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Doğal Afetten Etkilenen Öğrencilerin Deprem Kavramına Yönelik Metafor Algılarının Kapsayıcı Eğitim Bağlamında Belirlenmesi: Hatay (Antakya)

Determination of Metaphor Perceptions of Students Affected by Natural Disaster for Earthquake in the Context of Inclusive Education: Hatay (Antakya)

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Öz

Bu çalışmanın amacı; okul öncesi, ilkokul ve ortaokul öğrencilerinin deprem olgusu ile ilgili metafor algılarını karşılaştırmaktır. Araştırmada nitel araştırma desenlerinden biri olan fenomenoloji araştırma yöntemi kullanılmıştır. Veri toplama sürecinde görüşme tekniği kullanılırken ayrıca modelleme ve çizim tekniği ile sürece katkı sağlanmıştır. Araştırmanın katılımcılarını Hatay iline bağlı Antakya ilçesinde depremden etkilenen 3-5 yaş aralığındaki okul öncesi, ilkokul 3 ve 4 ve ortaokul 5, 6, 7 ve 8. sınıf öğrencileri olmak üzere toplamda dokuz öğrenci oluşturmuştur. Araştırmadan elde edilen bulgulara göre okul öncesi öğrencilerinin deprem olgusuna yönelik metaforlarının bilimsel açıklamalardan uzak olduğu saptanırken, ortaokul öğrencilerinin deprem olgusuna yönelik metafor algılarında bilimsel ifadelerin daha fazla yer aldığı tespit edilmiştir. Depremin etkisi altında kalan öğrencilerin eğitim-öğretim ortamlarından ayrı kalmaları onların bulundukları sınıf seviyesinden daha alt grupta olgunluk göstermelerine sebep oluşturmuş ve buna bağlı kalarak da fen bilimleri dersini sadece oyunlaştırma ile sınırlandırdıkları ayrıca bulgu sonuçlarına yansımıştır. Araştırma kapsamında elde edilen ilgili sonuçlara bağlı kalarak birtakım önerilerde bulunulmuştur.

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Abstract

The purpose of this study is to compare the metaphorical perceptions of earthquakes by preschool, primary and secondary school students. The phenomenology research method, one of the qualitative research designs, was used in the study. While the interview technique was used in the data collection process, modeling and drawing techniques were also used to contribute to the process. The participants of the study consisted of nine students in total, including preschool and primary school (3th, 4th grade), secondary (5th, 6th, 7th, and 8th grade) students between the ages of 3-5 who were affected by the earthquake in Antakya district of Hatay province. According to the findings obtained, it was determined that the metaphors of preschool students towards the earthquake phenomenon were far from scientific explanations. On the other hand, it was determined that scientific expressions were more common in the metaphor perceptions of secondary school students towards the earthquake phenomenon. The fact that the students who were under the influence of the earthquake were separated from their educational environment has caused them to show maturity in a lower group than the class level they were in. Accordingly, it was also determined that they limited the science course only to gamification. Based on the relevant results obtained within the scope of the research, some suggestions were made.

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1. INTRODUCTION

The world press referred to the recent 7.7 and 7.6 magnitude earthquakes that struck Turkey's Kahramanmaras province as the most horrific natural disaster of the 20th century, following the pandemic that severely impacted living conditions in the majority of the world's nations. The earthquake had the greatest impact on 11 provinces (Kahramanmaras, Osmaniye, Sanliurfa, Kilis, Adana, Diyarbakır, Adiyaman, Hatay, Malatya, Gaziantep, and Elazıg) in the Mediterranean, Southeastern, and Eastern Anatolia areas. According to information obtained through AFAD (2023), 50,500 people (April data) lost their lives in this earthquake process. The fact that there was a significant earthquake increase in the provinces of Ordu, Giresun, Trabzon, Rize, and Gumushane in the Eastern Black Sea Region, except for the base area of the earthquake, has proved how large and destructive the fracture in the fault line is which is the most important aspect of the earthquake (Bilge, 2023). Antakya was among the most affected provinces and around 23 thousand citizens lost their lives within the provincial borders. In addition, almost all of the city has come to a standstill due to power outages due to destroyed buildings.

People most needed shelter and safety in the early stages of the earthquake. In this situation, attempts have been made to mitigate issues to some extent by employing workable solutions like containers and tents. Nevertheless, the ongoing aftershocks, the demolishment of structures, and the multiple near fatalities have masked the earthquake process, and the ongoing trigger has constantly set off negative emotions in individuals (Demir-Yildiz & Demir-Ozturk, 2022). This led to both material and spiritual harm and impeded the solution of vital activities. This disaster in the region has also stopped the education system, and face-to-face training has become almost impossible. The process of adapting to face-to-face training after the earthquake has become traumatic as it has damaged various aspects of the school, such as the demolition of the school building and the loss of teaching staff and students (Karabulut & Bekler, 2019).

A World Bank research from 2019 states that every year, disasters prevent almost 175 million children from receiving an education in the globe. In the contents of the actions to be implemented in the sphere of education following the disaster, the relevance of science has been underlined because education is a vital and necessary service for a developing, safe, and especially sustainable society. First of all, it has been determined that approximately 130

million primary and secondary school students are out of school in countries affected by the crises, accounting for about half of all students in the world. In addition, the observation results of the students whose school building was changed due to disasters showed that their academic achievement decreased significantly. In particular, students with special needs and students who passively participate in educational processes suffer more from education. In this case, a strong and ready infrastructure for distance learning is required. Since disasters have strong emotional, behavioral, and academic effects on children and young people, it has been revealed that students need to learn about the effects of disasters and ways of coping, and psychosocial studies are needed. In fact, according to the VIII Training Workshop Report, the inclusion of this guiding role in the curriculum is a better choice.

It is clear that the earthquake, which is one of the most destructive natural events of the last century in our country, affected the students of our country the most. Due to both natural disaster (earthquake) and human-caused (pandemic) disasters in the country, the number of students with special needs has increased and demographic characteristics have changed. Due to internal migration caused by the natural disaster, 202.817 students were transferred to 71 provinces, mostly in Istanbul, Konya, Ankara, Kayseri, Bursa, Mugla, Aydin, Izmir, Mersin, and Antalya, resulting in the transfer of students to other provinces. The training flow was first included in the regional emergency plan, and then it caused differences for all regions. Therefore, students with special needs affected by the disaster were found in different parts of the country. Thus, recent events within the borders of the country have made inclusive educational practices for students affected by natural disasters more imperative than necessary.

Inclusive education is an approach that guides the educational needs of students according to their specific needs (Such as students with mental and physical disability, exposed to violence, temporarily protected, affected by migration, terror and natural disaster, who know Turkish as a foreign language, who have individual differences according to the diagnosis of special ability). Inclusive education is crucial in early childhood, the first step in education. Because as the foundation of children's attitudes, behaviors, and judgments is laid during this period, it is believed that the development of an inclusive understanding in the minds of students will help students develop as non-discriminatory individuals. Therefore, educational environments should be designed to help all children realize their potential (Ira & See, 2018).

It seems that system content needs to be changed, evaluated, and inclusive strategies developed according to disaster conditions and student demands to ensure the transmission and sustainability of education system understanding to future generations. Primary and secondary students in the concrete process stage can benefit from learning in an environment where an inclusive attitude is adopted. This can help them take a meaningful look at the events and situations around them and, more importantly, resume their lives from where they left off.

Due to the recent earthquake in the country, it is important for preschool and primary students educated in container and tent city conditions to hold on to their academic achievements and social lives. While each disciplinary area is crucial for students, science concepts help students better understand the natural events occurring in their environment. The field of science describes everyday nature events such as rain, sunrise, and setting, the phases of the moon, lightning, as well as electrical charge-discharge. They are also open to events that can evolve from natural events such as earthquakes, landslides, tsunamis, floods, global warming, greenhouse effect, pandemics to disasters (Bilge, 2023). Considering the feature of the field of science to focus on events and situations discussed in this context, preschool, primary and secondary students' mental perceptions of the earthquake can be accurately shaped.

Earthquakes are among the most important natural disasters affecting human life (Karakus, 2013; Rij, 2016). It is possible to associate the main cause of this condition with various reasons, such as the fact that the moment of the earthquake can not be predicted, the earthquake can not be prevented and it causes a large number of lives and property losses. Earthquakes are natural phenomena that originate from the depths of the earth and produce short-term ground shaking (Baytiyeh & Naja, 2013; Izbirak, 1991) or can be described as short-term ground shaking occurring in the earth's crust (Sahin & Sipahioglu, 2002). It is very important how the concept of an earthquake is perceived in the minds of the students who experience the earthquake. Metaphors provide students with the opportunity to explain the environment in which they live, events, phenomena, and objects according to which mental processes they make sense of and how they perceive them. Also, it is preferred in the field of science as it allows students to benefit from various simulating tools while doing so (Cerit, 2008). Metaphors are one of the techniques generally used to help individuals improve their

mental information processor and get rid of existing stereotyped information. This is especially important in the intervention processes after a traumatic event (Kuehlwein, 2000; Otto, 2000). The metaphor tool represents a concrete entity. Its purpose is to reveal people's mental model of the concept and to decipher the abstract domain, allowing information to leak out. Recent research emphasizes that metaphorical gestures can have an enhancing effect on the comprehension and learning process (Khatin-Zadeh, 2022; Khatin-Zadeh et al., 2022). Therefore, it is important to give feedback on students' developmental processes that can reveal their mental models to produce original works (Bilge, 2017).

Recent events relate to the possibility of a repeat of natural disasters, both in our country and around the world. For normalization to take place quickly in the processes thereafter and continuity in education, students need to be disaster-conscious and have sufficient knowledge of the content of education-training processes in line with teachers' disaster awareness. When the literature is examined; 9th-grade students experiencing the Van earthquake (Aksoy, 2013), 12th-grade students experiencing the Duzce earthquake (Karakus, 2013), middle school students experiencing the Sivrice earthquake (Dogan, Nacaroglu & Ablak, 2021), pre-school and middle school students experiencing the Kahramanmaras earthquake (Alptekin & Sarikaya, 2023) produced metaphors for the concept of earthquakes. In addition, some studies reach the metaphor information of candidate teachers and preschool students about earthquakes (Degirmenci, 2019; Demir-Yildiz & Demir-Ozturk, 2023; Yilmaz & Arslan, 2023). As a result, there has been little research in the literature that treats students as student echelons rather than as demographics (students affected by natural disasters). This has shown a gap in research in identifying what an inclusive learning environment should be to meet students' needs, interests, and values. Whereas, education is a crucial tool for creating a sustainable world and a necessary prerequisite for recognizing transformation and change. Thus, rather than evaluating students as level, this research purpose is to conceptualize students as demographics. More importantly, children and families in particular are considered the most vulnerable group affected by disasters (Ronan vd., 2015). In addition to this vulnerability, the educated child and family are the most powerful elements in ensuring that the society is self-sufficient in disaster situations (Takeuchi, Mulyasari & Shaw, 2011). For this reason, disaster awareness trainings should be started from a young age. Research often emphasizes that students in this level of education are in the age range best suited to gain

basic disaster awareness (Ozguven, 2006). Children do not know the cause of disasters, how to behave during disasters, and this feeling of not being ready causes their fears to increase. The crises experienced during the disaster reflect seriously on the education life of children (Grotberg, 2001). However, with the update of the Science Education Program (2024), the removal of the gains in the old program (MEB, 2018)- which refers to the ways of protection in destructive natural events- is contrary to the inclusive perspective. Whereas most countries are Bangladesh (Ahsan, Sharma, & Deppeler, 2012), Australia (Sharma, 2012; Woodcock, Hemmings, & Kay, 2012), Hon Kong, Indonesia, Canada and Australia (Loreman, Sharma, & Forlin, 2013), India (Yadav, Das, Sharma, & Tiwari, 2015), Italy (Aiello, Pace, Dimitrov, & Sibilio, 2017), Macau (Monteiro, Kuok, Correia, Forlin, & Teixeira, 2019), Spain (Cardona Moltó, Tichá, & Abery, 2017) and Finland (Saloviita, 2020) discussed inclusive education in different subject contexts in literature studies and revealed the extent of the importance that should be given to inclusive education. Under the inclusion principle, the Twelfth Development Plan (2023) seeks to create a people-centered understanding centered around the tenets of "qualified people, strong family, healthy society" to enhance the quality of life and encourage equitable access to opportunities for lifelong learning and qualified education. So this research was conducted to guide policy practitioners and researchers. Therefore, this study's purpose is to investigate how preschool, primary and secondary students affected by natural disasters are shaped by their age and class of metaphor perceptions regarding the concept of earthquakes.

2. MATERIAL AND METHOD

This section provided details on the design of the research, working group, data collection tools, and collection and analysis of the data.

2.1. Research Design

This study's purpose is to compare preschool, primary and secondary students' perceptions of metaphors for the concept of earthquakes. One of the qualitative research methods, research based on the pattern of factual science, is to find similarities and differences in students' thoughts about the phenomenon of earthquakes. Factual science (phenomenology) examines phenomenon concepts that people are aware of but fail to grasp in-depth and in detail. Events, experiences, perceptions, situations, and concepts in the world

experienced can arise in various ways called phenomena (Buyukkozturk et al., 2011; Yildirim & Simsek, 2018). The phenomenology provides favorable conditions for investigating random, unfamiliar, or not fully grasped phenomena as it does not show that human beings can fully understand everything despite developing around them (Yildirim & Simsek, 2018). Since the purpose of the study is to ascertain the metaphors that kids at all preschool, primary and secondary school levels use to explain earthquakes, as well as the part that demographic factors play in this process, it is believed that the research is in line with the pertinent research pattern.

2.2. Research Groups

The participants of this study were preschool, primary and secondary students in the Antakya district of Hatay province affected by the Kahramanmaras base earthquake on February 6, 2023 (n = 9). While participants in the study were selected, the maximum sampling method, one of the purposeful sampling methods, was preferred. The maximum diversity sampling method is to research similar or different situations or individuals for the research (Buyukozturk et al., 2016). The scope of the research involved volunteer preschool, primary and secondary pupils who were diverse in class level and age ranges. The students' demographic statistics are provided in Table 1' below.

Table 1. Participants' Demographic Characteristics

Educational Level	Class/ Age Level	Quantity Of Students	Education-Training Continuity
Age range: Preschool 3-5 years	3 years old	n=1	Going on
	4 years old	n=1	Going on
	5 years old	n=1	Going on
Primary Stage	3rd grade	n=1	Unified class
	4th grade	n=1	Unified class
Secondary Stage	5th grade	n=1	Unified class
	6th grade	n=1	Unified class
	7th grade	n=1	Unified class
	8th grade	n=1	Unified class

Upon examining Table 1, it was observed that the three students fell into the preschool pupil level age range of three, four, and five. The accompanying content demonstrates that preschoolers were in education-training continuity. Primary and secondary students made up one student from each grade level (3, 4, 5, 6, 7, and 8) included in the tier, while primary and

secondary students were being continued to learn in unified classrooms. Nine students in all, comprising preschool, primary and secondary students, are displayed in the table. Since there were no first- and second-year students in the area where the research was conducted, they could not be included in the study.

2.3. Data Collection Process

The data was collected in two phases. Phase one took place in the area where pupils were attending preschool. Preschoolers were educated in a classroom within specially designed tent-container living conditions. Through this design, the process of collecting data has become easier. Because students were in preschool (assuming illiterate) it would be appropriate to use verbal expression and model with playdough to determine their metaphor for the earthquake phenomenon. Because the way children describe adverse conditions that affect them may differ from the way adults express them. Therefore, children's emotional change is difficult to understand from the outside. They prefer to describe situations that upset them with games and drawings (Danisman & Okay, 2017). In this case, it was considered that the drawing and modeling work and verbal expressions of preschool pupils would be in line with their age range. In the process, the science and psychology education specialist accompanied the students.

Data were gathered in the second stage in artificial classrooms designed for primary and secondary students within the tentative setting. A semi-structured interview form was employed to gather the metaphors that students used to explain the idea of earthquakes. Interview is the process of expressing opinions regarding a phenomena or event (Yildirim & Simsek, 2018). To determine students' perceptions of the earthquake, "Earthquake ... is like. Because ..." a form with the phrase has been created. Additionally, students can use blank portions of the form in multiple metaphor sentences to express their thoughts on the concept of an earthquake, it said. Therefore, all the ideas of the students about the concept of earthquakes were reached and not limited to one metaphor. At this stage, the students were accompanied by an educational specialist in science and psychology. In the first and second stages, a voice recorder was used to prevent data loss. Participants in the study were selected voluntarily, and data collected under ethical guidelines were deleted after the transcript.

2.4. Data Analysis

Data from this research was transcripted using the method of content analysis. The purpose of content analysis is to reach out to ideas and links that can explain the data collected (Yildirim & Simsek, 2011). There is also the identification and categorization of similarities between codes. In this two-step study, the drawing or modeling of preschool students, as well as the words expressed about these techniques, were instrumental in the theme-setting process. In this form, students created numerous metaphor sentences related to the earthquake. Two expert researchers were actively involved in the data collection process and took specific notes for the phrases expressed. Because modeling and drawing techniques support verbal expression, analysis has become easier. The metaphor phrase that first came to mind on the semi-structured interview form in the primary pupils' data collection process and the reasons for it were considered to apply to all themes. Students were asked to write various metaphor sentences. A careful approach was taken to the techniques of expressing students so that the justifications for the sentences indicating the metaphor were consistent. However, the researchers didn’t offer any guidance that could shape students' ideas. During the analysis of the research data, the following was done.

2.5. Phase of Naming and Tagging

Metaphors generated from raw data collected during the research process were sequenced in alphabetical order at this step. The dataset included those that made sense of the content of the metaphors obtained, were easy to understand, and were in line with the metaphor's rationale. At this stage, metaphors that has not supported by a logical statement has removed from the data set along with the eliminations. It has also been determined that some participants wrote only a metaphor but not a justification for this metaphor because of its expression (e.g., "An earthquake is like a disaster because..."). Only the data in which the metaphor was written but the justification was not, are therefore excluded from the study. Furthermore, because some metaphors cannot be placed into any conceptual category, are not illogical or comprehensible, these metaphors are also excluded from the data set (e.g., "Earthquakes are like earthquakes because…"). At the end of this process, a total of 90 metaphors were obtained (See Tables 2 and 3).

2.6. Classification Stage (Screening and Filtering)

The similarity or common characteristics between metaphors from raw data were examined at this stage. Each metaphor was divided into analyzable groups, and common characteristics were identified. The codes were created using metaphors grouped according to their common characteristics. As a result, the forms in which 90 appropriate metaphors were written were subjected to a stage of reorganization and compilation (See Table 4).

2.7. Reorganization and Compilation Phase

Sample phrases that best represent each metaphor were set at this stage. The concept of earthquakes has been transformed into a theme based on students' mental perceptions. Metaphor themes, on the other hand, were distributed in five different category titles. Throughout this process, the researchers worked independently, which gave them different perspectives on various issues (See Table 5).

2.8. Validity and Reliability

Credibility, transferability, consistency, and verifiability strategies have been used for the reliability and validity of the research (Shenton, 2004). Expert opinions were taken into account in questions to be asked to students as part of research into credibility that depends on internal validity. To improve credibility, students' views have been passed directly to the findings department. Regarding transferability, which depends on the external validity of the research, details have been provided on the collection and analysis of the data. For the reliability and repeatability of the research (Lincoln & Guba, 2013), the data was first transcribed separately by the two researchers and then together by the two researchers. The credibility formula between coders is used to calculate the reliability of qualitative research (Reliability = Agreement / Agreement + Disagreement x 100). The reliability level of coders 80% and above is considered good (Miles & Huberman, 1994). In the research, metaphorical encodings of both coders were compared, and different views were obtained about the eight metaphors. Based on the calculation result, a value of 92% was found (Reliability = 90/90 + 8 = 0.92). The analysis result showed that coders reached the desired level of reliability.

3. FINDINGS

Under the title of the findings of the study, metaphors containing the thoughts of preschool, primary and secondary tier students about the earthquake were presented through the table and figure.

Table 2. Information On Metaphors Used By Preschoolers

Age Level	Metaphor	Frequency
3 years old	Walking Giant, Swinging, Death, Tent, Toy	5
4 years old	Swinging, Death, Tent, Ghost, Parent	5
5 years old	Swinging, Death, Tent, Lost, Ghost, Parent	6

When examined in Table 1; students in three age groups appear to produce 5 metaphors, including walking giant, swinging, death, tent, and toy. It is understood that the four-year-old students formed 5 metaphors, including swinging, death, tent, ghost, and parent. The metaphors produced by students in the five-year age group showed distribution in the form of rocking, death, tent, loss, ghost, and parent. Preschoolers produced a total of 16 metaphors. Preschoolers explained their thoughts on the concept of earthquakes as follows. Preschoolers expressed their views on the earthquake as follows:

The figure on the side shows a metaphor modeling of a third-year student related to an earthquake. For student modeling, "*People die when earthquake becomes a sway. The dough contains parts of the house inside the soil. Everything stops in the soil*" he said.

Figure 1. Visual Concerning Mystery Power

Three age-group students who believe the quake may have been made by several hidden forces have been involved in the theme of the walking giant metaphor. The student's statement is below:

Three years old: *An earthquake is like mud because the earthquake swallowed our house. The destruction of houses is like an earthquake. Concrete can then move and the earthquake can end.*

The figure on the side shows a metaphor modeling of a fourth-year student related to an earthquake. For student modeling, "*Smoke is streaming from the house, blood is streaming from the roof, homes are being destroyed and people can't stand.*" he said.

Figure 2. Visual Concerning Chaos

The four-year-old student who thought that the earthquake existed because of the awareness of individuals who remained between the conflicts was involved in the theme of parental metaphor. The student's explanation is below:

Four years old: *Big buildings like in a cartoon don't want small buildings and they fight and her mother gets angry. An earthquake is like the demolition of homes and people can fall among the stones.*

The figure on the side shows a metaphor modeling of a fifth-year student related to an earthquake. For student modeling "*The building leans over the girl and she's surprised because the girl's phone stays at home so she can't call anyone.*" he said.

Figure 3. Visual Concerning Desperation and Bewilderment

The five-year-old student who attributes the earthquake to the willingness of supernatural beings to change the location of homes is present in the ghost metaphor. The student's explanation is below:

Five years old: *The earthquake is like a ghost because the land walks. The houses collide with each other and fall. The earthquake is like swinging because you're scared.*

Table 3. Information On Metaphors Used By Primary and Secondary Tier Students

Class Level	Metaphor	Frequency
3rd grade	Homeless, Swinging, Death, Tent, Disaster, Sadness, Wreckage, Lost, Grave, Mobile Toilet, Winter, Teacher	12
4th grade	Bad ground, Swinging, Death, Tent, Disaster, Sadness, Wreckage, Grave, Mobile toilet, Friend, Winter, Teacher	12
5th grade	Climate, Energy, Swinging, Kizilay, AFAD, Sadness, Wreckage, Ambulance sound, Grave, Mobile toilet, Friend, Winter, School building	13
6th grade	Sheet, Energy, Swinging, Global warming, Kizilay, AFAD, Distance education, Internet, Solidarity, Chaos, Friend, School building	12
7th grade	Crack, Energy, Swinging, Global warming, Kizilay, AFAD, Distance Education, Internet, Solidarity, Desk, School building, Friend	12
8th grade	Fault fracture, Energy, Swinging, Awareness, Global warming, Kizilay, AFAD, Distance education, Internet, Solidarity, Desk, School building, Friend	13

As outlined in Table 3 it is seen how students in the primary and secondary tier are grouped into metaphors based on the topic of the earthquake. Twelve metaphors were utilized by 3rd-grade students in the primary group, including " *Homeless, Swinging, Death, Tent, Disaster, Sadness, Wreckage, Lost, Grave, Mobile Toilet, Winter, and Teacher*". 4th-grade students used twelve metaphors, such as " *Bad ground, Swinging, Death, Tent, Disaster, Sadness, Wreckage, Grave, Mobile toilet, Friend, Winter, and Teacher*". Thirteen metaphors were utilized by 5th-grade students in the secondary group, including "*Climate, Energy, Swinging, Kizilay, AFAD, Sadness, Wreckage, Ambulance sound, Grave, Mobile toilet, Friend, Winter, and School building*". Twelve metaphors were utilized by 6th-grade students, including "*Sheet, Energy, Swinging, Global warming, Kizilay, AFAD, Distance education, Internet, Solidarity, Chaos, Friend, School building*". Twelve metaphors were utilized by 7th-grade students, including "*Crack, Energy, Swinging, Global warming, Kizilay, AFAD, Distance Education, Internet, Solidarity, Desk, School building, Friend*". Thirteen metaphors were utilized by 8th-grade students, including "*Fault fracture, Energy, Swinging, Awareness, Global warming, Kizilay, AFAD, Distance education, Internet, Solidarity, Desk, School building, Friend*". Primary and secondary school students produced a total of 74 metaphors. Primary and secondary students explained their thoughts on the concept of earthquakes as follows. Primary and secondary students expressed their views on the earthquake as follows:

The third-year student, who relates the idea of the earthquake to the fatigue of the world due to the unconscious use of all the beings around him, has described the idea about the earthquake as follows under the name of the metaphor of disaster:

3rd-grade student: *The earthquake is like the end of the world because the trees are being cut down. And I think the concrete is getting bigger...*

Associating the formation of the earthquake with the soundness of the basic structure of the house, the fourth-year student, 's thoughts on the bad-ground metaphor are as follows:

4th-grade student: *The earthquake is like solidity because if the ground were solid, we would not be homeless…*

The climate metaphor-oriented expressions of the fifth-year student who associated the earthquake with global warming as it did not continue in the normal course of the seasons are as follows:

5th-grade student: *An earthquake is like vanishing. Global warming seems to be destroying everything.*

The sixth-year student, who described the earthquake with the reversible movement of the layers of the earth, expressed the concept of the earthquake under the name of the plate metaphor:

6th-grade student: The earthquake is like a swing because the sheets in the layers of the soil are moving in the opposite direction.

Arguing that the earthquake could be caused by the transformation of energy, the seventh-year student's thoughts on the crack metaphor are as follows:

7th-grade student: *Earthquake is energy. Because the potential energy is converted into kinetic energy and cracks in the earth's crust.*

Addressing the earthquake within the framework of disaster awareness and attributing it to the limited awareness of the subunits that make up the society, the eighth grader explained the perception of the earthquake as follows:

8th-grade student: *An earthquake is negligence. Since there is no social consciousness, cities are built on fractures in the fault line.*

Table 4. Frequency Distributions Of All Metaphors

Metaphor Codes	Frequency	Metaphor Codes	Frequency	Metaphor Codes	Frequency
Swinging	9	Solidarity	3	Toy	1
Death	5	Remote training	3	Homeless	1
Tent	5	Global warming	3	Awareness	1
Friend	5	Internet	3	Chaos	1
School building	4	Winter	3	Ambulance sound	1
AFAD	4	Disaster	2	Walking Giant	1
Kizilay	4	Parent	2	Sheet	1
Energy	4	Teacher	2	Bad ground	1
Grave	3	Desk	2	Climate	1
Wreckage	3	Ghost	2	Fault fracture	1
Mobile toilet	3	Lost	1	Crack	1
Sadness	3				

When Table 4 is examined, it is seen that frequencies of all metaphors are included. According to the table, metaphors are collected in 34 different code headings. The most frequently repeated codes include swinging, death, tent, and friend codes, while the least repeated codes include sheet, bad ground, climate, fault fracture, and crack codes.

Table 5. Category Distributions Involving Codes of All Metaphors

Level of education	**Metaphor Categories**				
	***Tragic** Death (5), Tent (5), Grave (3), Wreckage (3), Mobile toilet (3), Winter (3), Disaster (2), Lost (1), Toy (1), Homeless (1)	***Emotional** Friend (5), Sadness (3), Parent (2), Teacher (2)	***Psychological** School building (4), Solidarity (3), Distance Education (3), Working Desk (2), Awareness (1), Chaos (1), Ambulance voice (1)	***Fictional** Ghost (2), Walking Giant (1)	***Scientific** Swinging (9), Energy (4), AFAD (4), Kizilay (4), Global warming (3), Internet (3) Sheet (1), Bad ground (1), Climate (1), Fault fracture (1), Crack (1)
3 years old	☺☺☺			☺	☺
4 years old	☺☺	☺		☺	☺
5 years old	☺☺☺	☺		☺	☺
3th grade	☺☺☺☺☺☺☺☺	☺☺			☺
4th grade	☺☺☺☺☺☺☺	☺☺☺			☺☺
5th grade	☺☺☺☺	☺☺	☺☺		☺☺☺☺☺
6th grade		☺	☺☺☺		☺☺☺☺☺☺☺
7th grade		☺	☺☺☺☺☺		☺☺☺☺☺☺☺
8th grade		☺	☺☺☺☺☺		☺☺☺☺☺☺☺
Total (N=90)	**N=27**	**N=13**	**N=15**	**N=3**	**N=32**

Table 5 reviews show that a total of 90 metaphors -tragic, emotional, psychological, fictional, and scientific- are collected in 5 category titles. Metaphors are in the scientific (n=32) category, while other categories are ranked in the form of tragic (n=27), psychological (n=15), emotional (n=13), and fictional (n=3) categories. According to the table, it is understood that preschool students are not frequently (n=3) in the scientific category and that elementary second-tier students are more (n=24).

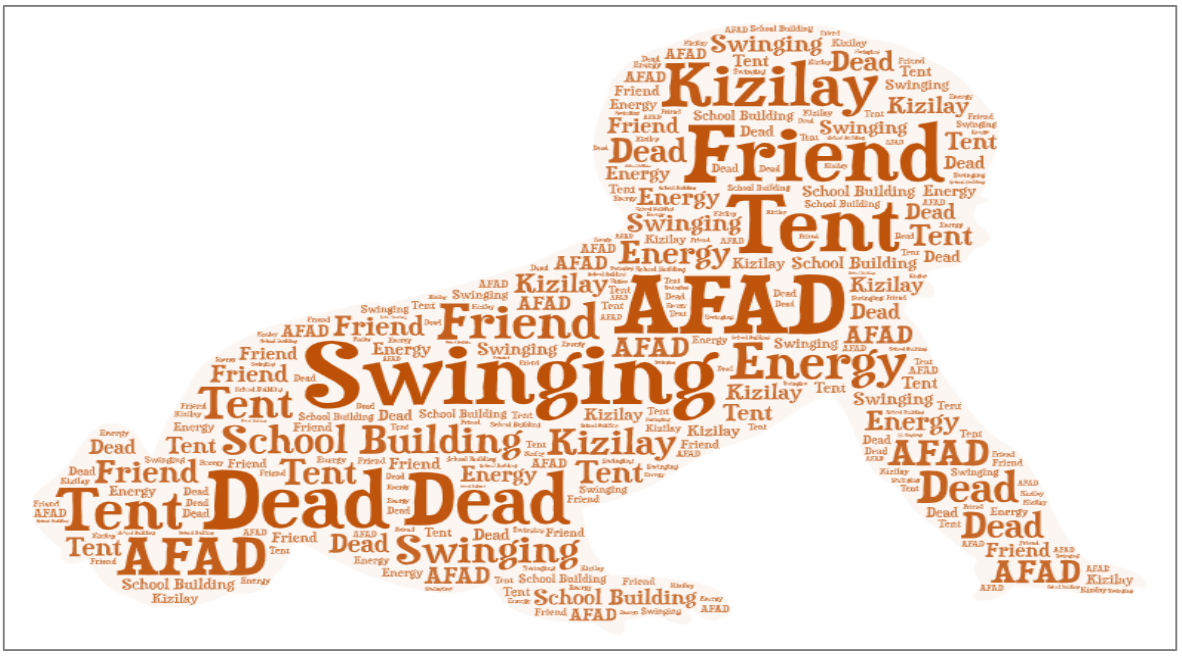

Figure 4. Frequently Used Metaphor Distributions As illustrated in Figure 4, it is seen that among the most commonly used metaphors by frequency values are death (n=5), tent (n=5), friend (n=5), school building (n=4), swinging (n=9), energy (n=4), AFAD (n=4) and Kizilay (n=4).

4. CONCLUSION AND DISCUSSION

The purpose of this research is to compare preschool, primary and secondary students' perceptions of earthquake-related metaphors. A total of ninety metaphors were obtained, according to findings from the study. The metaphors obtained were found to fall into five categories - tragic, emotional, psychological, fictional, and scientific.

When the metaphor categories were examined, they were reflected in the research findings that preschool, primary and secondary students often take place in certain categories (See Table 5). The fact that its scientific category contained 32 metaphors, more than any other, was among the most remarkable results. These results show that students scientifically grasp the concept of earthquakes. However, although there is a group of students who study

the phenomenon of earthquakes scientifically, the fact that the students identified were only in the secondary school and the measures needed to be taken in the aftermath of the earthquake led to different views (such as the tent, AFAD, Kizilay). So the fact that students in this age group scientifically express the phenomenon of earthquakes may also be an indication that students have gained knowledge by heart. This is because the prevalence of social networks in the digital age can make a person who has experienced an earthquake aware of the aftermath of an earthquake. A study in the literature (Simsek, 2007) stated that scientific statements are learned from television and supported this aspect of the study. Preschoolers and primary students in the 3 to 5-year-olds who are not often included in the scientific category confirm this interpretation. Whereas students should be informed about the scientific reality of each concept, starting with preschool. But the unscientific fictional expressions of students in the 3-5 age range are far from earthquake reality (ghosts, like the walking giant). However, the use of similar phrases by primary students requires a reconsideration of the science teaching program, along with early childhood science and math course-related attainments included in the preschool teaching program. However, it can be said that the extraction of the gains in the content of the updated science curriculum (refers to ways of protection in destructive natural events) negatively affects the importance given to the natural disaster issue. As well as, the lack of inclusive expression in the content of the science curriculum also showed one of the missing aspects of the program and resulted in the students staying away from scientific expressions. The inclusion of inclusive expressions in the preschool curriculum will support the next generation scientifically.

Like the carriages of a train, the training process progresses on the condition that each locomotive pulls each other (Bilge & Ayvaci, 2018). As noted in the literature study, it is clear that missing one factor at one grade level can negatively affect another grade level. The use of terms like "fault fracture," "sheet," and "crust" in scientific metaphor content reveals students' deficiencies in foundational knowledge (See Table 5). On the other hand, metaphors such as the tent, AFAD, and Kizilay include measures that can be taken following an earthquake, needs, and institutions that can get help. This has been interpreted as students not knowing the precautionary steps that should have been taken before the earthquake but knowing the precautionary steps that should have been taken in the aftermath of the earthquake. However, some students' use of scientific facts such as distorted urbanization,

building damage detection, earthquake bag preparation, measures that can be taken at the time of an earthquake, and the proliferation of high-rise buildings have contributed positively to the results of the research. However, to put it again, students have little awareness. Similar statements exist in the literature. It is known how difficult it is for every person on the street to be made aware of disasters. However, education is an important element in order for the society to take an effective role in reducing disaster damages (Altay, 2008; Kirikkaya, Unver & Cakin, 2011). In all levels of education, especially in preschool, earthquake awareness studies, which are enriched with drama, art and game works, should be done regularly (Tuncer, Sozen, Sakar, 2021). Therefore, in order to raise public awareness, inclusive education activities should be continued from pre-school.

Numerous natural disasters occurring in the country, such as a pandemic and an earthquake, have changed student demographics. According to this research finding, the needs of preschool, primary and secondary students post-earthquake have been differentiated. When these findings were examined more extensively, it was notable that preschoolers often featured in the tragic metaphor category. The fact that preschool students spelled out more deaths suggested that it was linked to death (presence or absence) as a concrete output of the earthquake. While primary students characterized the emotional extent of the earthquake as to lack of friends, primary second-tier pupils showed that the psychological effects of the earthquake prevented them from adapting to their lives as time went on because they could not adapt to studying due to a lack of factors such as school building and work desk. This suggests that students have a different attachment to concepts during the transition period from concrete to abstract thinking phase, and this commitment is in line with age group characteristics. It is clear that during the last childhood period (ages six to twelve), also known as middle childhood, children were more affected than their peers. In addition to supporting this finding, literature studies have emphasized that basic emotions such as fear, surprise and insecurity come to the fore in the preschool period (Erden & Gurdil, 2009; Erden, Erman & Oztan, 2011). Many of the studies examining the psychological effects of natural disasters on children have focused on symptoms of anxiety and depression (Cheng Liang, Fu & Liu 2018; Felix et al. 2011, Hansel, Osofsky & Osofsky, 2015). In order to see disasters as comprehensible situations at the level of society and individuals and to teach their vital requirements effectively to all individuals, inclusive education activities should be carried

out on the basis of society and individual (Tuncer, Sozen & Sakar, 2021). For this, it is time to develop fairer education and economic policies and more inclusive education programs (Karacaoglu et al. 2024).

Another remarkable finding, has been the resulting statements on remote education. As the finding suggests, there have been power outages in almost the entire earthquake zone, preventing remote education on internet networks from being an alternative option. However, in most of the literature research conducted during pandemic periods (Almaghaslah & Almayari, 2020; Alpaslan, 2020; Andoh et al, 2020; Chan et al., 2007; De Paepe et al., 2018; Fidan, 2020; Horspol & Lange, 2012; Kaden, 2020; Kocayigit & Usun, 2020; Coach, 2020; Yolcu, 2020) contrary to this finding, there are views that training can continue online. However, according to research results, this earthquake suggests that remote training cannot be used in every case of a natural disaster. Furthermore, beyond the inequality mentioned in the literature and issues such as the countryside (Ramos-Morcillo vd., 2020; Sercemeli & Kurnaz, 2020; Keskin & Ozer-Kaya, 2020), it has not been possible to find a building and instantly a tent city to provide electricity due to the complete demolition of the area due to the natural disaster. In one of the literature studies (Telli-Yamamoto & Altun, 2023), it was stated that remote education is vital for students in Turkey after the Kahramanmaraş base earthquake. This perspective has destroyed the existence of individuals with special requirements. Every child who goes on to education in the country does not need academic achievement alone, but children who are among the 1 310 605 special needs children and need to learn simple behaviors just to maintain their daily living activities, need lessons for practice and a teacher by adhering to it. Overall, individuals with autism, a vision disability, or a mental disability cannot be expected to complete remote education. Therefore, when it comes to the features that make remote education an alternative during natural disasters, the importance of developing lasting solutions for special-needs students should be remembered. While it is known in the literature that socioeconomically disadvantaged children do not have access to computers, tablets, internet or even television, it is also stated that they are excluded from the distance education process because they do not have a TV or tablets to access the content offered on EBA TV (TEDMEM, 2022). For this, it is essential that education environments and processes are inclusive for all children at every step taken (Tuzun, 2023). On the other hand,

it is essential to adopt the necessary education policies for education to be inclusive, qualified, supportive and democratic (Erbil, 2023).

The continued education training of students in combined classrooms in the container-tent environment has led to some negative consequences depending on the conditions of the district. Due to the continued importance of academic achievement in earthquake conditions, more importance was given to LGS students, while students at other levels were deprived of many courses such as science. The findings of the study concluded that students who stayed away from the school building limited the course of science to gamification due to their maturity below the level of the tier. There is a problem with the education system in Turkey as students preparing for LGS carry more exam anxiety than the destruction caused by the earthquake. A literature study by Karakus (2013) put forward the idea that being successful could help students build a tight bond in their lives. The interpretation of the literature study is similar.

This study showed that because student demographics are a rapidly changing country, there is a need for inclusive educational environments that adopt differentiated teaching based on the level of interest, need, and age of special needs students. That's why there needs to be inclusive printed material with a guidance qualification for teachers in unusual situations.

5. RECOMMENDATIONS

1. Since the metaphors obtained within the scope of the research move away from scientific expression, educators should prefer sentences that do not move away from academic language when explaining the events and phenomena that develop in daily life to their preschool students.

2. Since it is understood that the deficiencies of the primary school students related to the natural disaster are caused by the gains in the science program, it can be said that the science teaching program should be handled with an understanding of inclusiveness just like the preschool program.

3. Providing awareness services for all educators involved in both the in-service and pre-service period for students whose demographics are rapidly changing due to natural disasters will help ensure that the understanding of disaster awareness contained in targeted development policy content is sustainable.

4. Adverse conditions in the aftermath of the earthquake have significantly affected the alternative contribution of the transition to remote education. This has eliminated equality of opportunity in education for special-requirement students affected by natural disasters. Therefore, teaching modules that support inclusive education need to be presented with printed materials.

5. In the content of both preschool, primary and secondary all-tier pupil attainments, there is a need to develop activities where they can practice concerning the steps that need to be taken in the event of a disaster. It is proposed to develop guidance studies for improving and improving the psychology of students during and after an earthquake provided that their socio-psychological status is identified in advance for disaster-conscious educators to conduct these activities.

6. In the content of the educational program, which includes the subject of natural disasters, some recommendations may be offered for researchers who will provide literature support for interdisciplinary areas such as science, life knowledge, and social studies. Various studies will contribute to the literature to support the modification of teaching programs in line with the level of age, need, and interest of demographics addressed within the research.

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Conflict of Interest

There is no conflict of interest with any institution or person in the study.

Author(s) Contribution

All authors were involved in the concept, design, collection of data, interpretation, writing, and critical revising of the article. Therefore, the contribution rate of the authors is first author 35%, second author 35% third author 30%.

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