



Online education in Turkish universities after the earthquake: the pros and cons

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Abstract

On 6 February 2023, several provinces in Turkey were hit by two severe earthquakes measuring 7.8 and 7.5 magnitudes on the Richter scale, followed by thousands of aftershocks, which caused severe destruction of property, infrastructure, and livelihoods in the affected communities, leaving a large number of deaths and injuries, in addition to the displacement of millions of people. Schools and universities have had to close for a period of time to allow for structural repairs to take place. In the meantime, schools and universities have had to find alternative ways to teach and provide a learning environment for students. This includes providing online classes and distance learning options which were previously implemented during the Covid-19 pandemic. This study aims to evaluate online education during the period of the Covid-19 pandemic in terms of the negatives and positives, and how this system can be applied in the post-earthquake phase and avoid the negatives that occurred during the pandemic. The pandemic has affected the way people live and work around the world, and the earthquake has caused similar devastation. For example, both disasters have disrupted schooling and increased levels of unemployment, with students and teachers trying to adapt to new ways of learning and working. Both disasters have caused people to be more isolated from their family and friends, and both have caused considerable stress, anxiety, and depression. The earthquake has also caused a significant amount of physical damage to homes, businesses, and infrastructure, making the rebuilding process a long and arduous one. The disasters have also caused financial strain for many people, as they try to rebuild their lives. Many students, teachers, and their families have been displaced to other areas due to the earthquake. The online system during the Covid pandemic has shown great success despite some negatives, such as limited competition among students, limited participation during the lesson, some physical and social obstacles, in addition to the negative impact on students' lab practical skills. Conditions may be better now because university officials and teachers have gained experience during the Covid-19 pandemic in applying the system, and these universities have special programs for online education, and these programs have been improved towards of pandemic. Government authorities and universities should implement policies that provide support for students who are facing financial difficulties during this time, such as tuition fee waivers, fee discounts, financial aid packages, and free internet service.

Keywords: Turkey, earthquake, online, Covid-19.

Introduction

Several states (Adana, Adiyaman, Diyarbakir, Gaziantep, Hatay, Kilis, Malatya, Osmaniye, Sanliurfa, and Elazig) in southern Turkey were exposed at dawn on 6/2/2023 to a severe earthquake with a magnitude of 7.7, centered in Kahramanmaras province, followed hours later by another earthquake with a magnitude of 7.6 on the Richter scale in the same state

and thousands of aftershocks followed. These earthquakes caused severe destruction in the affected areas, the loss of tens of thousands of lives, many times the number of injured, and the displacement of millions of people, in addition to the economic losses suffered by the country (Aydogan, 2023). Until the date of preparing this study, the number of dead was 41,156, and the number of wounded was

105,505. The number of buildings that were completely demolished or slightly damaged was about half of the number of buildings in the earthquake zone (Afad, 2023). Hundreds of thousands of residents have been evacuated and settled in tents or prefabricated houses, and some of them have been distributed to student housing for Turkish university students. As a result, the start of school studies has been postponed until the first of March, and studies in universities have been transferred from online to online during the second semester (spring-2023) (MEB, 2023). This was not the first time that the online education system was applied in Turkish universities, as this system was applied during the Covid-19 pandemic, and many studies have been published on this system and compared it to face-to-face education, whether in Turkey or abroad. One of the most important reasons that led to the transfer of education from face-to-face to online is the attempt to limit the spread of the disease, in addition to the fear of students and teachers of contracting this disease and transmitting the infection to their families and loved ones (Elhadary et al., 2020). There is also a similarity in the post-earthquake phase with the Covid-19 phase, in terms of the loss of many students to some of their family members and relatives, the displacement of millions of students and their families in the earthquake areas, and the psychological and material impact on them, as well as the fear of a recurrence of the earthquake. And since many families from the earthquake areas had moved before the earthquake to other cities such as Istanbul and Ankara in search of work, the impact of the earthquake almost included most of the regions of Turkey, where many students who lived with their families outside the earthquake area were killed because of the earthquake during the semester vacation (Safak, 2023). This study aims to

evaluate the online education system during the period of the Covid-19 pandemic in terms of the negatives and positives, and how this system can be applied in the post-earthquake phase and avoid the negatives that occurred during the pandemic.

Earthquake and education

Turkey is located on the Mediterranean Earthquake Belt, where the Arab-African and Eurasian plates collide, resulting in numerous active faults. The North Anatolian Fault (NAF), the East Anatolian Fault (EAF), and the West Anatolian Fault (WAF) are the most prominent fault lines, which are still active today (Öztürk et al., 2008, Taymaz et al., 2004). Most of the earthquakes in Turkey are of tectonic origin, caused by the movement of these major faults. As a result, Turkey experiences a high risk of earthquakes, particularly in the Aegean Region, Marmara Region, North Anatolia Region, Hatay and its surroundings, and Eastern Anatolia Region (Emre et al., 2018). Over the last century, four significant earthquakes occurred in Turkey, in 1943, 1957, 1967, and 1999, which are considered major disasters (Kürçer et al., 2008). Due to the high risk of earthquakes in Turkey, the government has taken steps to improve earthquake preparedness and response, such as strengthening building codes, establishing earthquake monitoring systems, and developing emergency response plans. These measures aim to minimize the impact of future earthquakes on the country and its citizens (Arslan et al., 2006).

Earthquakes can have significant negative impacts on education and the social and economic life of communities. However, the post-earthquake phase has seen more collaboration between governments, NGOs, and the private sector to provide relief and aid to those affected, whereas in the Covid-19 pandemic, the response from governments

and organizations has been slower and less comprehensive. There is also a similarity in the post-earthquake phase with the Covid-19 phase, in terms of the loss of many students to some of their family members and relatives, the displacement of millions of students and their families in the earthquake areas, and the psychological and material impact on them, as well as the fear of a recurrence of the earthquake. The hideous impact of the earthquake is the disruption of the educational infrastructure in the affected areas. Many schools, universities, and other educational institutions have been destroyed or damaged, leaving many students without access to education. This has greatly affected the educational system of the affected areas, as the students are unable to attend classes, participate in exams, and receive the necessary educational materials (Alemdar, 2023, Yeon et al., 2020). Students who have lost their homes have been forced to move to other cities and regions to receive their education, which can be difficult due to sociocultural barriers (MEB, 2023). Another impact is the psychological effects of the earthquake on the students and their families. Many students have lost family members, homes, and belongings, causing them to suffer from trauma, shock, and depression. In addition, the lack of infrastructure and resources, such as electricity and water, has made it difficult for students to study and cope with their losses (Yeon et al., 2020). In addition to the previous impacts is the decrease in enrollment in universities in the affected areas. Due to the damage caused by the earthquake, many students have been unable to return to their universities, which has caused a decrease in enrollment numbers. This has had a negative effect on the economy of the affected areas, as universities are a major source of revenue. Finally, the disruption of transportation networks is

another influential impact. The earthquake damaged roads, bridges, and other infrastructure, making it difficult for people to access their places of work, school, and other essential services. This has made it harder for people to get around and has had a negative effect on the local economy (Hurriyet, 2023).

Online education during the COVID-19 pandemic

During the Covid-19 pandemic, most countries of the world implemented online education completely at the beginning of the pandemic, as is the case in Turkey, where the online system was applied in educational institutions, including schools and universities, on March 2020 in order to limit the spread of the disease (Elhaty and Elhadary, 2020). And after the decrease in the number of cases of the disease, the Council of Higher Education in Turkey allowed the date of August 2020, universities to apply the hybrid system in addition to the online system or as an alternative to it (YÖK, 2020). In the online system, the teacher uses one of the well-known programs to communicate with students, and the most famous of these programs in Turkey is LMS, where the teacher gives lectures directly through the program or application, and the program provides the teacher with the freedom to discuss with students during the lesson. The program also allows recording lectures and uploading them to the university's website, which gives the student the opportunity to watch the lectures at any time. In previous studies, we surveyed the opinions of teachers and students about the extent of their satisfaction with the application of the online system compared to the attendance system, as 48.8% of teachers expressed their satisfaction, while the percentage was higher in the case of students, amounting to 65.0% (Elhadary et al., 2020). The percentage of satisfaction has

increased among both teachers and students with the continuation of the pandemic and the continuation of the implementation of this system. As a result of the measures taken by most countries of the world to limit the spread of the virus, as well as as a result of the use of the vaccine, cases of Covid-19 have decreased, which encouraged most countries to gradually ease measures, including allowing hybrid education in universities and giving the student the freedom to choose between online or face-to-face (Elhaty and Elhadary, 2020). The online system was applied to students of humanities disciplines, while the hybrid system was allowed to be applied in applied colleges. And we had surveyed the opinions of teachers and students before implementing this decision about their opinions about which system they prefer in the next stage, and the results showed that half of the teachers (50.0%) preferred hybrid education, while 31.3% of them preferred to continue with the online system, while the lowest percentage (18.8%) was inclined to apply hybrid education. The study also showed that students preferred to continue with the online system by 44.2% over the hybrid system (37.7%), while a small percentage of students preferred the online system (Elhaty and Elhadary, 2020). The tendency of teachers and students to apply the hybrid system in scientific colleges increases from theory. According to the study, the main factor in the choices of teachers and students was the fear of contracting the disease and transmitting the infection to their families and loved ones.

Online education during post-earthquake

The state of terror that spread among the residents of the affected area and the rest of the population of Turkey as a result of the intense fear of recurring earthquakes, as well as the scenes of severe destruction and the loss

of many loved ones, led to the spread of mental illnesses among many residents (Sirvi, 2023, Sözen, 2019). The harsh weather contributed to the delay in the rescue cases, which made the people wait beside the destroyed buildings, hoping to save their relatives alive. This situation lasted for several days, which exacerbated the bad psychological state of many residents. Therefore, because of the state of fear and instability, Turkish officials have been forced to apply online education (MEB, 2023).

This sudden shift to online education has been a challenging experience for most students, as they were not adequately prepared for the transition. Many had to purchase additional hardware or software in order to access their classes or to participate in group work and discussions. Furthermore, due to the lack of infrastructure in many parts of Turkey, some students faced difficulties in finding proper internet connections or had to rely on mobile data plans. At the same time, the transfer to online education has also posed a challenge to the faculty members. Providing quality education to students by using appropriate tools and techniques was a major concern as most of the faculty members were used to the traditional teaching methods. Furthermore, the faculty had to develop new methods to assess their students, as well as to find ways to motivate and engage them when online classes are conducted. Higher education institutions have developed new methods to deliver content, as well as ensuring students have access to the same resources and support that they would have in a traditional classroom setting. These methods include online lectures, video conferencing, and virtual classrooms (Elhaty and Elhadary, 2020). Universities have also implemented a variety of assessment tools such as online quizzes, assignments, and exams. This has allowed students to remain connected to the

course material, and to receive feedback on their work in a timely manner. Universities have also been quick to adapt to the need for student support, offering online counseling services and mental health resources. Additionally, universities have been able to provide students with access to research libraries and virtual support staff. This has allowed students to still access the same resources and services that they would have in a traditional setting. Online education can be used to provide much-needed education and support to children, families, and communities affected by earthquakes. Online education can provide access to educational materials and resources, as well as support for students and families in the form of counseling, tutoring, and other services. Online education can also be used to provide access to specialized training and resources for those affected by the earthquake. Additionally, online education can be used to support the recovery efforts of local governments and organizations in the affected areas.

Advantages and disadvantages of online education during the Covid-19 pandemic

The most important advantages of applying online education during COVID-19 pandemic include flexibility, improved access to education, cost savings, and increased engagement (Elhadary et al., 2020). Online education offers students the flexibility to work around their own schedules and learn at their own pace. In addition, online education can provide access to education that may not be available in traditional settings (Sun et al., 2020). Online education can be less expensive than traditional education due to the reduced cost of technology and access to educational materials. Online education can increase engagement among students due to its interactive nature (Liu, 2008). However,

online education has several disadvantages. The lack of face-to-face interaction and communication between students and instructors can lead to decreased engagement and a sense of isolation. Online education can be plagued by technical issues such as poor internet connectivity, slow loading times, and unreliable software. In addition, students may not have access to all the educational materials they need for their courses or may not be able to access them quickly. Online education can be more expensive than traditional education due to the costs of technology and access to certain educational materials (Elfirdoussi et al., 2020, Dhawan, 2020).

The spread of cheating in the education system has been driven by the increasing difficulty of monitoring students due to the rise of online learning and the ability for students to access course materials from anywhere. This has made it difficult for teachers to detect cheating and has allowed some students to obtain degrees they do not deserve. The lack of monitoring also makes it easier for students to take advantage of their peers by having them do their work for them. This encourages students to focus on cheating as a way to achieve success, resulting in a neglect of the learning process and a decrease in academic quality (Elhadary et al., 2020). In order to tackle this issue, schools should implement more stringent measures to detect and prevent cheating, such as implementing plagiarism detection software and strengthening the monitoring of student work. Additionally, teachers should be given more support to help them identify signs of cheating and to be able to provide guidance to students at risk of cheating. Finally, students should be taught the importance of hard work and of putting in the effort to learn and understand the material in order to earn their degrees.

The physical and social conditions of some students can have a significant impact on their ability to access quality education. Without access to suitable devices, reliable internet speeds, or adequate space in the home, students may struggle to keep up with their schoolwork. This can put them at a disadvantage compared to their peers who have better access to resources. Additionally, if parents or guardians have to work from home, this can limit the amount of time and energy that can be devoted to helping students with their schoolwork. This can further compound the difficulty of the situation and can lead to poorer academic performance and even poorer mental health outcomes (Elhadary et al., 2020).

Online education has had a significant impact on the practical skills of students in scientific colleges. Many scientific colleges have had to adapt their curriculum to online learning, which means that many of the practical skills that students would normally learn in a physical classroom or lab setting have been lost due to the lack of hands-on experience. Many of the skills that are vital for students in scientific colleges rely on having physical access to the equipment, materials, and experiments that are required to gain the necessary knowledge and experience. This lack of practical skills has been a major setback for many students in scientific colleges during the pandemic (Elhaty et al., 2020, Mian and Khan, 2020).

Difficulties and positives of online education expected during the aftermath of the earthquake

Difficulties that students may face in the post-earthquake phase: 1. Access to basic necessities: The loss of infrastructure, housing, and utilities may make it difficult for students to access the basic necessities they need to survive, such as food, water, and

shelter. 2. Emotional distress: The aftermath of an earthquake can be extremely traumatic and cause emotional distress. Students may be dealing with fear, sadness, and grief, as well as the trauma of having lost loved ones or homes. 3. Lack of educational resources: Schools may be damaged or destroyed by the quake, leaving students without access to educational resources. This can make it difficult for students to keep up with their studies. 4. Mental health issues: Students may suffer from depression, anxiety, and other mental health issues due to the trauma of the earthquake. 5. Financial insecurity: The destruction caused by an earthquake can lead to financial insecurity for families, leaving students without access to adequate resources to support their education. 6. Disrupted social networks: The destruction caused by earthquakes can disrupt social networks, making it difficult for students to connect with peers and find emotional support (Johnston et al., 2011, Sözen, 2019, Yeon et al., 2020, Kılıç and Ulusoy, 2003, Ishikawa et al., 2015).

The psychological state due to the loss of some family members can involve feelings of despair, helplessness, shock, and grief. Individuals may also experience anxiety, stress, depression, and post-traumatic stress disorder (PTSD). These emotions can lead to physical symptoms, such as headaches, fatigue, and difficulty sleeping. In addition, the stress can lead to problems with concentration, memory, and decision-making (Di Pietro, 2018). It is important to seek mental health support and professional help if needed. The destruction of homes due to natural disasters or conflict can lead to a large number of people becoming homeless. This can have a significant impact on the affected communities, including an increased risk of poverty and illness, as well as a lack of access to resources such as health care, education,

food, and water. The psychological state of people who have experienced an earthquake is likely to be one of fear, anxiety, and uncertainty. People who have experienced a strong earthquake may feel a heightened sense of vulnerability and a fear of reoccurrence. They may experience feelings of helplessness, heightened stress levels, and difficulty sleeping. People may become hypervigilant and have difficulty trusting their environment. Other emotional responses to the traumatic event may include shock, denial, anger, guilt, shame, and depression (Di Pietro, 2018, Yeon et al., 2020, Baytiyeh, 2018, Sohrabizadeh et al., 2019, Ishikawa et al., 2015).

In spite of all the difficulties faced by both the students and the faculty, the transition to online education has been successful in Turkey. This was made possible through the support of the government and the universities, who provided the necessary resources and training for the faculty. The universities also provided technical support to the students and made sure that their online classes were secure and that the students were able to access the materials.

Using online discussion forums to facilitate communication between professors and students, allowing students to ask questions and receive responses from their professors. Using social media to create groups and pages dedicated to courses and research topics, which allows students to share information and collaborate with each other. Using virtual classrooms and video conferencing tools to enable students to attend lectures remotely. Creating online quizzes and exams to assess student understanding and progress. Providing students with access to online libraries and databases, which contain a wealth of information and resources. Creating online tutorials and interactive learning materials to help students understand course

content. Using multimedia elements such as videos and animations to explain concepts in a more engaging way (Baytiyeh, 2018).

Recommendations

Overall, universities have been able to provide a quality education through online learning during the pandemic. This has allowed students to continue their studies, and to receive the same educational opportunities that they would have in a traditional setting. It has also enabled universities to adapt quickly to the changing times, while still providing a high standard of education.

There are a few different ways to address this issue. First, it is important to provide students with the necessary resources to help them develop practical skills if they are unable to attend in-person classes. This includes providing access to online tutorials, webinars, and other materials that students can use to learn practical skills. Additionally, providing access to virtual labs or other simulations can help students gain practical experience with their studies. Finally, providing opportunities for students to engage in hands-on activities outside of class can help them develop their practical skills. Examples of this include volunteering in their local community, internships, and research projects. Ultimately, it is important for students to have access to the resources they need to develop their practical skills, even during the pandemic.

Governments and international aid organizations can provide assistance to those affected by homelessness due to the destruction of homes. This can include providing temporary housing, financial aid, and social services to help individuals and families get back on their feet. In addition, providing mental health support to those affected can help them cope with the trauma of losing their homes.

It can be very distressing. People may feel a sense of helplessness, fear, anxiety, and depression. They may also experience physical symptoms such as headaches, stomachaches, and increased heart rate. People may also be unable to concentrate or focus due to the stress and fear of the situation. It is important to provide emotional support and counseling to those affected by the earthquake. It is also important to provide emotional support to those who have lost loved ones or suffered physical injuries due to the earthquake.

It is important for people who have experienced an earthquake to access professional help to process their emotions and to receive support to help them cope with the situation.

The financial condition of many students has been affected due to the loss (killing) of the breadwinner or the loss of the breadwinner's source of livelihood. This has led to an increase in student financial aid requests. To assist affected students, universities and colleges have set up emergency funds or have increased their financial aid budgets. Additionally, some universities and colleges have partnered with local organizations to provide additional financial assistance. Many states have also passed laws to provide emergency funds for students whose breadwinners have been affected by the pandemic. Finally, the federal government has passed legislation to provide additional financial aid to students who have been affected by the pandemic.

The best way to help students who are affected by the loss of a breadwinner due to an earthquake is to provide financial assistance. This could come in the form of scholarships, grants, or loans from the government or from charitable organizations. Finally, providing mentorship and guidance to help with navigating the college application

and financial aid process can ensure students are able to access the resources they need to pursue their education.

In response to the disaster, the Turkish government declared a state of emergency in the affected areas and has deployed military personnel and emergency services to provide relief. International aid organizations, such as the United Nations, International Red Cross, Arab and Muslim countries, and the European Union, have also sent aid and personnel to help with the relief effort. The Turkish people have shown immense resilience in the face of tragedy, and have come together to help those affected by the disaster, donating money and supplies, and volunteering their time. The international community has also been quick to respond, sending aid and supplies, and offering expert advice and assistance. The government of Turkey and the international aid organizations have been working hard to provide relief, however, the magnitude of the disaster has made it difficult to meet the needs of the affected population. Therefore, it is important that nations and organizations around the world continue to provide aid and assistance to those affected by the disaster so that the Turkish people can rebuild their lives and move forward.

Conclusion

Turkish Government has announced that the start of the spring semester of 2023 has been postponed for all schools due to the earthquakes. In addition, all universities have converted their face-to-face classes to online classes for the spring semester of 2023. This was not the first time that the online education system was applied in Turkish universities, as this system was applied during the Covid-19 pandemic. Many studies have highlighted the challenges faced by universities when using the online education system. These include inadequate technical infrastructure,

inadequate resources, lack of teacher training and support, and lack of student engagement. However, online education has been found to be an effective alternative to face-to-face education in Turkish universities. It has enabled universities to continue delivering quality education in a safe and efficient manner during the pandemic. One of the most important reasons that led to the transfer of education from face-to-face to online is the attempt to limit the spread of the disease, in addition to the fear of students and teachers of contracting this disease and transmitting the infection to their families and loved ones. There is also a similarity in the post-earthquake phase with the Covid-19 phase, in terms of the loss of many students to some of their family members and relatives, the displacement of millions of students and their families in the earthquake areas, and the psychological and material impact on them, as well as the fear of a recurrence of the earthquake. This study aims to avoid the negatives that appeared during the application of online education in the period of Covid-19. The researchers (Alhati, I. and Elhadary, T.) have presented in previous studies the positive results of online education are mainly due to the convenience of online classes, the increased access to educational resources, the flexibility of learning schedules, and the cost savings associated with online education. The main positives associated with online education are the ability to study at anytime, anywhere, and access to a wide range of educational resources. Furthermore, online education can provide students with more focused and personalized support, which can help students to better understand the subject matter. In addition, online education can give teachers more flexibility in terms of teaching and assessment methods, allowing them to tailor the material to the individual needs of the students. The researchers touched upon

the negatives which include increased distractions due to the presence of other online activities, such as social media, lack of face-to-face interaction, potential technical issues that may arise, and potential for cheating due to the ease of access to course material from outside sources. Additionally, online courses may also be less engaging and may not be as effective as traditional classroom instruction especially lab practical classes. It is expected that online application during the post-earthquake phase will be better than that during Covid-19, because university officials and teachers gained experience during the Covid-19 pandemic in applying online platforms, and these universities have special programs for this type of education which have been improved since the pandemic. However, the conditions that students live in in the affected areas may affect the quality of education. Therefore, specific plans must be drawn up by universities and the concerned provinces to ensure that education is not affected by the post-earthquake aftermath.

Declaration of competing interest

We hereby declare that we have no conflict of interest related to this article.

References

- AFAD. 2023. *About Tent Cities Press Release (20.02.2023)* [Online]. Disaster And Emergency Management Presidency. Available: <https://www.afad.gov.tr/basin-aciklamasi-20022023> [Accessed February, 20 2023].
- ALEMDAR, B. 2023. *Breaking news: Schools were suspended in Turkey* [Online]. haber7.com. Available: <https://www.haber7.com/guncel/haber/3299826-son-dakika-haberi-tum->

- [turkiyede-okullar-tatil-edildi](#) [Accessed February 20, 2023].
- ARSLAN, M. H., KORKMAZ, H. H. & GULAY, F. G. 2006. Damage and failure pattern of prefabricated structures after major earthquakes in Turkey and shortfalls of the Turkish Earthquake code. *Engineering Failure Analysis*, 13, 537-557.
- AYDOGAN, M. 2023. *More than 41,100 dead from powerful Feb. 6 earthquakes in southern Türkiye* [Online]. Anadolu Agency. Available: <https://www.aa.com.tr/en/turkiye/more-than-41-100-dead-from-powerful-feb-6-earthquakes-in-southern-turkiye/2825572> [Accessed February 20, 2023].
- BAYTIYEH, H. 2018. Online learning during post-earthquake school closures. *Disaster Prevention and Management: An International Journal*.
- DHAWAN, S. 2020. Online learning: A panacea in the time of COVID-19 crisis. *Journal of educational technology systems*, 49, 5-22.
- DI PIETRO, G. 2018. The academic impact of natural disasters: evidence from L'Aquila earthquake. *Education Economics*, 26, 62-77.
- ELFIRDOUSSI, S., LACHGAR, M., KABAILI, H., ROCHDI, A., GOUJDAMI, D. & EL FIRDOUSSI, L. 2020. Assessing Distance Learning in Higher Education during the COVID-19 Pandemic. *Education Research International*, 2020, 8890633.
- ELHADARY, T., ELHATY, I. A., MOHAMED, A. A. & ALAWNA, M. 2020. Evaluation of academic performance of science and social science students in Turkish Universities during covid-19 crisis. *Journal of Critical Reviews*, 7, 1740-1751.
- ELHATY, I. A. & ELHADARY, T. 2020. A pre-assessment of the educational programs intended to be applied by Turkish universities in light of the continuing spread of COVID-19. *Eur. J. Mol. Clin. Med*, 7, 1-20.
- ELHATY, I. A., ELHADARY, T., ELGAMIL, R. & KILIC, H. 2020. Teaching University Practical Courses Online during COVID-19 Crisis: A Challenge for ELearning. *Journal of Critical Reviews* 7, 2865-2873.
- EMRE, Ö., DUMAN, T. Y., ÖZALP, S., ŞAROĞLU, F., OLGUN, Ş., ELMACI, H. & ÇAN, T. 2018. Active fault database of Turkey. *Bulletin of Earthquake Engineering*, 16, 3229-3275.
- HURRIYET. 2023. *Demolished: The roads were split, the buildings collapsed* [Online]. Hurriyet. Available: <https://www.hurriyet.com.tr/gundem/yikt-i-gecti-yollar-yarildi-binalar-coktu-42216162> [Accessed February 20, 2023].
- ISHIKAWA, S.-I., MOTOYA, R., SASAGAWA, S., TAKAHASHI, T., OKAJIMA, I., TAKEISHI, Y. & ESSAU, C. A. 2015. Mental health problems among undergraduates in Fukushima, Tokyo, and Kyoto after the March 11 Tohoku Earthquake. *The Tohoku journal of experimental medicine*, 236, 115-122.
- JOHNSTON, D., TARRANT, R., TIPLER, K., COOMER, M., PEDERSEN, S. & GARSIDE, R. 2011. Preparing schools for future earthquakes in New Zealand: Lessons from an evaluation of a Wellington school exercise. *Australian Journal of Emergency Management, The*, 26, 24-30.
- KİLİÇ, C. & ULUSOY, M. 2003. Psychological effects of the November 1999 earthquake in Turkey: an epidemiological study. *Acta Psychiatrica Scandinavica*, 108, 232-238.
- KÜRÇER, A., CHATZIPETROS, A., TUTKUN, S. Z., PAVLIDES, S., ATEŞ, Ö. & VALKANİOTIS, S. 2008. The Yenice-Gönen active fault (NW Turkey): Active tectonics and palaeoseismology. *Tectonophysics*, 453, 263-275.
- LIU, S. L. 2008. Student interaction experiences in distance learning courses: A phenomenological study. *Online Journal of Distance Learning Administration*, 11.

- MEB. 2023. *The Ministry of National Education is using every means available to provide shelter and food services to earthquake victims* [Online]. Ministry of National Education Available: <https://www.meb.gov.tr/the-ministry-of-national-education-is-using-every-means-available-to-provide-shelter-and-food-services-to-earthquake-victims/haber/28962/en> [Accessed February 20, 2023].
- MIAN, A. & KHAN, S. 2020. Medical education during pandemics: a UK perspective. *BMC Medicine*, 18, 100.
- ÖZTÜRK, S., BAYRAK, Y., ÇINAR, H., KORAVOS, G. C. & TSAPANOS, T. M. 2008. A quantitative appraisal of earthquake hazard parameters computed from Gumbel I method for different regions in and around Turkey. *Natural hazards*, 47, 471-495.
- SAFAK, Y. 2023. *Major evacuation: Earthquake survivors are transported to the cities they want by land, sea and air* [Online]. Yeni Safak. Available: <https://www.yenisafak.com/gundem/buyuk-tahliye-kara-deniz-ve-hava-yoluyla-depremzedeler-istedikleri-sehirlere-tasiniyor-4506482> [Accessed February 20 2023].
- SıRVI, S. 2023. *Psychological Effects of Earthquake* [Online]. Acibadem. Available: <https://www.acibadem.com.tr/hayat/depremin-psikolojik-etkileri/> [Accessed February 27. 2023].
- SOHRABIZADEH, S., JAHANGIRI, K., SHAFIEI MOGHADDAM, P., SAFARPOUR, H. & ESKANDARI, Z. 2019. Earthquake preparedness in higher education structures: A case study of an academic institute in Tehran, Iran. *International Journal of Disaster Resilience in the Built Environment*, 10, 175-187.
- SÖZEN, E. 2019. The Earthquake Awareness Levels of Undergraduate Students. *Journal of Pedagogical Research*, 3, 87-101.
- SUN, L., TANG, Y. & ZUO, W. 2020. Coronavirus pushes education online. *Nature Materials*, 16, 1-1.
- TAYMAZ, T., TAN, O. & YOLSAL, S. Active tectonics of Turkey and surroundings: Seismic risk in the Marmara Sea region. Proc. 1st International Workshop on Active Monitoring in the Earth Geophysics (IWAM04), Mizunami, Japan, Extended Abstract Book, 2004. 110-115.
- YEON, D.-H., CHUNG, J.-B. & IM, D.-H. 2020. The Effects of Earthquake Experience on Disaster Education for Children and Teens. *International Journal of Environmental Research and Public Health*, 17, 5347.
- YÖK. 2020. *CoHE's Important Decision to Transfer Powers to Education Faculties* [Online]. Council of Higher Education (YÖK). Available: <https://www.yok.gov.tr/en/Sayfalar/news/2020/new-cohe-transfer-important-powers.aspx> [Accessed September 1, 2020].