

**Original Article****Metaphoric Perceptions of Emergency Aid and Disaster Management Students Regarding "Earthquake": A Case Study of Turkey****Tuba Karabey, PhD****Gaziosmanpasa University Faculty of Health Science, Tokat, Turkey****Mehtap Aras, PhD****Gaziosmanpasa University Faculty of Health Science, Tokat, Turkey****Correspondence:** Tuba Karabey, Address: Tokat Gaziosmanpasa University, Faculty of Health Sciences , Tokat E-mail: tubakarabey@hotmail.com**Abstract**

Although earthquakes deeply affect the sociological and economic structure of societies, they are natural disasters that cause loss of life and property to people who experience earthquakes and that societies living on earthquake zones must live with the reality of earthquakes. Natural disasters such as earthquakes, which cause great harm to people, take place in the memory of societies not only when they occur, but also afterward, and affect people negatively in biopsychosocial aspects. This study aims to reveal the metaphorical perceptions of Emergency Aid and Disaster Management students in Turkey regarding earthquakes. The universe of the research is composed of Emergency Aid and Disaster Management students, considering that earthquake knowledge, perceptions, and awareness of students studying in this department are different from other university students. The research was carried out with the students of Emergency Aid and Disaster Management Department in Turkey between 26.03.2021-26.05.2021. In Turkey, there are 3355<sup>1</sup> students studying in this department in the 2020-2021 academic year. A questionnaire form was applied to reveal the mental images of 490 students who accepted to participate in the study regarding the concept of the earthquake.. The students produced 458 valid metaphors about earthquakes, and the metaphors produced by the students were generally gathered under 7 main themes. These themes are determined as " Fatal, Bridge, Enemy, Punitive, Domino, Overwhelming, Stifling ". As a result, the metaphors put forward by the Emergency Aid and Disaster Management students express that they experience a great deal of fear about the earthquake.

**Key words:** earthquake, emergency aid and disaster management students, metaphor**Introduction**

Natural disasters can be defined as natural and social events that develop unexpectedly and suddenly, affect societies, their economic, socioeconomic, and political conditions negatively, and require foreign aid (Wijkman & Timberlake, 2021). Natural disasters interrupt the normal functioning of society and economy and cause significant material damage. Firstly, it causes the loss of human capital (the destruction of physical capital) and secondly, it causes the loss of production capital (Qiu et al., 2018; Yiew et al., 2018). Damages caused by natural disasters can be examined in a multi-dimensional way. Earthquakes deeply affect people's lives,

economic activities, and sociological backgrounds. Societies located in earthquake zones must get used to living with it. Natural disasters such as earthquakes, which cause great harm to people, are in the minds of societies not only when they occur, but also afterward. Studies show that people who have been exposed to such natural disasters cannot get rid of the effects of the event and experience psychological problems even after years (Benevolenza & DeRigne, 2019; Beaglehole et al., 2018). When compared to natural disasters, the disaster that causes the most damage to buildings is an earthquake. The earthquakes, one of the natural disasters, have a lot of devastating damage where they occur. It can

<sup>1</sup> The data are taken from the website of the Higher Education Institution of Turkey (<https://yokatlas.yok.gov.tr/>). Access date: 10.05.2021

severely damage many sectors such as production, tourism, agriculture, education, health, import and export (Rasheed et al., 2021). Turkey is in earthquake-prone geography and an earthquake is the most hazards natural disaster seen in Turkey. Earthquakes generally occur almost everywhere in Turkey. In Turkey, damaging earthquakes mainly concentrated in three regions. These are the North Anatolian Fault Zone, where the largest earthquakes are seen, the East Anatolian Fault Zone, which is as active as the North Anatolian Fault Zone, and the West Anatolian depression system (Dogan et al., 2021). According to the latest study completed by the Mineral Research and Exploration Institute, there are 1914 live faults in Turkey (Kurcer et al., 2021). In Turkey, 98% of the population (nearly half of them locates in the first-degree Earthquake zone), most of the industrial establishments and power plants are also in this zone (Baytiyeh and Ocal, 2016). Palmquist (2001) defines metaphor as "a linguistic device that links two objects or concepts is usually considered to be a figurative language construct through which speakers and writers relate two dissimilar ideas to create a dramatic transfer or comparison from one domain of experience to another". Metaphors are a way of expressing an idea, a thought, an action, by likening a word or phrase to any situation or object (Erdem and Satir, 2000). In qualitative research, we have a lot of information that contains complex meanings. Metaphors are a method used to eliminate this complexity and provide convenience to researchers (Schmitt, 2005). Metaphors (or mental images) are tools that people try to explain objects, abstract concepts, and various events using different analogies, and they are mostly seen as one of the rhetoric arts to decorate discourse (Ada, 2015; Ates, 2016; Akyildiz, 2017; Milton, 2017). However, in recent years, it has started to be considered as a way of understanding or seeing the world. For this reason, analyzing metaphors is very important in revealing individuals' perceptions of events (Aydin and Pehlivan, 2010; Asaman, 2013; White and Gilstrap, 2016). Metaphor has been a frequently researched topic in research in the field of education lately (Karasahinoglu, 2015; Eguz and Ontas, 2018; Chan and Chien, 2018; Demirbilek and Demirbilek, 2020; Gozel and Gundogdu, 2021). Earthquake and metaphor issues have also been the subject of a limited number of studies (Kaya, 2010; Aksoy, 2013; Baytiyeh and Ocal, 2016). The most frequently used metaphor in Kaya (2010)'s study with middle school students was

"Earthquake, as a burning and destroying event". The study show that middle school students think of earthquake as a devastating thing. Baytiyeh and Ocal (2016) compared the earthquake perceptions of high school students in Lebanon and Turkey in their study. The study aimed to reveal whether social and cultural factors affect the risk perceptions of students living in different countries. Only 18% of high school students studying in Lebanon and only 37% of high school students studying in Turkey received education about the earthquake at school. Therefore, although students live in an earthquake zone, they do not think that a devastating earthquake will occur in the next 50 years. The most important requirement of protection from natural disasters is disaster awareness. If there is not enough natural disaster education and awareness in the society, it will be difficult to protect from them. Karakus (2013) aimed to reveal the thoughts of the 12th grade students (117 students) who had and did not experience the earthquake. Students who experienced the earthquake developed 44 valid metaphors for the concept of "earthquake". The first three metaphors with the highest percentage among the developed metaphors; "Doomsday", "lost test", "second life". Aksoy (2013) examined the 9th grade students' (194 students) perceptions about the concept of "earthquake". It has been revealed that students perceive earthquakes, Doomsday, fear, monsters and cradles, death, and disaster. Aydin and Coskun (2010) examined the 7th grade students' perceptions of earthquake with a phenomenological approach. A total of 553 students were contacted during the study. Students described the concept of earthquake as "natural disaster" and "disaster". It is thought that emergency aid and disaster management students have high earthquake knowledge and awareness, unlike other students studying at the university. This study aims to reveal the metaphorical perceptions of emergency aid and disaster management students regarding earthquakes in Turkey. These students have detailed knowledge and skills about natural disasters and especially earthquakes during their education. Some of the courses they have taken are: Disaster Management, First Aid, Emergency and Disaster Psychology, Search and Rescue Vehicle and Material Information, Geographic Information Systems and Map Information, Risk and Crisis Management in Disasters, Anatomy, Physiology, Public Relations in Disasters.

**Purpose of the research:** The aim of this study is to reveal the mental images that Emergency Aid and Disaster Management students have about the concept of an earthquake through metaphors. For this purpose, the study aimed to find answers to the following questions:

1. What are the metaphors that the students of Emergency Aid and Disaster Management Department have produced about the concept of an earthquake?
2. Under which conceptual categories can the produced metaphors be grouped in terms of common features?
3. Do the conceptual categories obtained differ according to individual characteristics and earthquake-related factors?

### Methodology

**Research Pattern:** Phenomenology, one of the qualitative research designs, was used in the research. The phenomenology pattern focuses on phenomena that we are aware of but do not have a detailed and in-depth understanding of. Phenomenology provides a suitable research ground for studies that aim to investigate phenomena that are not completely alien to us and that we know but do not fully understand.

**Data Collection:** The research was conducted with the students of the Department of Emergency Aid and Disaster Management studying in Turkey between 26.04.2021-26.05.2021. There are emergency aid and disaster management departments in 17 universities (16 state universities and 1 private university) in Turkey that provide formal education. Students studying at state universities were included in the study. There are a total of 3355 students in state universities in the 2020-2021 academic year.

A questionnaire form was prepared to reveal the mental images of 490 students who accepted to participate in the study regarding the concept of an earthquake. In the first part of the questionnaire, which consists of two parts, there are five questions related to determining the socio-demographic information of the students (age, gender, class, etc.). In the second part, to reveal the perceptions of the students regarding the earthquake, metaphors were defined and exemplified, they were asked to complete the gaps in the sentences "Earthquake likes ..... because ..... ". In metaphor studies, the concept of 'like' is generally requested to evoke the connection more clearly between the subject of the

metaphor and the source of the metaphor, because the concept is asked to provide a justification (or logical basis) for the presented metaphors (Saban, 2009). Data was collected through online survey software and social media communication. The questionnaires filled out by the students constitute the data source of the research.

**Ethical Aspect of the Research:** Before the research was carried out, approval from the Social Sciences and Humanities Research Ethics Committee of Tokat Gaziosmanpasa University and the permission of the institution was obtained. Written and verbal informed consent were obtained from the students who accepted to participate in the study by providing information about the purpose and process of the research. The study was carried out according to the principles of the Declaration of Helsinki. In the process of analyzing and interpreting the data, respectively; Encoding and sorting metaphors, creating a main theme, ensuring validity and reliability, and quantitative data analysis was carried out. In the coding and sorting phase of the study, it was examined whether the metaphors associated with the earthquake were evident, but the statements of 32 students (due to the absence of metaphors, weak metaphor imagery, lack of logical basis) were deemed invalid, and the analysis of the research data was made with 458 metaphors obtained from 490 students. During the main theme creation phase, each metaphor was associated with a theme and 7 different main themes were created. To ensure the validity and reliability of the study, the data analysis process was explained in detail and the obtained 458 metaphor images were used as the main data source, and each main theme was supported with metaphor images. In addition, to ensure reliability, expert opinion was consulted to check whether the metaphor images gathered under 7 main themes represented the main themes. Two faculty members who are experts in the same field were asked to write a list of metaphors and main themes, and assign a number to each metaphor, and write the numbers of the metaphors that they think belong next to the main themes. These pairings were then compared. The reliability of the study was decided according to the number of consensus and disagreements obtained from the comparison. Reliability was calculated according to the formula of Miles and Huberman (1994). Reliability = The number of same decisions / (Total of the same and different decisions) As a result of this calculation, the reliability of the study

was found to be 94% (Miles & Huberman, 1994) reliability is provided (Saban, 2009).

## Results

As a result, after completing 7 main themes according to 458 metaphors and their contents, metaphors and all information were transferred to the SPSS statistics program. After this procedure, numbers (f) and their percentages (%) covering 458 metaphors and 7 main themes were calculated. It was found that 73.36% of the students participating in the study were women, 92.5% had not experienced an earthquake, 88.42% had no relatives who had experienced an earthquake, and 65.50% had no relatives due to the earthquake (Table 1).

The students participating in this study produced 458 valid metaphors on earthquake. The metaphors produced by the students of the Department of Emergency Aid and Disaster Management are generally divided into 7 main themes:

1. Fatal,
2. Bridge,
3. Enemy,
4. Punitive,
5. Domino,
6. Overwhelming,
7. Stifling (Table 2).

**Fatal:** It is a main theme with the highest frequency, formed by metaphors produced by 51.52% of the participants. Participants generally described the earthquake as fatal. In this main theme, 9 different metaphors were produced by 238 students (Table 2). The sharpest of the metaphors produced in this main theme; death (44), grim reaper (44), apocalypse (31), Satan (12), and executioner (50). According to them, an earthquake is a concept that causes death. Some of the metaphors related to this category and the reasons for their development are shown in Table 2. For us, the most striking metaphorical definition in this main theme is "Earthquake is like executioner because it takes life".

**Bridge:** Participants stated the earthquake as a link, a foam between life and death. In this main theme, 3 different metaphors were produced by 50 students. The most prominent metaphors produced in the main theme of the Bridge were Connection (10), Crossing (16), and Bridge (24). Some of the

metaphors related to this category and the reasons for their development are shown in Table 2. For us, the most striking metaphorical definition in this main theme is "Earthquake is like the connection because it connects life and death".

**Enemy:** In this main theme, the participants stated the earthquake as an enemy. In this main theme, a total of 6 different metaphors were produced by 17 students. Among the metaphors produced in the main theme of war tools, the most prominent ones were weapon (9), terminator (3), the atomic bomb (2), cyanide (1). According to them, earthquakes are powerful weapons that can destroy masses. Some of the metaphors related to this category and the reasons for their development are shown in Table 2. For us, the most striking metaphorical definition in this main theme is "Earthquake is like cyanide because it is a weapon that kills by inflicting pain".

**Punitive:** In this main theme, a total of 5 different metaphors were produced by 35 students (Table 2). The sharpest of the metaphors produced in this main theme; Punishment (12), Bad teacher giving lessons (9), Prison (8), Bad cop (3), Handcuffs (3). According to the participants, earthquake is a punitive concept. Some of the metaphors related to this category and the reasons for their development are shown in Table 2. For us, the most striking metaphorical definition in this main theme is "Earthquake is like a bad teacher because it gives life lessons by punishing".

**Domino:** In this main theme, 3 different metaphors were produced by 32 students. The most prominent metaphors produced in the main theme of the domino stone were the domino stone (13), the small touch (13), and the trigger (6). Some of the metaphors related to this category and the reasons for their development are shown in Table 2. For us, the most striking metaphorical definition in this main theme is "Earthquake is like a domino stone because a small vibration ends all labor".

**Overwhelming:** In this main theme, the participants stated that the earthquake had an overwhelming effect on people. In this main theme, a total of 5 different metaphors were produced by 23 students. The most prominent metaphors produced in the overwhelming main theme were Bonebreaker (2), Work machine (5), Hurtful (4), Suffering (6), Immobilizer (5). Some of the metaphors related to this category and the reasons for their development are shown in Table 2. For us, the most striking metaphorical definition

in this main theme is "Earthquake is like a construction machine because it kills people by passing over them".

**Stifling:** A total of 5 different metaphors in this main theme were produced by 65 students. The most prominent metaphors produced in the main theme of the sultry theme were Being Breathless

(12), Drowning (22), Choking (13), Flirting (15), and Airless (3). Some of the metaphors related to this category and the reasons for their development are shown in Table 2. For us, the most striking metaphorical definition in this main theme has been "Earthquakes are like struggling because people struggle to live".

**Table 1.** Participants' demographics and earthquake situation

Category		n	%
Gender	Female	3	73.36
		3	
		6	
	Male	1	26.64
		2	
		2	
Earthquake survival situation	Yes	3	7.6
		5	
	No	4	92.35
		2	
		3	
Having a relative with an earthquake	Yes	5	11.58
		3	
	No	4	88.42
		0	
		5	
Having a relative who died due to the earthquake	Yes	3	34.50
		0	
	No	4	65.50
		2	
		8	

**Table 2.** Metaphors related to the concept of "earthquake"

Main Themes	Metaphors	Earthquake Definitions Sample	%
Fatal	Azrael (44), The Pit (12), Devil (12), Death (44), Doomsday (31), Inevitable End (12), Disaster (19), Executioner (50), Traffic Accident (12)	"The earthquake is like the Grim Reaper because it takes life" "An earthquake is like an apocalypse because what needs to be done before is clear and measures can be taken against the situation that will occur when the time comes. "Earthquake is like executioner because it takes life"	51.52

<b>Bridge</b>	Connection (10), Transition (16), Bridge (24)	"Earthquake is like a link because it connects life and death" "Earthquake is like a transition because it provides a transition to death" "Earthquake is like a bridge because man wobbles between death and life" "An earthquake is like a collapsed bridge; because it separates people from their loved ones"	10.91
<b>Enemy</b>	Weapon (9), Atomic Bomb (2), Cyanide (1), Knife (1), Terminator (3), Bomb (1)	"Earthquake is like a weapon because there is a war between death and life" "The earthquake is like an atom bomb because it is a weapon that ruptures families." "Earthquake is like cyanide because it is a biological weapon that kills by inflicting pain" "Earthquake is like a terminator because it destroys"	3.71
<b>Punitive</b>	Punishment (15), Bad teacher giving lessons (12), Prison (8)	"Earthquake is like a bad teacher because he gives life lessons by punishing" "Earthquake is like a penalty because it pays for the mistakes we do" "Earthquake is like a prison because it punishes it by separating it from loved ones"	7.64
<b>Domino</b>	Domino (13), Small touch (13), Trigger (6)	"The earthquake is like a domino, because a small vibration takes away all the labor" "Earthquake is like a small touch, because with that touch everything will be destroyed" "Earthquake is like a trigger because the earth moves and shakes"	6.98
<b>Overwhelming</b>	Bone breaker (2), Engineering machine (5), Hurt (4), Agony (6), Immobilizer (5)	"Earthquake is like a bone-breaker because your whole body will be crushed" "Earthquake is like a construction machine because it kills people by passing over them" "Earthquake is like suffering because it makes people suffer"	5.02
<b>Stifling</b>	Being out of breath (12), Drowning (22), Choking (13), Struggling (15), Stuffy (3)	"An earthquake is like drowning because it kills by letting it out of breath." "Earthquakes are like struggling because people struggle to survive" "An earthquake is like being out of breath; because you cannot breathe under debris "	14.22

## Discussion

Almost all of Turkey is under earthquake risk. Turkey is in the Alpine-Himalayan belt, which is one of the most earthquake-prone regions in the world. Earthquakes in Turkey have caused serious

loss of life and property. 32,968 people died in the 1939 Erzincan earthquake (7.9); 116,720 buildings were destroyed (Sur, 1993). 18,374 people died in the 1999 Duzce earthquake (7.4), 93,618 buildings were destroyed, and 218,075

buildings were damaged (Akturk and Akbenli, 2002). In 2020, Elazig (6.8) and Izmir (6.6) earthquakes were experienced. Everyone living in Turkey has witnessed an earthquake in the country they lived in their lifetime. She/he may not have experienced the earthquake, but he is aware of this fact. Students studying in the department of emergency aid and disaster management in Turkey also receive training with this reality. Perspectives on natural disasters, especially earthquakes, are different. Therefore, these students' perceptions about earthquakes are important. The study aimed to reveal the thoughts of emergency aid and disaster management students about earthquakes with the help of metaphors.

In the studies examining the earthquake perception of students who encounter an earthquake, it was mentioned that the earthquake was not perceived well and that there were various difficulties in earthquake education (Demirkaya, 2007; Aksoy, 2013; Aydin and Coskun, 2010).

Most of the students participating in the research are female students and most of the students had not experienced an earthquake before and did not lose any of their relatives in the earthquake. Students who have knowledge of earthquakes and have received training on it have produced 458 valid metaphors about earthquakes and these metaphors were collected under 7 main headings. With the highest percentage "the fatal" title is in the first place. Most of the students participants have never experienced an earthquake before and none of the relatives of 88% of the participants experienced an earthquake. Only 30 of the participants lost a relative in the earthquake. Despite this, more than half described the earthquake as fatal. The fact that she/he or a relative did not experience an earthquake did not prevent students' negative feelings against the earthquake.

Similar concepts emerged in this study with previous studies on earthquakes. These are "death", "doomsday" and "disaster". Along with these general definitions, the students expressed the earthquake with very interesting metaphors. Metaphors such as "bridge", "domino", "punishment", "connection", "struggling" have been remarkable examples for the differences in earthquake perceptions. "Stuffiness", "prison", "knife" and "cyanide" are other interesting metaphors.

Even though most of the students who participated in the study did not experience an earthquake, the education they received, and their knowledge that natural disasters would cause loss of life and property if precautions were not taken caused them to describe the earthquake as deadly. The most important way of protection from natural disasters is education and awareness.

Graduates of Emergency Aid and Disaster Management are expected to raise awareness about natural disasters. The study shows that students are raised with this awareness. The fact that they live in an earthquake zone, and they have witnessed at least one devastating earthquake throughout their lives also increases this awareness.

**Conclusion:** In our study in which we aim to reveal the perceptions of the nursing students about through metaphors, it has been concluded that when earthquake is mentioned, young people have the first perception of death in their minds and they assess earthquake as a killing machine. In fact, it was determined that the main theme for which the most metaphors were produced was the "deadly" main theme. In this context, it is necessary to improve the perceived health status and psychological well-being and strengthen the positive coping methods related to the disaster event in order to reduce the degree of negative impact related to the earthquake and increase awareness. In addition, a systematic curriculum should be developed to improve the disaster coping skills of undergraduate students.

## References

- Ada, S. (2015). Determining Students' Perceptions towards Mathematics Lesson and Mathematics Teacher with the Help of Metaphors. Unpublished Master Thesis, Gazi University. Institute of Educational Sciences, Department of Elementary Mathematics Education. Ankara.
- Aksoy, B. (2013). Qualitative survey of perception of 9th graders who experienced an earthquake towards the concept earthquake. Journal of World of Turks, 15(1), 247-265.
- Akyildiz, N. (2017). Examining the Metaphorical School Perceptions of High School Students: The Example of Diyarbakir Province. Unpublished Master Thesis, Cag University. Institute of Social Sciences, Department of Psychology. Tarsus, Mersin.
- Asaman, E. (2013). Metaphorical Perceptions of Teachers and Students in Special Education Institutions towards each other. Unpublished Master Thesis, Mersin University. Institute of Education Sciences.

- Ates, O. T. (2016). Teacher and school metaphors of students. International Journal of Contemporary Educational Research, 2(1), 78-93.
- Aydin, F. (2010). Observation of the students earthquake perceptions by means of phenomenographic analysis (primary education 7th grade Turkey). International Journal of Physical Sciences, 5(8), 1324-1330.
- Aydin, I. S., Pehlivan, A. (2010). The metaphors used by Turkish teacher candidates regarding the concepts of teacher and student. Turkish Studies, 5(3): 818-842.5.
- Balci A. (2015). Research in the social sciences (11th Edition). Ankara: Pegem Academy.
- Baytiyeh, H., & Ocal, A., (2016). High school students' perceptions of earthquake disaster: A comparative study of Lebanon and Turkey. International Journal of Disaster Risk Reduction, vol.18, 56-63.
- Beaglehole, B., Mulder, R. T., Frampton, C. M., Boden, J. M., Newton-Howes, G., & Bell, C. J. (2018). Psychological distress and psychiatric disorder after natural disasters: systematic review and meta-analysis. *The British Journal of Psychiatry*, 213(6), 716-722.
- Benevolenza, M. A., & DeRigne, L. (2019). The impact of climate change and natural disasters on vulnerable populations: A systematic review of literature. *Journal of Human Behavior in the Social Environment*, 29(2), 266-281.
- Chan, Z. C., Chien, W. T., & Henderson, S. (2018). Metaphorical interpretations of the educator-student relationship: An innovation in nursing educational research. *Nurse education in practice*, 28, 46-53.
- Demirbilek, N. & Y. Demirbilek. (2020). Determination of The Metaphories of Students in The Child Development Program for The Concepts of "Mother" And "Child Education". *Euroasia Journal Of Social Sciences & Humanities*. Vol: 7, Issue: 6, pp: 46-58, Doi Number: <http://dx.doi.org/10.38064/eurssh.118>
- Demirkaya, H. (2007). Investigation of Primary School 5th, 6th and 7th Grade Students' Attitudes Towards Earthquake According to Various Variables. *Turkish Journal of Social Research*, (3), 38-49.
- Dogan, B., Asci, M., Karakaş, A., Pekşen, E., Erenler, A., Çepni, M. S., ... & Kurtuluş, C. (2021). Basin progress: active deformation analysis by tectonostratigraphic elements and geophysical methods on North Anatolian Fault System (Eastern Marmara Region, Turkey). *Natural Hazards*, 109(2), 1675-1716.
- Eguz, S., & Ontas, T. (2018). Metaphors used by secondary school students regarding the concept of "teacher". *Journal of Mugla Sitki Kocman University Faculty of Education*, 5(1), 79-91.
- Erdem, F. & Satir, C. (2000). Analysis of cultural structure with metaphors in different organizations. Eighth National Management and Organization Congress Proceedings. Nevşehir: Erciyes University Press.
- Gozel, U. & Gundogdu, K. (2021). Metaphorical perceptions of students towards the concept of game. *Anadolu Journal of Educational Sciences International*, 11(1), 135-158. DOI: 10.18039/age.741036
- Karasahinoglu T. (2015). Metaphorical Perceptions of Physical Education Teacher in Secondary Schools. Unpublished Master Thesis, Gazi University. Institute of Education Sciences. Physical Education and Sports Teaching Department. Ankara.
- Kaya, H. (2010). Metaphors developed by secondary school students towards" earthquake" concept. *Educational Research and Reviews*, 5(11), 712.
- Kurcer, A., Ozdemir, E., Olgun, S., Ozalp, S., Can, T., & Elmaci, H. (2021). Active tectonic and paleoseismological characteristics of the Dinar Fault, SW Anatolia, Turkey. *Mediterranean Geoscience Reviews*, 1-33.
- Miles, M. B., & Huberman, A. M. (1994). Qualitative data analysis: An expanded sourcebook. sage.
- Milton, C. L. (2017). Ethics and Discovering New Meanings With Metaphors. *Nursing science quarterly*, 30(3), 205-206.
- Palmquist, R. A. (2001). Cognitive style and users' metaphors for the web: An exploratory study. *The Journal of Academic Librarianship*, 27(1), 24-32.
- Qiu, X., Yang, X., Fang, Y., Xu, Y., & Zhu, F. (2018). Impacts of snow disaster on rural livelihoods in southern Tibet-Qinghai Plateau. *International journal of disaster risk reduction*, 31, 143-152.
- Rasheed, R., Rizwan, A., Javed, H., Sharif, F., & Zaidi, A. (2021). Socio-economic and environmental impacts of COVID-19 pandemic in Pakistan—an integrated analysis. *Environmental Science and Pollution Research*, 28(16), 19926-19943.
- Saban, A. (2009). Mental images of pre-service teachers about the concept of student. *Turkish Journal of Educational Sciences*, 7(2), 281-326.
- Schmitt, R. (2005). Systematic metaphor analysis as a method of qualitative research. *The qualitative report*, 10(2), 358-394.
- Sur, O. (1993). Earthquake Zones of Turkey. Ankara University Turkish Geography Research and Application Center Journal. 53-68.
- White, Z. M., & Gilstrap, C. M. (2016). Inside patients' homes: A metaphorical analysis of home hospice nurses' experiences working with dying patients. *OMEGA-Journal of Death and Dying*, 72(4), 302-315.
- Wijkman, A., & Timberlake, L. (2021). Natural disasters: acts of God or acts of man?. Routledge.
- Yiew, T. H., Kalimuthu, K. V., Lee, C. Y., Cheah, S. P., & Foo, C. C. (2018). DO NATURAL Disasters Affect Economic Growth In Bangladesh?. *International Journal of Business and Society*, 19(3), 781-792.