes, transcription conventions, and commands for statistical analysis were selected from the CHILDES (Child Language Data Exchange System) (MacWhinney, 2000).

Reliability and validity

The trustworthiness of the study was supported both quantitatively and qualitatively. Quantitatively, the reliability test was used to estimate the internal consistency of the questionnaire. The value of the Cronbach Alpha correlation coefficient for the 15 items (r=,93) is considered an acceptable result for the reliability of a questionnaire (Dörnyei & Taguchi, 2010).

In addition, the Rotated component matrix below reveals solid validity values for the questionnaire items. The items were grouped into two categories. Items 1-6 are interrelated, and all are about the technical aspects and accessibility to online sessions. The second category of items 7–15 is about the pedagogical aspects of online education, such as the learning process of the students. (See Table 3 below).

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Table 3.
Rotated Component Matrix[a] of questionnaire items/Validity test

	Grouping Category	
	Pedagogical aspects	Technical aspects
Q1		,742
Q2		,775
Q3		,766
Q4		,712
Q5		,735
Q6		,540
Q7	,842	
Q8	,880	
Q9	,747	
Q10	,875	
Q11	,876	
Q12	,905	
Q13	,891	
Q14	,791	
Q15	,880	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

For the survey responses, the Kappa statistic was performed to determine consistency between two independent coders of the data (Landis & Koch, 1977). The intercoder reliability for 15 codes of interview data was found to be Kappa = 0.72 ("Sig" = ,000; $p < 0.001$), which is an acceptable agreement between the two coders (Viera & Garrett, 2005). The study was qualitatively supported by using standard coding, triangulation, and member checking (Fraenkel & Wallen, 2009).

Findings

Findings related to RQ1. Is there a significant difference in students' attitudes to online education depending on their gender?

To answer RQ1, a Mann-Whitney U test was run to analyze the questionnaire items according to the gender grouping variable. Table 4 below shows a significant difference between female and male students for item 4 (U = 13225, p = .01).

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Table 4.
A Mann-Whitney U Test Statistics for students' attitudes depending on their gender

	Mann-Whitney U	Asymp. Sig. (2-tailed)
Q1	15099,00	,77
Q2	14293,00	,24
Q3	15164,00	,82
Q4	13225,00	,01
Q5	15249,50	,90
Q6	13936,00	,12
Q7	14393,00	,27
Q8	14403,00	,25
Q9	14770,50	,52
Q10	14317,00	,24
Q11	14499,00	,32
Q12	14871,00	,56
Q13	14969,00	,66
Q14	15167,50	,83
Q15	14276,00	,21

Grouping Variable: Gender

Item 4 is given below:

Item 4. I have information about the application schedules of the courses given by distance education.

Table 5 below shows the mean ranks of the groups for item 4 with a significant difference between the groups.

Table 5.
Mean ranks of female and gender students / significant differences

	Gender	N	Mean Rank	Sum of Ranks
Q4	Female	192	187,62	36023,00
	Male	160	163,16	26105,00
	Total	352		

The mean rank Table 4 above indicates that female students reported more positive reflections and a higher mean rank (M=187,62) than male (M=163,16) students. Therefore, female students revealed higher awareness of and knowledge about the academic calendar of the online session applications.

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Findings related to RQ2. Is there a significant difference in students' attitudes to online education depending on their major?

A Mann-Whitney U test analysed the questionnaire items according to the students' major. Students' majors were classified into two main groups, 1) students studying in the English Preparatory program of their university, and 2) students studying in the other faculties, such as literature, pedagogy, and science. Table 6 below reports a significant difference ($p < .05$) between the two groups for item 1 ($U = 11789$, $p = .00$), item 5 ($U = 12341{,}50$, $p = .04$), item 7 ($U = 12197{,}50$, $p = .02$), item 8 ($U = 11969{,}50$, $p = .00$), item 10 ($U = 12244{,}50$, $p = .02$), item 12 ($U = 11928$, $p = .00$), item 13 ($U = 12060{,}50$, $p = .01$), and item 15 ($U = 11880{,}50$, $p = .00$).

Table 6.
A Mann-Whitney U Test Statistics for students' attitudes depending on their major

	Mann-Whitney U	Asymp. Sig. (2-tailed)
Q1	11789,00	,00
Q2	13098,50	,24
Q3	13329,00	,35
Q4	13231,00	,29
Q5	12341,50	,04
Q6	14025,00	,91
Q7	12197,50	,02
Q8	11969,50	,00
Q9	13307,00	,34
Q10	12244,50	,02
Q11	12859,00	,12
Q12	11928,00	,00
Q13	12060,50	,01
Q14	12699,50	,09
Q15	11880,50	,00

The items with a significant difference between the groups are listed below:
Technical aspects of online education:
Item 1. I can access the courses given by distance education at any time.
Item 5. I use the preferred online platforms (Zoom, Discord, Sakai, etc.) effectively in distance education.
Pedagogical aspects of online education:
Item 7. Distance education is efficient in terms of learning processes.
Item 8. Distance education process increases my motivation to learn.

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Item 10. Distance learning is in line with my learning characteristics.
Item 12. Distance learning makes it easier for me to learn on a long-term basis.
Item 13. Distance education courses contribute to my personal and professional development.
Item 15. Distance education enriches the learning process.

Table 7 below displays the mean ranks between the two major groups for the items with a significant difference.

Table 7.
Mean ranks between students from different majors / significant differences.

	Major	N	Mean Rank	Sum of Ranks
Q1	PREP.SCHOOL	228	166,21	37895,00
	OTHERS	124	195,43	24233,00
Q5	PREP. SCHOOL	228	168,63	38447,50
	OTHERS	124	190,97	23680,50
Q7	PREP. SCHOOL	228	168,00	38303,50
	OTHERS	124	192,13	23824,50
Q8	PREP. SCHOOL	228	167,00	38075,50
	OTHERS	124	193,97	24052,50
Q10	PREP. SCHOOL	228	168,20	38350,50
	OTHERS	124	191,75	23777,50
Q12	PREP. SCHOOL	228	166,82	38034,00
	OTHERS	124	194,31	24094,00
Q13	PREP. SCHOOL	228	167,40	38166,50
	OTHERS	124	193,24	23961,50
Q15	PREP.SCHOOL	228	166,61	37986,50
	OTHERS	124	194,69	24141,50
	Total	352		

The results above indicate that for the items listed in Table 7, the mean ranks of the students from the English Prep program are significantly lower than those of the students from the other faculties, such as literature, pedagogy, and science. It can be concluded that the students from the English prep program reported negative reactions and attitudes to both technical and pedagogical aspects of online education when compared with the students from the other majors.

Findings related to RQ3. Is there a significant difference in students' attitudes to online education depending on whether they have been affected by the earthquake?

For the answer of RQ3, a Mann-Whitney U test was conducted to analyse the questionnaire items depending on the impact of the earthquake on students' life. Students were categorized into two groups based on their response to the following yes/no question: Have you been financially and/or psychologically affected by the earthquake on the 6th of February 2023? Table 8 below

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reports a significant difference (p≤ .05) between the two groups for item 2 (U = 12766,50, p = .00), item 3 (U = 12364,50), p = .00), and item 4 (U = 13692, p = .05).

Table 8.
A Mann-Whitney U Test Statistics for students' attitudes depending on their major

	Mann-Whitney U	Asymp. Sig. (2-tailed)
Q1	13743,50	,06
Q2	12766,50	,00
Q3	12364,50	,00
Q4	13692,00	,05
Q5	13720,50	,06
Q6	14299,00	,23
Q7	14836,00	,51
Q8	14699,00	,39
Q9	14591,00	,36
Q10	14054,50	,12
Q11	14752,00	,45
Q12	14651,00	,37
Q13	15089,00	,71
Q14	14472,00	,29
Q15	15029,00	,65

The items with a significant difference between the groups are related to the technical aspect of online education and are listed below:
Item 2. I can access the courses given by distance education wherever I want.
Item 3. It is easy for me to access the courses offered by distance education.
Item 4. I have information about the application schedules of the courses given by distance education.

Table 9 below shows the mean ranks between groups with a significant difference for items 2,3 and 4.

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Table 9.
Mean ranks between students depending on the earthquake's impact on their life / significant differences.

	Impact.EQ	N	Mean Rank	Sum of Ranks
Q2	YES	164	160,34	26296,50
	NO	188	190,59	35831,50
	Total	352		
Q3	YES	164	157,89	25894,50
	NO	188	192,73	36233,50
	Total	352		
Q4	YES	164	165,99	27222,00
	NO	188	185,67	34906,00
	Total	352		

The mean rank values in Table 9 above indicate that the students affected by the earthquake reported low mean ranks and significantly more negative attitudes towards the technical aspects of online education, such as accessibility to online sessions, internet connections, and following academic schedules.

Findings related to RQ4. What are students' reflections on the impact of the earthquake on their education?

In the survey section students answered the following questions:
1) Were you affected morally and/or financially by the February 6, 2023, earthquake in Turkey?
2) If you were affected by the February 6, 2023, earthquake in Turkey, how was this reflected in your education? Can you briefly explain?

The results from the language analysis revealed the frequency of the words used by 163 students in their answers to the survey questions. Table 10 below shows semantically related words' descriptive statistics and frequency values.

Table 10.
Frequency of semantically related words used in students' answers of the survey.

Thematic Category	**Semantically Related Words (in Turkish)**	**Semantically Related Words (English translation)**	**Frequency**
Emotional	Kötü, olumsuz	Bad, Negative	37
Cognitive	Güçlük, Zorluk, Problem, Aksaklık, Sorun	Difficulties, Problems	34
Emotional	Psikolojik	Psychological	25
Cognitive	Odaklanma	Concentration	23
Emotional	Üzüntü, Acı, Sıkıntı	Sorrow	22

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Social	Aile, Akraba, Yakınım, Arkadaş	Family, Relatives, Friends	21
Emotional	Kayıp, Zarar	Loss	17
Emotional	Motivasyon	Motivation	10
Social	Maddi	Financial	10
Emotional	İsteksizlik, Depresyon	Depression	9
Social	Kopukluk	Lose Connection, Internet / Electricity Cut	9
Social	Ülkemiz	Our Country	8
Emotional	Korku, Travma, Endişe	Fear, Trauma, Anxiety	8
Cognitive	Sınav	Exams	7
Cognitive	Toparlayamadım	Not Recover	6
Cognitive	Adapte	Adaptation	3
Social	Ölen	Dead	3

From the table above, it can be concluded that to express the impact of the earthquake on their education, the students used the most words related to negative emotions (f=37), difficulties and problems (f=34), to their psychology (f=25), concentration (f=23), sorrow (f=22), and family and friends (f=21). These concepts could be classified into three thematic categories, such as cognitive (concentration, difficulties, problems), emotional (bad, sorrow, psychology) and social (family, friends) effects of the earthquake on students' education. The other words with lower frequencies also fall into the three categories above. Some of the words showing the emotional impact of the earthquake are words such as motivation (f=10), trauma and anxiety (f=8), and depression (f=9). Other words giving insight into the social consequences are internet accessibility (f=9), our country (f=8), financial (10), and death (f=3). As for cognitive difficulties, words such as adaptation (f=3), exam (f=7), and not recovery (f=6) give a view of the situation.

In terms of the cognitive effects of the earthquake on their education, the students mentioned problems related to focusing on lessons and exams due to loss in their families and psychological stress:

> S1: Aile içinde kayıplarım olduğu için psikolojik açıdan derslere odaklanamadım.
> *I couldn't focus on the lessons psychologically because I had losses in the family*. (*English is in italics*. Turkish is not in italics.)
> S2: Depremin yarattığı travma sebebiyle derslere odaklanmak çok zor oldu çünkü sürekli tetikteydim ve tedirgindim. Bu nedenle verimli bir dinleme gerçekleştiremedim. Tedbir amacıyla evde kalamadığımda derslerle katılamadım. Vize dönemine kadar eğitimim olumsuz etkilendi. *Due to the trauma caused by the earthquake, it was very difficult to focus on the lessons because I was constantly alert and nervous. For this reason, I could not listen productively. When I couldn't stay at home as a precaution, I couldn't attend classes. My education was adversely affected until the midterm period.* (*English is in italics*. Turkish is not in italics.

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In addition, students reported that online education was not as effective as face-to-face education for their learning and self-discipline because of technical issues such as internet connection and other distractive factors:

> S3: Uzaktan eğitim asla eğitim gibi değil. Bu süreçte hiçbir şey yapamadım, çoğu konularım eksik ve zor anlıyorum.
> *Distance learning is never like education. I have not been able to do anything in this process, most of my subjects are incomplete and I hardly understand them.* (*English is in italics*. Turkish is not in italics.)
> S4: Ben depremi Hatay İskenderunda yaşadım psikolojim için çok kötü oldu. Eğitimin de yüzyüze olmasını isterdim çünkü online eğitimde genel anlamda çok verim alınamıyor ve ne yazik ki bağlantı problemleri,evimizin işleri vs. yüzünden çok girme fırsatım olmadı.
> *I experienced the earthquake in Hatay Iskenderun, it was very bad for my psychology. I would like the training to be face-to-face because online education is not very efficient in general, and unfortunately, I did not have the opportunity to join much the online sessions due to connection problems, work at home, etc. (English is in italics*. Turkish is not in italics.)
> S10: Deprem bölgesinde etkilenenler için maddi manevi elimizden geleni yaptık fakat derslerin çevrimiçi olması başarımızı ve disiplini sekteye uğrattı, derslere empoze olamadık maalesef.
> *We did our best financially and morally for those affected in the earthquake zone, but the fact that the classes were online interrupted our success and discipline, unfortunately, we could not impose on the lessons. (English is in italics.* Turkish is not in italics.)

Some students also reported learning challenges during the adaptation process to online education, but eventually getting used to it:

> S5: Deprem bölgesinde yaşamama rağmen oradaki arkadaşlarımın yaşadıklarını düşünmek bile beni çok etkiledi. Her şekilde yardım etmeye çalıştık ama çok da zorlandım. İlk başlarda hem bundan kaynaklı hem de online eğitimden kaynaklı derslere odaklanamadım. Alışmam zaman aldı.
> *Even though I live in the earthquake zone, even thinking about what my friends there went through affected me a lot. We tried to help in every way, but I had a hard time. At first, I couldn't focus on the courses both because of this and because of online education. It took me a while to get used to it. (English is in italics*. Turkish is not in italics.)
> S6: Eğitim açısından etkiledi. Online eğitim başta çok zor geldi ama şimdi daha alıştım. Ama seneye böyle olması beni korkutuyor.
> *From an educational point of view, I was affected. Online education was very difficult at first, but now I am more used to it. But I'm scared that it will be like this next year.*
> *(English is in italics*. Turkish is not in italics.)

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On the other hand, emotional aspects were also reported by the students. The deep sorrow and morning because of the loss, led to deep depression and, as a result, low intrinsic motivation to join the online classes:

> S7: Büyük bir üzüntü yaşadığım için ders konusunda dönem başında motivasyonum çok düşüktü.
> *At the beginning of the semester, I was very unmotivated to study because I was very sad.*
> *(English is in italics*. Turkish is not in italics.)
> S8: Derin bir üzüntü yaşamama ve depresyona girmeme sebep oldu ayrıca evde internet sıkıntım olduğu için derslere giremedim, interneti bir şekilde bulsam bile derslere girme isteğim kalmamıştı.
> *It caused me to experience deep sadness and depression, and I could not attend classes because I had internet problems at home, even if I found the internet connection somehow, I had no desire to attend classes.*
> *(English is in italics.* Turkish is not in italics.)
> S9: Depremle ilgili gördüklerim ve duyduklarım psikolojik olarak çaresiz ve öfkeli hissettirdi. Bu hâlde eğitimimi ve geleceğimi pek düşünemedim.
> *What I saw and heard about the earthquake made me feel psychologically helpless and angry. In this case, I couldn't think much about my education and my future.*
> *(English is in italics*. Turkish is not in italics.)

The social effect of the earthquake on students' education was also elicited from the survey data. The reports reflected mostly negative consequences on students' social lives and, therefore, on their education. Some students had to stay alone in the dormitory or move back to their hometowns, separated from their friends due to the sudden shift to online education:

> S13: Arkadaşlarım doğrudan etkilendi ve bu durum beni çok sarstı, yurtta tek başıma kaldığım içinde mental olarak iyi değildim bu durum eğitimi ikinci plana atmama sebep oldu uzaktan eğitime geçilmesi de daha da etkiledi bu durumu.
> *My friends were directly affected and this situation shook me very much, I was not mentally good because I was alone in the dormitory, this situation caused me to put education on the back plan, and the transition to distance education affected this situation even more.*
> *(English is in italics*. Turkish is not in italics.)
> S11: Depremi yaşamadım fakat depremden sonraki süreçten etkilendim. Derslerim online oldu ve kyk yurdunda kaldığım için apar topar eşyalarımı toplamam gerekti. Daha sonrasında arkadaşlık ilişkilerime yansıdı, benim için iyi bir süreç olmadı.
> *I did not experience the earthquake, but I was affected by the process after the earthquake. My classes were online, and I had to pack my belongings in a hurry because I was staying in the student dormitory. Later, it was*

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reflected in my friendship relationships. It wasn't a good period for me. (English is in italics. Turkish is not in italics.)

What is worse, some students were not able to contact even their close family after the earthquake:

S12: Eğitimimiz kesintiye uğradı ve deprem sonrasında aileme ulaşamadım bu korku yarattı.
Our education was interrupted and I could not reach my family after the earthquake, which created fear in me. (English is in italics. Turkish is not in italics.)

Summary of the findings

The analysis of the questionnaire items revealed significant differences between the groups and indicated that,
1) Compared to male students, female students have significantly higher awareness of and knowledge about the application schedules of the courses given by online education,
2) The students from the English Prep program reported significantly more negative reactions and attitudes to both technical and pedagogical aspects of online education, when compared with the students from the faculties of literature, pedagogy, and science.
3) Compared to the students who had not been affected by the earthquake, the students who had been morally and financially affected by the earthquake reported significantly more negative reflections on the technical aspects of online education, such as accessibility to online sessions, internet connections, and following academic schedules.

The statistical findings from the survey responses indicated a high frequency of words related to negative emotions (f=37), difficulties and problems (f=34), psychology (f=25), concentration (f=23), sorrow (f=22), and family and friends (f=21). The content analysis revealed the earthquake's cognitive, emotional, and social impacts on students' education. The cognitive effects of the earthquake on their education, involved issues related to focus on lessons and exams, to the learning process during the adaptation to online education, and to the low effectivity of online education because of technical issues such as internet connection and other psychologically distractive factors. The emotional effects of the earthquake on students' education included depression and low intrinsic motivation to join the online classes due to the deep anxiety and sorrow they felt for their losses. The social effect of the earthquake on students' education reflected mostly negative consequences on students' social lives, such as worrying about their families in the earthquake area and being separate

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Discussions

Discussion of Findings related to RQ1: Is there a significant difference in students' attitudes to online education depending on their gender?

According to the findings of the present study, compared to male students, female students have significantly higher awareness of and knowledge about online education's application schedules. This is partially in line with previous research claiming that female students exhibited more consistent participation in online courses (Nistor, 2013). On the other hand, according to literature, female students showed preference for the face-to-face education model (Hoşgör, Güngördü, & Hoşgör, 2023) but this could be explained with female students' less consistent attitudes when compared to their male counterparts (Nistor, 2013).

Discussion of Findings related to RQ2: Is there a significant difference in students' attitudes to online education depending on their major?

In the present study, the students from the English Prep program reported significantly more negative attitudes toward both technical and pedagogical aspects of online education when compared with the students from the faculties of literature, pedagogy, and science. The previous research reported similar findings that 4th grade students exhibited considerably higher scores on the Attitude Scale towards Distance Education compared to students in lower grade levels (Kaban, 2021). To conclude, novice students who are in their first year, like English Prep students, report more negative attitudes toward online education than senior students from higher grades, which could be explained by their less experience and thus ability to adjust to new contexts.

Discussion of Findings related to RQ3: Is there a significant difference in students' attitudes to online education depending on whether they have been affected by the earthquake or not?

The current study reported that compared to the students who had not been affected by the earthquake, the students who had been morally and financially affected by the earthquake reported significantly more negative reflections on the technical aspects of online education, such as accessibility to online sessions, internet connections, and following academic schedules. Literature supports this, showing that students who experienced the earthquake reported more negative consequences associated with online education compared to those who did not (Yücel, 2023). However, another study obtained reverse results, which indicated that the university students who resided in state dormitories, did not experience the loss of relatives, and did not have their houses damaged in the earthquake displayed a preference for face-to-face education (Hoşgör, Güngördü & Hoşgör, 2023). The explanation for this could be that the earthquake-affected students faced not only psychological and traumatic issues, but also technical, infrastructure, and logistics problems. Thus, they may prefer online education to stay with their family, but they may not favour it because of technical and infrastructure problems.

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Discussion of Findings related to RQ4: What are students' reflections on the impact of the earthquake on their education?

The survey analysis revealed that the earthquake had cognitive, emotional, and social impacts on students' education. The previous research confirms this by similar results in the contexts where online education is a necessity but not a choice. The cognitive aspects of preferring a face-to-face model over online education were the low efficiency of the practical lessons (Çakıcı & Aksoy, 2023), low concentration, comprehension difficulties, internet, and system reliability (Yücel, 2023). (Tokpınar, Yılmaz, Yılmaz & Değermenci, 2023). The effective and social factors mentioned were isolation from loved ones, as well as significant levels of stress, anxiety, and depression (Elhaty & Elhadary, 2023) due to the issues with infrastructure and technology resources, which led to insufficient participation in online education apps throughout the classes (Koç, 2023).

The low report of positive reflections could be explained by the devastating impact of the earthquake and the sudden compulsory shift from face-to-face to distance education models.

Conclusion

The findings of the present study revealed that after the compulsory shift from face-to-face to online education due to a devastating natural disaster, university students reported mostly negative reactions to the new educational model due to cognitive, psychological, and social reasons. The male students, the novice students, and the students who had been affected by the earthquake displayed significantly more negative attitudes toward online education.

Implications

The authority should improve technical support and provide reliable infrastructure to sustain online university education. Professionals should provide financial and psychological support to students affected by disasters during their adaptation process. Furthermore, lecturers should be trained through workshops to improve and update their technical, computer, and pedagogical skills appropriate for online education. What is more, according to the findings of the present study, lecturers should take into account their students' gender and grade. It is suggested that in a compulsory shift to distance education due to disasters, special attention should be paid to male students and students in their first years of university education. These groups of students are supposed to face more challenges and difficulties during their adaptation to the new mode of education. Therefore, it is crucial for educators to provide targeted support and resources to help these students succeed in their online learning environment. By addressing the specific needs of male students and first-year university students, instructors can ensure a more inclusive and effective distance education experience for all learners.

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Limitations

The present study has some limitations, such as a lack of more qualitative data collection methods, analysing recordings of online classes and interviews with participants.

Suggestions for further research

More research is recommended in different contexts of online education with longitudinal data collection methods.

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Appendices

Appendix A
Questionnaire / Attitude items

1. Uzaktan eğitimle verilen derslere istediğim zaman ulaşırım .
2. Uzaktan eğitimle verilen derslere istediğim yerde ulaşırım .
3. Uzaktan eğitimle verilen derslere ulaşmak benim için kolaydır.
4. Uzaktan eğitimle verilen derslerin uygulama takvimleri konusunda bilgiye sahibim.
5. Uzaktan eğitimde tercih edilen online platformları (zoom, discord, sakai vb) etkili kullanırım.0
6. Uzaktan eğitimle verilen derslere erişimde sıkıntı yaşadığımda teknik destek alırım.
7. Uzaktan eğitim öğrenme süreçleri açısından verimlidir.
8. Uzaktan eğitim süreci öğrenme motivasyonumu arttır.
9. Uzaktan eğitim aracıyla kendi öğrenme sürecimi değerlendiririm.
10. Uzaktan eğitim öğrenme özelliklerime uygundur.
11. Uzaktan eğitim süreci yeni öğrenmelere beni teşvik eder.
12. Uzaktan eğitim kalıcı öğrenmemi kolaylaştırır.
13. Uzaktan eğitimle verilen derslerin kişisel ve mesleki gelişimime katkı sağlar.
14. Uzaktan eğitimle verilen derslerin öğretim tasarımı etkilidir.
15. Uzaktan eğitim öğrenme sürecini zenginleştir.

Survey / Open ended questions

1) 6 Şubat 2023 Türkiye depremimden manevi ve / veya maddi olarak etkilendiniz mi?
2) 6 Şubat 2023 Türkiye depremimden etkilendiyseniz bu eğitiminize nasıl yansıdı? Kısaca açıklayabilir misiniz?