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Promoting Accessibility in Disaster Education: The Case of Primary School Students with Needs to Inclusive Education*

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Abstract

The status of inclusive education given to primary school students with special needs who receive inclusive education in the disaster education and management process in Turkey and where these students are in the disaster education and management process is an important question mark. The aim of this study is to examine the knowledge levels of primary school students with special needs receiving inclusive education about natural disasters. In line with this main purpose, the study sought answers to subproblems such as (1) recognizing disasters, (2) explaining the causes of disasters, (3) preventing disasters, (4) ways of protection from disasters of primary school students with special needs receiving inclusive education. In addition, it is among the aims to reveal the similarities and differences between the knowledge levels of primary school students with special needs receiving inclusive education at the same grade level and their peers with normal development regarding natural disasters. Case study design, one of the qualitative research approaches, was used in the study. In the study, it was concluded that primary school students receiving inclusive education had a moderate level of knowledge about the causes of natural disasters and the measures to be taken against these disasters; and that they had misconceptions at the point of recognizing disasters.

Keywords: Inclusive Education, Primary School, Disaster Education, Samsun

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Individuals start life and shape their lives by having their own developmental characteristics. According to Baykoç (2015, s. 19), human development covers many areas such as linguistic, social, sensory, mental and physical. The term individual with special needs can be defined as individuals who need additional support and arrangements, education and therapy compared to individuals with normal development in various mental, physical, emotional and speech areas. Autism spectrum disorder, attention deficit and hyperactivity disorder, language and speech disorders, individuals with hearing or visual impairment, individuals with physical disabilities and individuals with giftedness are defined as individuals with special needs (Varış & Hekim, 2017).

The right to education, one of the fundamental human rights, is protected by many international documents and laws. There should be no reason for individuals with special needs to be deprived of the right to education due to their condition (Bayar, 2015). Individuals with special needs should be provided with various opportunities in order to have the principle of equal opportunity in education. The education and opportunities given to these individuals are called "special education" (Aslan & Gönülal, 2023). Special education is designed in accordance with the special needs of the individual and focuses on developing the strengths of the individual, supporting their weaknesses and helping them socialize.

Today, the concept of "mainstreaming" is a very important concept in the field of special education. The philosophy underlying this concept is based on the principles of equal opportunity and normalization (Duran & Ülküer, 2021). Mainstream education is an approach that enables students with special needs to receive part-time or full-time mainstream education together with their peers with normal development in the same classroom environment. In this process, education is provided in accordance with the individual needs and learning styles of students (Şengül & Toptaş, 2021). In part-time mainstreaming education, the student with special needs receives education in a special education class. He/she participates in the class of his/her peers in the courses in which he/she can be successful. In full-time mainstreaming education, the student with special needs receives full-day education together with his/her peers with normal development according to the individualized education plan prepared for him/her. Inclusive education, which started in the USA in the 1970s, has started to be included in the education policies of many countries over time (Yazıcıoğlu, 2018). In the Republic of Turkey, mainstreaming education started with the "Law on Children in Need of Special Education" numbered 2916 in 1983 and became widespread with the "Decree Law on Special Education" numbered 573 in 1997 and the "Regulation on Special Education Services" put into force in 2000 (MEB, 2010).

Research on inclusive education reveals that many difficulties are experienced in this subject. The main obstacles are teachers' lack of materials and inability to allocate sufficient time to students with special needs due to the intensity of the general education curriculum, negative attitudes of families towards inclusive education, students' difficulties in the classroom due to their special needs, educators' reluctance to give up supportive education, and exposure to peer bullying (Şengün, 2023; Batmaz & Çermik, 2019; Cincioğlu, 2023). Like other students, disaster education and management are important topics of discussion for these students who need special support and services. In Turkey, which is a country open to most of the natural, technological and complex disasters in the world, there is the possibility of encountering disasters that cause physical and economic losses and psychological traumas,

which are unpredictable where, when and how they will occur (Avdar & Avdar, 2022). Throughout its history, Turkey has been exposed to many disasters and has been put to great tests in this regard. The 6 February 2023 earthquakes in Kahramanmaraş and Adıyaman once again showed how unprepared Turkey is in disaster education and management. Data indicate that children are the most affected group by disasters (Daşçı, 2024). Children face epidemic diseases, shelter, lack of healthy nutrition, physical, social and psychological problems after disasters (Gürbüz & Koyuncu, 2023). It is a reality that the difficulties faced by children with special needs in disaster situations are more than other individuals (Bilik & Akdağ, 2023).

The above-mentioned arguments are an important question mark where the disaster education given to individuals with special needs is in the disaster education and management process in Turkey, which faces the risk of experiencing many disasters, especially earthquakes. For this reason, in Turkey, which is constantly tested by disasters and the inadequacy of the efforts made in this regard is proved by the sufferings experienced, it is an important issue that children with special needs should gain self-protection skills in disasters in inclusive education; especially the presence of individuals with special needs in disaster preparedness studies should be among the priorities.

Purpose of the Study

The aim of this study is to examine the knowledge levels of primary school students with special needs receiving inclusive education about natural disasters. In line with this main purpose, the study sought answers to subproblems such as (1) recognizing disasters, (2) explaining the causes of disasters, (3) preventing disasters, (4) ways of protection from disasters of primary school students with special needs receiving inclusive education. In addition, it is among the aims to reveal the similarities and differences between the knowledge levels of primary school students with special needs receiving mainstreaming education at the same grade level and their peers with normal development regarding natural disasters. It is aimed to draw attention to the inclusion of decision makers and stakeholders in the process of disaster education and management and to contribute to the inclusion of gains related to disasters in individualized education plans.

Importance of Research

Early childhood covers the 0-8 years of human life, and a properly planned early childhood education is very important in terms of physical, intellectual and social-emotional development while helping children develop basic skills (United Nations International Children's Emergency Fund (UNICEF), 2024). Considering the difficulties experienced by individuals with special needs in society, the inclusion of these individuals in inclusion programs where their individual characteristics are prioritized is an important issue in increasing quality and access in early childhood education. Disaster education and management becomes more important especially in countries like Turkey, which face high rates of suffering due to disasters. Knowledge of children with special needs about natural disasters is an important argument in helping them to make the right decisions and protect themselves in dangerous situations. In addition, the sensitivity of society on this issue makes guiding researches in this field even more important.

Review of Related Literature

In literature, there are many independent studies on disaster education and inclusive education. However, there are very few studies on natural disasters conducted on inclusive students. Işıtan and Dayı (2020), in their study in which they took the opinions of teachers who have students with special needs in their classes, stated that students with special needs have difficulties in adapting to school rules, they experience difficulties such as being excluded by their peers, and that teachers want to receive consultancy from special education specialists to solve the problems they experience. Sadioğlu et al. (2012) stated that classroom teachers find parents of children with special needs indifferent towards their children. He emphasizes that teachers do not receive sufficient support from school administrations and guidance units. Inal et al. (2018), who emphasize that disaster education in Turkey is not given with a holistic approach, state that the United Nations Risk Reduction Strategy is seen as a deficiency in terms of the education curricula of developing countries. In his study, Uzunyol (2013) found that a significant portion of the participant students could not define natural disasters and could not make important determinations such as "loss of life and property". In addition, Başıbüyük and Pala (2023) point out that the outcomes of the curricula are insufficient in terms of disaster education, that there are only outcomes for disaster education in the Life Science Curriculum and suggest that disaster outcomes should be created for other units in a way that fits the logic. Odabaşı et al. (2023) drew attention to the importance of adapting the Riskland (Risky Area) Training Set, which was prepared in 2004 in cooperation with UNICEF and UNISDR, to disasters and hazards according to the social, geographical structures and cultures of the countries in order to increase disaster awareness.

In the literature, it is seen that the research on mainstreaming students mostly focuses on the difficulties encountered in mainstreaming education, and there is no literature on disaster education. In their study, Demir and Usta (2019) found that teachers welcomed mainstreaming education positively, but they had difficulty in finding materials that would fit the level of mainstreaming students. Duran and Ülküer (2021) pointed out that the academic achievements of both mainstreaming and normally developing students are more important than their developmental needs, and that there should be achievements according to individual differences. Seylim (2021) drew attention to the exclusion of mainstream students from education due to their exclusion by their peers in the classroom; he emphasized the negativity caused by the low number of teachers working in this field and frequent staff changes.

The Research Problem

The main purpose of this study is to examine the knowledge levels of primary school students with special needs about natural disasters. In line with this main purpose, answers to the following subproblems were sought.

1. Can primary school students with special needs receive inclusive education awareness of the natural disaster in the picture they, see?
2. What are the causes of natural disasters according to primary school students with special needs receiving inclusive education?

3. According to primary school students with special needs receiving inclusive education, can natural disasters be prevented and what are the ways of protection from these disasters?
4. What are the similarities and differences between the views of primary school students with special needs receiving mainstreaming education and their peers on awareness of natural disasters, causes of disasters, preventing disasters and protection from disasters?

Research Limitations

The research is limited to 16 students with special needs receiving inclusive education in five different primary schools affiliated to the Ministry of National Education in İlkadım, Çarşamba and Terme districts of Samsun province in the 2023-2024 academic year and 16 students with normal development receiving education in the same class. It was assumed that the students were sincere in their answers to the data collection tool and that they answered without being influenced by each other and that the information given by the teachers about the situation of mainstreaming students was correct.

Method

Case study design, one of the qualitative research approaches, was used in the study. According to Tavşancıl Tarkun (2000: 30), all perspectives are valuable for qualitative researchers. For this reason, the researcher does not seek the truth and the appropriate one but aims to understand the detailed perspectives of people and sees everyone as equal. Case study, which is one of the qualitative research models, is a distinctive approach used in the search for an answer to the scientific question that involves in-depth examination of that system using multiple data collection to collect systematic information about how a limited system functions and works (Chmiliar, 2010; Büyüköztürk et al., 2021).

Study Group

The study group of the research consisted of 16 students with special needs receiving fulltime inclusive education who were studying in 5 different primary schools affiliated to the Ministry of National Education in İlkadım, Çarşamba and Terme districts of Samsun province in the 2023-2024 academic year, and 16 normally developing primary school students randomly selected among the classmates of each inclusive student (Table 1). Convenience sampling was used in the selection of the research population. Convenience sampling is often used when it is not possible to use other sampling methods (Yıldırım & Şimşek, 2018). In order to make a healthier evaluation while measuring the knowledge levels of students with special needs receiving mainstream education about natural disasters, it was tried to make a comparison by interviewing their peers studying in the same class.

Table 1

Profile of the Research Group

Classroom	Gender	Students with Inclusive Education	Students with Normal Development	f	%
1st Class	Male	* K1, K2	**N1, N2	4	12,5
	Female	K9, K10	N9, N10	4	12,5
1st Class	Male	K3, K4	N3, N4	4	12,5
	Female	K11, K12	N11, N12	4	12,5

3rd Class	Male	K5, K6	N5, N6	4	12,5
	Female	K13, K14	N13, N14	4	12,5
4th Class	Male	K7, K8	N7, N8	4	12,5
	Female	K15, K16	N15, N16	4	12,5
Total				32	100

* **K**: Students with Inclusive Education
** ***N***: Students with Normal Development

Data Collection Tools

A semi-structured interview form was used as a data collection tool to examine the knowledge levels of students with special needs receiving inclusive education about natural disasters. In semi-structured interviews, the interviewer has a general road map about the subject. However, in this type of interview, the interviewer's questions and directions may change depending on the answers given by the participants according to their characteristics. In this way, different perspectives and different dimensions of the subject are tried to be revealed (Coşkun, Altunışık, & Yıldırım, 2007). In the preparation of the questions, the opinions of an academic expert and four classroom teachers were collected. According to DeMarrais (2004), the questions should be short, clear and understandable to get detailed answers from the participants. For this reason, short and understandable questions were selected so that students with special needs receiving inclusive education could understand them and the questions were supported with visuals.

Data Collection

Classroom teachers were informed in advance about how the interview would be conducted. For the students with special needs receiving mainstreaming education not to feel alienated and to express themselves more comfortably, the questions were asked by their teachers under the supervision of the researcher. Care was taken to ensure that the interview environment was quiet and that no one other than the students, the researcher and the classroom teacher was present, and the data collection period was kept short.

Data Analysis

The data collected in the study were analyzed by content analysis method. Content analysis is a technique that tries to identify human behaviors and their nature through non direct ways (Büyüköztürk et al., 2021). Content analysis is defined as the quantification counting of what people say and write; categorizing what is written and said and counting how often they occur (Simon & Burstein, 1985).

To increase the validity and reliability of the research, the data in the data collection tool were examined and analyzed by more than one researcher. To increase internal validity and to prevent observers' prejudices from affecting the research, it was deemed useful to conduct interviews with more than one person rather than a single person (Büyüköztürk et al., 2021).

Findings

The data collected after the application of the data collection tool to the research group was coded in the computer environment, and the themes and sub-themes collected for each problem are given below.

Table 2

Themes and Subthemes

Themes	Subthemes
Earthquake	Earthquake awareness Causes of earthquake Preventability of earthquake Protection of earthquake
Flood	Flood awareness Causes of flooding Preventability of flooding Protection of flooding
Landslide	Landslide awareness Causes of landslides Preventability of landslides Protection of landslides
Avalanche	Avalanche awareness Causes of avalanches Preventability of avalanche Protection of avalanche
Storm	The storm awareness Causes of the storm Preventability of the storm Protection of storm
Tornado	Tornado awareness Causes of a tornado Preventability of tornado Protection of tornado
Hurricane	Hurricane awareness Causes of a hurricane Preventability of hurricane Protection of hurricane
Tsunami	Tsunami awareness Causes of tsunamis Preventability of tsunami Protection of tsunami
Forest Fire	Forest fire awareness Causes of forest fire Preventability of forest fire Protection of forest fire
Volcano Eruption	Volcanic eruption awareness Causes of volcanic eruption Preventability of a volcanic eruption Protection of volcanic eruption
Erosion	Erosion awareness Causes of erosion Preventability of erosion Protection of erosion

Findings Related to the Subtheme of Earthquake Awareness

Table 3

The Awareness of Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Recognize Earthquake by Looking at Visuals

Theme	Subtheme	Code	SIE*	f	%	SND**	f	%
Earthquake	Earthquake awareness	Aware	K1,K2,K3,K4, K5,K6,K7,K8, K11,K12,K13, K14,K15,K17	14	87,5	N1,N2,N3,N4, N5,N6,N7,N8, N9,N10,N11,N12, N13,N14, N15, N16	16	100
		Unaware	K1, K2, K14, K15, K16	2	12,5	-	-	-
		Total		16	100		16	100

* **SIE:** Students with Inclusive Education
SND: Students with Normal Development

As seen in Table 3, 87.5% of the students with special needs receiving mainstreaming education were able to be aware of the earthquake when they looked at the visual. All of their peers in the same class were able to be aware of the earthquake.

Findings Related to the Subtheme of the Earthquake Causes

Table 4
According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Causes of the Earthquake

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Earthquake	Causes of earthquake	Shaking	K3, K6, K11, K12, K16	5	31	N3, N8, N9, N13	4	25
		Building shaking and demolition	K1, K2, K14, K15, K16	5	31	N9, N14	2	12
		I don't know	K4, K5, K9, K10	4	25	N2, N11, N12	3	18
		Fault throw	K7	1	6	N1, N5, N6, N7, N15, N16	6	37
		Solar-induced	K8	1	6	-	-	-
		Pollution of nature		-	-	N4	1	6

According to Table 4, students with special needs receiving mainstreaming education see shaking (31%) and building collapse (31%) as the cause of the earthquake. Only one student with special needs sees fault rupture as a cause. According to students with normal development, fault rupture (25%) is the most common cause of earthquake. While the similarity between the students with special needs receiving mainstreaming education and the student with normal development is high in the shaking code, the similarity is low in the fault rupture code.

In the interviews, the opinions of the students on the sub-theme of why the earthquake occurred are given below:

K1: "It happens when buildings shake. Buildings collapse." K6: "An earthquake happens when everything shakes." K7: "It happens when the pipe in the ground breaks. "K8: "It happens from the sun." K11: "It happens when the earth shakes. It happens when the lamps shake. "K14: "Children die. Houses shake. When the light shakes at home, we realize it is an earthquake." K16: "Lamps shake, buildings shake, plates shake." N4: "It happens because people pollute nature." N6: "The fault line shakes with the accumulation of energy under the soil. Earthquakes occur in the regions where the fault line passes. The more energy accumulated, the bigger the earthquake." N7: "There is something like a pipe under the ground. When it shakes, buildings collapse."

Findings Related to the Subtheme of the Earthquake Preventability and Protect from Earthquake

Table 5

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Preventability and Protect from Earthquake

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Earthquake	Earthquake preventability	Unpreventable	K1,K4,K6,K8,K11, K12,K13,K14,K15,K16	10	62	N2,N6,N8,N11 N12,N13,N14,N16	8	50
		Preventable	K2,K3,K5,K7	4	25	N1,N3,N5, N7, N10,N15	6	37
		I dont know	K9,K10,K14	3	18	N9	1	6
	Prevention of earthquake	Drop-cover-hold on	K5,K11,K15	3	18	N3,N4,N11	3	18
		Earthquake emergency kit	K1,K7,K16	3	18	N3,N10,N13	3	18
		Go out	K5,K16	2	12	-	-	-
		Hide under the table	K15,K16	2	12	-	-	-
		Build a solid house	K16	1	6	N1,N15	2	12
		Open an umbrella	K7	1	6	-	-	-
		Go to the safe place	K13	1	6	-	-	-
		Not be close to windows	K11	1	6	-	-	-
		Build a rail house	-	-	-	N4,N5,N7	3	18
		Build a low-rise house	-	-	-	N5,N6,N15	3	18
		Make earthquake cabin	-	-	-	N3,N4	2	12

According to Table 5, 62% of the students with special needs receiving mainstreaming education and 50% of their peers with normal development think that the earthquake cannot be prevented. The opinions of the students in both groups are close to each other in the question of the preventability of the earthquake. Students with special needs receiving inclusive education and their peers with normal development responded with the same rate (18%) to the question of ways to protect themselves from earthquakes: preparing an earthquake / an emergency kit with the collapse-trap hold movement. The codes of going out and hiding under the table were not found in the students with special needs receiving inclusive education and their peers with normal development. The codes of building a house with a rail system, low-rise house, cabin was seen in students with normal development, but not in students with special needs.

Students' views on the sub-theme of ways of protection from earthquakes are given below:

K1: "It cannot be prevented, but we can take precautions. Let's make an emergency kit " K7: "Yes. We prepared an earthquake kit. We can open an umbrella to survive the earthquake. An umbrella protects us." K11: "No. We should do crouch-cover-hold. Let's not approach the window." K16: "It cannot be prevented. We go outside, we go under the table. An emergency kit is taken. I make the house strong. "K13: "No. We should calmly go to a safe place and wait for the earthquake to end." N3: "Yes. We should do duck, cover and hold. We should make cabins hide at home in case of an earthquake. We should make earthquake bags." N4: "We cannot prevent it. Let's not pollute nature. We can buy an earthquake bed with a cabin. Let's

build houses with rails like the Japanese. We should make collapse-trap-hold." N5: Yes. We should build houses with a rail system. Let's not build stores and tall buildings. Two, three stores are enough."

Findings Related to the Subtheme of Flood Awareness

Table 6

The Awareness of Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Recognize the Flood by Looking at Visuals

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Flood	Flood awareness	Aware	K1,K3,K4,K5, K6,K7,K8,K9, K11,K13,K14,K16	12	75	N1,N2,N3,N4,N5,N6,N7, N8,N10,N11,N12, N13,N14, N15, N16	15	93
		Unaware	K2,K10,K12,K15	4	25	N9	1	7
		Total		16	100		16	100

According to Table 6, the rate of recognizing the flood disaster by looking at the visual is high in both groups (above 75%).

Findings Related to the Subtheme of the Flood Causes

Table 7

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Causes of the Floods

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Flood	Causes of Flooding	Lots of rain	K1,K3,K4,K5,K6, K7,K8,K11,K12, K13,K15,K16	12	75	N1,N4,N5,N6, N7,N8,N10,N11, N12,N13,N14,N15	12	75
		I don't know	K2,K10,K14	3	18	N9	1	6
		Stream overflow	K5	1	6	N6,N8,N13, N14,N16	5	31
		Waterlogging	K9	1	6	N2	1	6
		Dam burst	-	-	-	N3,N5	2	12
		Pipes burst	-	-	-	N7	1	6
		Snow melt	-	-	-	N1	1	6
		Lack of trees	-	-	-	N1	1	6

According to Table 7, students with special needs who receive mainstreaming education and their peers with normal development mostly (75%) see too much rain as the cause of the flood. It is also seen that the code for flooding is equal in both groups. According to the codes of dam bursting, pipe bursting, snow melting and not planting trees, students with special needs receiving mainstreaming education were not observed, while their peers with normal development were observed.

Findings Related to the Subtheme of the Flood Preventability and Protect from Flood

Table 8

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Preventability and Protect from Flood

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Flood	Preventability of flooding	Unpreventable	K1,K3,K4,K5,K6, K8, K9, K11,K13,K14	10	62	N2,N4,N6, N8,N11,N13,N15	7	43
		Preventable	K7,K12, K15,K16	4	25	N1,N3,N5,N7, N10,N14,N16	7	43
		I dont know	K2,K10	2	12	N9	1	6
		Go home-stay home	K7,K12	2	12	N10	1	6

	Drain the water	K8,K16	2	12	-	-	-
	Emergency kit	K1,K10	2	12	-	-	-
	Make a big hole and pit	K11	1	6	N6	1	6
	Ask for help by phone	K15	1	6	N3	1	6
	Get on the roof	K3	1	6	-	-	-
	I'll run away	K5	1	6	-	-	-
	Wait to die	K4	1	6	-	-	-
Protection of flooding	Go high	K14	1	6	-	-	-
	Not building houses by the stream/sea	-	-	-	N1,N12,N13	3	18
	Build a dam	-	-	-	N5,N16	2	12
	Plant a tree	-	-	-	N11,N16	2	12
	Build your house on high ground	-	-	-	N15	1	6
	Lifebelt	-	-	-	N3	1	6
	Open the drain	-	-	-	N12	1	6
	Robust pipe	-	-	-	N7	1	6

According to Table 8, most students with special needs receiving inclusive education (62%) see the flood disaster as unpreventable. In students with normal development, the codes of preventable and unpreventable equal (43%). While students with special needs receiving mainstreaming education mostly see going home-stay at home, draining the water and preparing an emergency kit as a way of protection from floods (12%), students with normal development mostly see not building houses near the stream/sea (12%) as a way of protection from floods.

Student views on the sub-themes of flood prevention and ways of protection from floods are given below:

K1: "*We cannot prevent it. Let's prepare an emergency kit." K4: "No. We cannot do anything. We should wait to die." K8: "We cannot stop the flood, but we can throw the water with a bucket." K11: "No. We cannot get help from anyone. We have to make big holes in the ground to prevent flooding." N3: "Yes. I should call 112. We should buy a life jacket." N13: "No. We should park our vehicles in safe places. We should not build buildings near streams and the seaside.*"

Findings Related to the Subtheme of Landslide Awareness

Table 9

The Awareness of Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Recognize Landslide Disaster by Looking at Visuals

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Landslide	Landslide awareness	Aware	K1,K5,K7, K8,K13,K16	6	37	N1,N4,N5,N6,N7,N8 N10,N11,N15,N16	10	62
		Unaware	K2,K3,K4,K6,K9,K10, K11,K12,K14,K15	10	62	N2,N3,N9, N11,N13,N14	6	37
		Total		16	100		16	100

According to Table 9, in the sub-theme of recognizing landslide disaster by looking at the visual, the majority (62%) of the students with special needs receiving inclusive education could not recognize the landslide, while most of their peers with normal development (62%) recognized the landslide.

Findings for the Subtheme of the Landslide Causes

Table 10

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Causes of the Landslide

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Landslide	Causes of landslides	Soil slipped	K1,K6,K7,K8,K16	5	31	N8,N10	2	12
		I don't know	K2,K9,K10,K14	4	25	N2,N3,N4,N9,N14	5	31
		Too much rain	K1,K7	2	12	N1,N5,N6,N12, N15,N16	6	37
		Due to earthquake	K4,K13	2	12	N13	1	6
		because of the fraying of the houses	K3,K11	2	12	-	-	-
		Snow/ avalanche	K15	1	6	N11	1	6
		Due to wind	K12	1	6	-	-	-
		Due to sound	-	-	-	N7	1	6
		Due to deforestation	-	-	-	N1	1	6
		No terracing	-	-	-	N1	1	6

According to Table 10, while the majority of the students with special needs receiving inclusive education (31%) see landslides as the cause of landslides, most of the students with normal development 37%) see too much rain as the cause of landslides. Student views on the sub-theme of the causes of landslides are given below:

N1: "*The soil slides. It slides because it rains a lot. It becomes watery." K11: "Since the houses were demolished, the soil fell on the roads." K12: "When there is wind, it shakes the soil. It starts to spill." K13: "When there is an earthquake, the soil shakes and collapses." N1: "When it rains a lot, it gets muddy everywhere because they did not plant trees. They did not build balconies (terraces) on the mountains.*"

Findings Related to the Subtheme of the Landslide Preventability and Protect from Landslide

Table 11

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Preventability and Protect from Landslide

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Landslide	Preventability of landslides	Unpreventable	K1,K3,K4,K5,K6, K8,K11,K12,K13	9	56	N1,N10, N11,N13	4	25
		Preventable	K7,K16	2	12	N4,N5,N6,N7,N8, N12,N15,N16	8	50
		I dont know	K2,K9,K10, K14,K15	5	31	N2,N3, N9,N14	4	25
	Protection of landslides	Plant a tree	K1	1	6	N1,N6,N7,N8, N12,N15,N16	7	43
		Set stones/lay wall	K16	1	6	N4,N5	2	12
		Call AFAD*	K5	1	6	-	-	-
		Stay at home	K7	1	6	-	-	-
		Run away from home	K11	1	6	-	-	-
		Pray	K12	1	6	-	-	-
		Go to the safe place	K13	1	6	-	-	-
		Not building a house next to a mountain	-	-	-	N1,N5,N13	3	18

Terracing	-	-	-	N1,N16	2	12
Make a nice road	-	-	-	N11	1	6
Build your house on high ground	-	-	-	N15	1	6

*AFAD: Disaster and Emergency Management Presidency

According to Table 11, the majority (56%) of the students with special needs receiving mainstreaming education see landslides as unavoidable, while most of their peers with normal development see landslides preventable (50%). Plant a tree is seen as the code with the highest difference between the groups.

The opinions of the students on the sub-theme of preventability of landslides and ways of protection are given below:

K5: "*No. We should run away. Let's call AFAD." K7: "Yes. We ran. We will stay in our house." K11: "No. We should run away from home immediately." K16: "Yes. We can put stones. We can arrange stones." N1: "No. If we plant trees, mud will not come to the houses. We should build balconies (terraces) on the mountains. We should not build houses next to the mountains." N16: "Terracing is prevented by afforestation*."

Findings Related to the Subtheme of the Avalanche Awareness

Table 11

The Awareness of Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Recognize Avalanche Disaster by Looking at Visuals

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Avalanche	Avalanche awareness	Aware	K2,K3,K4,K6, K8,K9,K10,K11 K12,K14,K15	11	68,7	N2,N4,N9	3	18,7
		Unaware	K1,K5,K7,K13,K16	5	31,2	N1,N3,N5,N6,N7,N8, N10,N11,N12,N13, N14,N15,N16	13	81,2
		Total		16	100		16	100

According to Table 12, the ability to recognize the avalanche disaster when looking at the visual is low (68.7%) in students with special needs receiving mainstreaming education, while it is high (81.2%) in their peers with normal development.

Findings Related to the Subtheme of the Avalanche Causes

Table 13

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Causes of the Avalanche

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Avalanche	Causes of Avalanche	I don't know	K2,K4,K6,K8, K9,K10,K14,K15	8	50	N2,N4,N9,N11	4	25
		Snow fell/snow slipped	K1,K3,K7,K12,K16	5	31	N7,N8,N10,N15,N16	5	31
		Too much snow	K1	1	6	N1,N5,N6,N13,N14	5	31
		Sound/echo/noise	K5	1	6	N3,N5,N6,N15	4	25
		Due to wind	K11	1	6	-	-	-
		Due to earthquake	K13	1	6	-	-	-
		Melting snow	-	-	-	N12	1	6

According to Table 13, most of the students with special needs (50%) stated that they did not know the cause of the avalanche disaster. The number of students who defined it as

falling or sliding snow is equal in both groups (31%). While one student with special needs mentioned sound/echo/noise as the cause of avalanche, four students with normal development mentioned it as the cause. Student views on the sub-theme of how the avalanche is formed are given below:

K1: "*A lot of snow breaks from above and starts to slide." K3: "Someone skied. He dropped the snow." K13: "When the mountains shake in an earthquake, an avalanche falls." N5: "If we make a noise when it snows a lot, like a scream, then the avalanche will fall." N7: "A piece of snow breaks off. It grows and falls. It destroys houses*."

Findings Related to the Subtheme of the Avalanche Preventability and Protect from Avalanche

Table 14

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Preventability and Protect from Avalanche

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Avalanche	Preventability of avalanche	Unpreventable	K1,K3,K4,K5, K6,K8,K11,K13	8	50	N11,N13,N14	3	18
		Preventable	K7,K12,K16	3	18	N1,N3,N5,N6,N8, N10,N12,N15,N16	9	56
		I don't know	K2,K9,K10, K14,K15	5	31	N2,N4,N7,N9	4	25
	Protection of avalanche	I'll run away	K1,K7,K1,	3	18	N11	1	6
		Don't build a house next to a mountain	K16	1	6	N7,N13,N15	3	18
		Build set/wall cover	K12	1	6	N8,N12	2	12
		Hide	K5	1	6	-	-	-
		Go to a safe place	K13	1	16	-	-	-
		Plant a tree	-	-	-	N1,N6,N16	3	18
		Be quiet	-	-	-	N3,N6,N16	3	18

According to Table 14, most (50%) of the students with special needs receiving inclusive education consider avalanche disaster as unpreventable, while the majority (56%) of their peers with normal development consider it as preventable. The don't know code is close in both groups. The opinions on the sub-themes of avalanche being preventable and ways of protection are given below:

K1: "*We cannot prevent it. When we see the avalanche, we should run in the other direction." K11: "No. We should run away quickly." K13: "No. We should go where there is no avalanche. "N3: "Yes, if we are quiet, it will not fall. We should go on tiptoe." N5: "Yes. Police and gendarmerie should tell tourists going to the mountain not to shout." N8: "We build a wall where the avalanche will come*."

Findings Related to the Subtheme of Storm Awareness

Table 15

The Awareness of Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Recognize Storm by Looking at a Visual

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Storm	Storm awareness	Aware	K1,K3,K4, K6,K7, K11,K13,K16	8	50	N1,N3,N4,N5, N6,N7,N8,N11, N12,N13,N15,N16	12	75

	Unaware	K2,K5,K8,K9, K10,K12,K14,K15	8	50	N2,N9,N10,N14	4	25
	Total		16	100		16	100

According to Table 15, 50% of the students with special needs receiving mainstream education recognized the storm. Most peers with normal development (75%) recognized the storm.

Findings Related to the Subtheme of Causes of the Storm

Table 16

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Causes of the Storms

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Storm	Causes of Storms	Due to wind	K1,K3,K4, K6,K7,K11, K12,K13,K16	9	56	N1,N3,N4,N5, N6,N7,N8,N12 N13,N15,N16	11	68
		I don't know	K2,K9,K10,K14	4	25	N2,N9,N10,N14	4	25
		Due to rain	K8,K15	2	12	N11	1	6
		Due to soil	K5	1	6	-	-	-

According to Table 16, most students with special needs receiving inclusive education (56%) and their peers with normal development (68%) see the wind as the cause of the storm. The don't know code is equal in both groups. The opinions of the students on the sub-theme of how the storm is formed are given below:

K4: "*It is formed by wind. We need a lot of wind." P8: "It rained very badly. The seas overflowed and hit the land." P15: "It was a flood; it happens when there is a lot of rain*."

Findings Related to the Subtheme of the Storm Preventability and Protect from Storms

Table 17

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Preventability and Protect from Storms

Theme	Sutheme	Code	SIE	f	%	SND	f	%
Storm	Preventability of the storm	Unpreventable	K1,K3,K4,K5, K6,K11,K12,K13	8	50	N5,N6,N7,N8,N11, N12,N13,N15,N16	9	,6
		Preventable	K7,K8,K15	3	18	N1,N4	2	2
		I don't know	K2,K9,K10,K14,K16	5	31	N2,N3,N9,N10,N14	5	,1
	Protection of the storm	Plant a tree	K1	1	6	N1	1	,-
		Hold on to the tree	K3	1	6	-	-	-
		Run home	K4	1	6	-	-	-
		We can't take precautions	K5	1	6	-	-	-
		Spontaneously ends	K6	1	6	-	-	-
		Stay at home	K7	1	6	-	-	-
		Build a fence	K8	1	6	-	-	-
		Go indoors	K13	1	6	-	-	-
		Ask for help by phone	K15	1	6	-	-	-
		Adhesive shoes	-	-	-	N4	1	,-
		Follow the weather forecast	-	-	-	N7	1	,-

	Building a sturdy house	-	-	-	N11	1	-
	Not building a house by the sea	-	-	-	N15	1	-
	Parking your car far away	-	-	-	N13	1	-

According to Table 17, most of the students with special needs receiving inclusive education (50%) and their peers with normal development (56%) think that the storm is inevitable. The answer "I don't know" is equal in both groups. The opinions on the sub-theme of preventability of the storm and ways of protection are given below:

K3: "*We can save ourselves by holding on to the tree." K6: "No. If we tell the wind to go, it cannot go. It will gradually exhaust itself and go away." K15: "Yes. We can call someone on the phone, but I don't know the number." N4: "Yes. We can make sticky shoes. Since the storm is cold, we should have thick clothes." N5: "We can't. The wind happens by itself. People should be warned by sending a message." N7: "No. We should not go out when the weather tells us not to go out*."

Findings Related to the Subtheme of the Tornado Awareness

Table 18

The Awareness of Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Recognize the Tornado Disaster by Looking at the Visual

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Tornado	Tornado awareness	Aware	K1,K5,K7,K8, K9,K11,K13, K14,K16	9	56,2	N1,N2,N3,N5,N6,N7, N8,N10,N12,N13, N14,N15,N16	13	81,2
		Unaware	K2,K3,K4,K6, K9,K12,K15	7	43,8	N4,N9,N11	3	18,7
		Total		16	100		16	100

According to Table 18, while the recognition and non-recognition of tornadoes by students with special needs receiving mainstreaming education were close to each other, most of their peers with normal development (81%) recognized the tornado.

Findings Related to the Subtheme of the Cause of Tornado

Table 19

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Causes of the Tornado

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Tornado	Cause of tornado	I don't know	K2,K4,K9,K12,K15	5	31	N2,N4,N8,N9,N12	5	31
		Due to the wind	K1,K13,K16	3	18	N1,N5,N7,N13, N14,N15,N16	7	43
		Convergence of storms	K7,K10,K11	3	18	-	-	-
		It happens at sea	K6,K14	2	12	N13,N16	2	12
		Lots of rain	K3,K8	2	12	N11	1	6
		The earth becomes round	K5	1	6	-	-	-
		Wind merges with rain	-	-	-	N3	1	6
		Rotating of air	-	-	-	N6	1	6
		Clouds puffing up	-	-	-	N10	1	6

According to Table 19, when asked about the cause of the tornado, the proportion of students who said that they did not know and that it was in the sea (31%) was equal in both groups. The number of students who said that the tornado was caused by the wind was higher in the students with inclusive education than in the students with normal development. The number of students with special needs receiving inclusive education who said that tornadoes occur due to too much rain is higher than their peers with normal development. The opinions of the students on the sub-theme of how the tornado is formed are given below:

K1: "*The wind turns round and round and makes a tornado." K5: "The soil grows by making a circle." K7: "Many storms form by turning together." K14: "A cyclone forms at sea. It kills people." N3: "When strong wind and water mix together, a tornado occurs." N10: "As the clouds rotate, they get bigger and bigger, and a tornado forms*."

Findings Related to the Subtheme of the Tornado Preventability and Protect from Tornado

Table 20

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Preventability and Protect from Tornado

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Tornado	Preventability of tornado	Unpreventable	K1,K3,K4,K5, K6,K8,K10,K11, K12,K13,K14	11	68	N1,N2,N3,N6,N7, N8,N10,N11,N12, N13,N14,N15,N16	13	81
		Preventable	K7	1	6	N5	1	6
		I don't know	K2,K9,K15,K16	4	25	N4,N9	2	12
	Protection of tornadoes	Go away – run away	K7,K11	2	12	N1,N13	2	12
		Do not go out	K7	1	6	N3	1	6
		Build a sturdy house and roof	K13	1	6	N5	1	6
		Plant a tree	K1	1	6	-	-	-
		Pray	-	-	-	N10,N11	2	12
		Making a house	-	-	-	N1	1	6
		Take shelter in a safe place	-	-	-	N15	1	6

The code "tornado can be prevented" is at an equal rate in both groups. In both groups, the codes of getting away or running away, don't go out, build a strong house or roof are at equal rates. The code "Plant a tree" was seen in students with special needs receiving inclusive education, but not in their peers with normal development. In the interview, students' opinions on the sub-theme of the prevention of tornadoes and ways of protection are given below:

K1: "*We can't prevent it. But if we plant a tree, the tornado will hit it, it will prevent it from passing." K7: "Yes. We should run away from the cyclone. We should not go outside. If it comes to our house, we should run to someone else's house." K11: "No. Let's park the cars and run away. "N1: "We cannot prevent it. It sucks everything in. Let's not build houses where there is a tornado. We should get away." N10: "It cannot be prevented. God will prevent it. If we pray, it will not happen again*."

Findings Related to the Subtheme of Hurricane Awareness

Table 21

The Awareness of Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Recognize the Hurricane Disaster by Looking at the Visual

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Hurricane	Hurricane awareness	Aware	K2,K3,K4,K5,K6, K7,K8,K9,K10,K11, K12,K13,K14,K15,K16	15	93,7	N1,N2,N3,N4,N7, N9,N10,N11 N12,N13,N14,N15	12	75
		Unaware	K1	1	6,3	N5,N6,N8,N16	4	25
		Total		16	100		16	100

According to Table 21, the rate of not recognizing the hurricane is high in both groups.

Findings Related to the Subtheme of Causes of Hurricane

Table 22

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Causes of the Hurricane

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Hurricane	Causes of the hurricane	I don't know	K2,K7,K9,K10 K12,K14,K16	7	43	N1,N2,N4,N9, N10,N11,N13,N14	8	50
		Fire and smoke	K3,K4,K6,K8,K15	5	31	N16	1	6
		Very stormy	K1,K13	2	12	-	-	-
		Rolling soil	K5	1	6	-	-	-
		Black cloud	K11	1	6	-	-	-
		Strong wind		-	-	N5,N6,N8,N12	4	25
		The tornado has grown	-	-	-	N7,N15	2	12

According to Table 22, students with special needs receiving inclusive education and most of their peers with normal development said that they did not know the cause of the hurricane. The code of smoke because there was a fire was more common among students with special needs receiving inclusive education (31%) than among their peers with normal development (6%). Student views on the sub-theme of the causes of the hurricane are given below:

K1: "It happens when there are a lot of storms." K3: "It is dark. They made a fire, and it got dark because of the smoke." K5: "The earth rolls up." N3: "It happens when clouds mix with water and wind." N16: "It happens with forest fires."

Findings Related to the Subtheme of the Hurricane Preventability and Protect from Hurricane

Table 23

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Preventability and Protect from Hurricane

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Hurricane	Preventability of hurricane	Unpreventable	K1,K4,K5,K6, K11,K12,K13	7	43	N5,N6,N7,N8 N15,N16	6	37
		Preventable	K3,K8	2	12	-	-	-
		I don't know	K2,K7,K9,K10, K14,K15,K16	7	43	N1,N2,N3,N4,N9,N10 N11,N12,N13,N14	10	62

		I pour water	K3,K8	2	12	-	-	-
		Build a house far away	K1	1	6	-	-	-
	Protection of hurricane	Build a house far away	K13	1	6	-	-	-
		Build a shelter	-	-	-	N5	1	6
		I'll run away	-	-	-	N7	1	6
		Build a sturdy house	-	-	-	N15	1	6

According to Table 23, according to the students with special needs receiving inclusive education, the codes of hurricane cannot be prevented, and I don't know (43%) are at equal rates. The code "hurricane can be prevented" was seen only in students with special development. Most of the students with normal development (62%) gave the answer "I don't know". The codes of building a house away and go to a safe place, which were found in students with special needs receiving inclusive education, were not found in students with normal development. The opinions of the students on the sub-themes of ways of protection from hurricanes are given below:

K1: "*We cannot prevent it. Let's build our houses far away." K3: "Yes. We should pour water on the fire." K7: "It was in the Old Turkish book, but I forgot." K8: "I attach a hose to the tap. I spray water on it." N5: "It cannot be prevented. But shelters can be built under the houses." N16: "No. The electricity poles next to our house and our house must be strong.*"

Findings Related to the Subtheme of the Tsunami Awareness

Table 24

The Awareness of Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Recognize the Tsunami Disaster by Looking at the Visual

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Tsunami	Tsunami awareness	Unaware	K1,K2,K3,K4,K7, K8,K9,K10, K11,K12 K13,K14,K15,K16	14	87,5	N2,N9,N10, N11,N12,N13, N14,N15	8	50
		Unaware	K5,K6	2	12,5	N1,N3,N4,N5, N6,N7,N8,N16	8	50
		Total		16	100		16	100

According to Table 24, most of the students with special needs receiving inclusive education (87.5%) did not recognize the tsunami, while half of the students with normal development did.

Findings Related to the Subtheme of Causes of Tsunami

Table 25

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Causes of the Tsunami

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Tsunami	Causes of Tsunami	I don't know	K2,K5,K9 K10,K14,K16	6	37	N2,N9,N10, N11,N14	5	31
		The sea overflowed from too much rain	K8,K11,K15	3	8	N13	1	6
		Water from the sea	K3,K6,K7	3	8	-	-	-
		Flooded	K1,K4	2	12	-	-	-
		Waves collided and merged	K13	1	6	N4,N12	2	12
		Due to much wind	-	-	-	N5,N6,N7,N8,N15	5	31

	Due to whales	-		-	-	N3	1 6

According to Table 25, the majority of the students in both groups did not know the causes of the tsunami. The code of overflowing of the seas due to too much rain is higher in students with special needs receiving inclusive education (8%) compared to their peers with normal development (6%). The codes of water from the sea and flooding seen in students with special needs receiving inclusive education are absent in their peers with normal development. The students' views on the sub-theme of the cause of the tsunami are given below:

K3: "*Water came from the sea." K7: "Something gushes out of the sea." K11: "The sea destroyed the houses. It rained a lot and the sea overflowed." N1: "There was an earthquake in the water." N3: "If whales go fast, giant waves are formed." N4: "It happens when waves collide with each other in the ocean. It happens mostly in Japan." N6: "It happens when the waves in the ocean get bigger and bigger with strong winds.*"

Findings Related to the Subtheme of the Tsunami Preventability and Protect from Tsunami

Table 26

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Preventability and Protect from Tsunami

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Tsunami	Preventability of tsunami	Unpreventable	K3,K4,K5, K6,K12,K13,K1	7	37	N1,N3,N4,N5,N6, N7,N8,N12,N13,N16	10	62
		Preventable	K1,K7,K8	3	18	N15	1	6
		I don't know	K2,K9,K10, K11,K14,K16	6	37	N2,N9,N10, N11,N14	5	31
	Protection of tsunami	Build a house away from the sea	K7	1	6	N1,N13,N15	3	18
		Send SOS message from the phone	K15	1	6	N5	1	6
		Build a sturdy house	K1	1	6		-	-
		We must escap	K3	1	6		-	-
		Build a wall	-	-	-	N4	1	6

According to Table 26, most of the students in both groups see the tsunami as unpreventable. Students with special needs receiving inclusive education (18%) were more to see it as preventable than their peers with normal development (6%). The codes of "we should build a strong house" and "we should run away" seen in students with special needs receiving inclusive education were absent in their peers with normal development. In both groups, telephone help and message codes were equally common. The opinions of the students on the sub-themes of the tsunami being preventable and ways of protection are given below:

P3: "*No. We should get in the car and run away." P6: "We cannot prevent it. Nothing like this happened in Turkey." P8: "Yes. If there are many people with me, we can release a hose and draw the water." P12: "No. If we try to prevent it, we will die." N4: "No. We build walls that never collapse. The waves will hit it." N5: "It cannot be prevented. We need a warning message on the phone.*"

Findings Related to the Subtheme of Forest Fire Awareness

Table 27

The Awareness of Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Recognize Forest Fire by Looking at Visuals

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Forest Fire	Forest fire Awareness	Aware	K1,K2,K4,K5,K6, K7,K8,K9,K11,K12, K13, K14, K15, K16	14	87,5	N1,N2,N3,N4,N5, N6,N7,N8,N9,N10, N11,N12,N13, N14,N15,N16	16	100
		Unaware	K3,K10	2	13,5	-	-	-
		Total		16	100		16	100

According to Table 27, 87.5% of the students with special needs receiving mainstreaming education recognize forest fires, while all of their peers with normal development recognize forest fires.

Findings Related to the Subtheme of the Forest Fire Causes

Table 28

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Causes of the Forest Fire

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Forest fire	Forest fire causes	Build a fire	K3,K4,K6,K7,K9, K12,K14,K15,K16	9	56	N1,N6,N8,N9, N11,N12,N14	7	43
		Shards of glass	K1,K5,K13	3	18	N10,N15	2	12
		Unextinguished picnic fire	K8,K11	2	12	N7,N13,N15	3	18
		I don't know	K2,K10	2	12	-	-	-
		Plane crash	-	-	-	N11	1	6
		Match drop	-	-	-	N3	1	6
		Villagers	-	-	-	N4	1	6
		Carelessness	-	-	-	N7	1	6
		Rubbish dispose	-	-	-	N13	1	6
		Drought	-	-	-	N16	1	6

According to Table 28, students with special needs who receive mainstreaming education and their peers with normal development see human causes (lighting fires, glass shards, falling airplanes, falling matches, villagers, carelessness, littering) as the causes of forest fires. The students' views on the sub-theme of how forest fires occur are given below:

K1: "*They threw glass in the forest and left. The sun reflects on it and a fire starts." K6: "If we light a fire in the forest and do not put it out, there will be a fire." K8: "If a person goes to the forest for a picnic and makes a fire there, the forests will burn. K9: "It starts to burn red." K14: "When a fire is lit in the forest, the forest burns." N1: "If an aero plane crashes, it burns. It happens if they light a fire in the forest and do not put it out." N3: "A match falls on the ground during a picnic. A fire starts." N4: "Villagers set it on fire." N7: "It happens due to carelessness. People who go on picnics do not extinguish the fire." N13: "Because they leave rubbish on the picnic, because they do not put out the fire*."

Findings Related to the Subtheme of the Forest Fire Preventability and Protect from Forest Fire

Table 29

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Preventability and Protect from Forest Fire

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Forest fire	Preventability of forest fire	Unpreventable	K2,K6,K7,K8, K12,K13,K14 K15,K16	9	56	N1,N2,N3,N4,N5,N6, N7,N8,N10,N12, N13,N14,N15,N16	14	87
		Preventable	K1,K3,K4,K5,K11	5	31	N9,N11	2	12
		I dont know	K9,K10	2	12	-	-	-
	Protection of forest fire	Call the fire brigade	K7,K11,K12,K13, K14,K15,K16	7	43	N8,N10,N12,N16	4	25
		Pour water	K2,K4,K8	3	18	N1,N2,N14,N16	4	25
		Fire lighting	K1	1	12	N1,N4,N11	3	18
		I'll run away	K3	1	12	-	-	-
		Call AFAD	K5	1	12	-	-	-
		Don't go to the forest	K7	1	12	-	-	-
		Put out the picnic fire	-	-	-	N6,N7,N13,N15	4	25
		No littering	-	-	-	N5,N11	2	12
		Plant a tre	-	-	-	N14	1	6
		Call the forester	-	-	-	N9	1	6

According to Table 29, the rate of prevention of forest fires is high in both groups. Students with special needs receiving inclusive education who think that forest fires cannot be prevented are higher than their peers with normal development. The codes of pouring water and making fire are higher in students with special needs receiving inclusive education than in their peers with normal development. Student opinions on the sub-theme of preventability of forest fires and ways of protection are given below:

K1: "*It cannot be prevented. We should call 112." K5: "It cannot be prevented. We should call it AFAD." K7: "Yes. We call the fire brigade. Let's not go to the forest." K11: "No. We should call the fire brigade. They should not smoke and throw it on the ground." K15: "Yes. We call the fire brigade. I think it was 112." N1: "Yes. We should call 112 and ask them to put it out. Helicopters should pour water. We should not light a fire in the forest." N4: "Yes. Villagers should not light fires in the forest." N9: "We should call the forester." N15: "Yes. We should extinguish the fire we light and see in the forest*."

Findings Related to the Subtheme of the Volcanic Eruption Awareness

Table 30

The Awareness of Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Recognize Volcano Eruption by Looking at Visuals

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Volcano Eruption	Volcano eruption awareness	Aware	K1,K3,K5,K6,K7, K8,K10,K11, K13,K15,K16	11	68,7	N1,N2,N3,N4,N5, N6,N7,N8,N10, N11,N13,N15,N16	13	81,2
		Unaware	K2,K4,K9,K12,K14	5	31,3	N9,N12,N14	3	18,8
		Total		16	100	-	16	100

According to Table 30, the rate of recognizing volcano eruption is high in both groups.

Findings Related to the Subtheme of the Volcanic Eruption Causes

Table 31

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Causes of the Volcanic Eruption

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Volcano Eruption	Causes of volcano explosion	I don't know	K2,K3,K4,K9, K14,K16	6	37	N2,N9, N12,N14	4	25
		Lava-fire-magma emergence	K1,K8 K12,K13	4	25	N4,N6,N7 N8,N10,N16	6	37
		Boom!	K10,K11	2	12	-	0	0
		The mountain is hot	K11	1	6	N1,N11,N13	3	18
		They threw fire	K7	1	6	-	-	-
		The mountain is swollen and bursting	K15	1	6	-	-	-
		Earthquake on the mountain	K13	1	6	-	-	-
		Spark stone merged	K15	1	6	-	-	-
		Due to the weather gets colder	-	-	-	N5	1	6
		The mountain woke up	-	-	-	N10	1	6

According to Table 31, most of the students with special needs (37%) receiving inclusive education do not know the causes of volcano eruption. Most of the students with normal development (37%) see lava-fire-magma as the cause of volcano eruption. Student views on the sub-theme of the causes of volcano eruption are given below:

K7: "*It explodes when people throw fire into the cave inside the volcano." K8: "Before the fire comes out, there is a sound, lava gushes out." P11: "When the mountain gets too hot, it explodes like a boom." K13: "When there is an earthquake, the mountain trembles and fires come out of it." K15: "The mountain swelled, swelled and exploded." N1: "It happens when the mountain gets very hot." N3: "When the spark combines with stones, the volcano erupts." N6: "When the lava trapped underground explodes and comes to the surface." N10: "Sleeping mountains wake up and lava comes out. Smoke comes out." N15: "The fires in the magma come to the surface*."

Findings Related to the Subtheme of the Volcanic Eruption Preventability and Protect from Volcanic Eruption

Table 32

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Preventability and Protect from Volcanic Eruption

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Volcano Eruption	Preventability of volcanic eruption	Unpreventable	K1,K3,K5,K6, K8, K11, K12, K13,K15	9	56	N1,N2,N4,N6,N7, N8,N11,N12, N13,N14	10	62
		Preventable	K7,K10	2	12	N5,N10	2	12
		I don't know	K2,K4,K9, K14,K16	5	31	N9	1	6
	Protection of volcanic eruption	We must escape	K3,K5,K7,K13	4	25	N15	1	6
		We pour water	K10	1	6	N3	1	6

No action can be taken	K12	1	6	N15	1	6
Help by phone	K15	1	6	-	-	-
Call the fire brigade	K12	1	6	-	-	-
Not building a house	-	-	-	N1-N7	2	12
Build a dam	-	-	-	N3	1	6
Close the lid	-	-	-	N4	1	6
Metal wall	-	-	-	N5	1	6
Blow it out with the wind	-	-	-	N10	1	6
Deforestation	-	-	-	N13	1	6

According to Table 32, most of the students in both groups see the volcano eruption as unpreventable. The number of students with special needs receiving inclusive education who answered "I don't know" is higher than the students with normal development. Students with special needs receiving mainstreaming education were more likely to say that they should run away (25%) than students with normal development 6%). The codes for asking for help by phone and calling the fire brigade were not observed in students with special needs receiving mainstream education. Student views on the sub-theme of the volcano being preventable and ways of protection are given below:

K3: "*No. We have to escape from there." K10: "Yes. We need to extinguish it with water." K11: "No. Let's call the fire brigade 112." K12: "No. If we prevent it, we will burn." P15: "No. My father will buy me a phone. I will make a phone call, but I don't know who to call." N1: "No. We should not build a house next to the volcano. If it erupts, we should escape from the house without taking anything." N3: "Yes. Let's build a dam next to the volcano. Water will extinguish it." N4: "No. Let the workers close the mouth of the volcano with a lid." N5: "Yes. Let's build a metal wall." N10: "It can be prevented. A strong wind will blow the lava away. "N13: "No. Let's not build forests next to the volcano." N15: "No. We can't take precautions. I'll run away.*"

Findings Related to the Subtheme of the Erosion Awareness

Table 33

The Awareness of Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Recognize Erosion by Looking at Visuals

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Erosion	Erosion awareness	Aware	K1,K12,K16	3	18,8	N3,N5,N6,N7,N8 N12,N13,N15,N16	9	56
		Unaware	K2,K3,K4,K5,K6, K7,K8,K9,K10, K11,K13,K14,K15	13	81,2	N1,N2,N4,N9, N10,N11,N14	7	44
		Total		16	100		16	100

According to Table 33, the rate of erosion recognition of students with special needs receiving inclusive education (18.8%) is low, while the rate of erosion recognition of students with normal development (56%) is higher.

Findings Related to the Subtheme of the Erosion Causes

Table 34

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Causes of the Erosion

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Erosion	Causes of erosion	Dehydration	K1,K8,K11, K12,K13,K16	6	37	N1,N3,N4, N6,N7,N12	6	37
		I don't know	K2,K9,K10, K14,K15	5	31	N2,N9,N10	3	18
		Soil cracked	K4,K11	2	12	N1,N6,N11	3	18
		The floor is broken	K3,K6	2	12	-	-	-
		Due to the heat	K5	1	6	N1,N8,N13	3	18
		Due to much rain	K7	1	6	-	-	-
		Due to little rain	-	-	-	N8,N13,N15	3	18
		Plant scarcity	-	-	-	N12	1	6
		Groundwater is scarce	-	-	-	N5	1	6
		Loss of fertile soil	-	-	-	N16	1	6

According to Table 34, the reason for erosion being due to lack of water equal (37%) in both groups. Students with special needs receiving inclusive education gave the answer "I don't know" more than the students with normal development. The codes of less rain, lack of plants, decrease in groundwater, loss of fertile soil seen in students with special needs receiving mainstreaming education were not seen in students with normal development. Student views on the sub-theme caused by erosion are given below:

K1: "*It's because of thirst." K3: "The floors are broken. The plane fell and broke the ground." K4: "Cars travelled too much on the road. The soil cracked." K7: "Too much rain has opened the gaps between the soil. People fall under the soil." K8: "There was water here. The water dried up and the soil became like this." K11: "The soil is cracked. It cracks when there is no rain." K13: "It happened because of lack of water." K15: "I watched it on TRT Çocuk, but I don't remember." K16: "There was a drought. Drought happens when the water runs out." N1: "The ground dried up because of the heat. The water in the streams is running out. That's why it cracks." N5: "It happens because people spend too much water." N12: "It happens when water and plants decrease." N16: "It happens when the fertile part of the soil is lifted into the air.*"

Findings Related to the Subtheme of the Erosion Preventability and Protect from Erosion

Table 35

According to Students with Special Needs Receiving Inclusive Education and Their Peers with Normal Development to Preventability and Protect from Erosion

Theme	Subtheme	Code	SIE	f	%	SND	f	%
Erosion	Preventability of erosion	Unpreventable	K1,K3,K4,	5	31	N4,N13	2	12
		Preventable	K7,K8,K11, K12,K13,K14	6	37	N1,N3,N5,N6,N7, N8,N12,N15,N16	9	56
		I dont know	K2,K5,K9, K10,K14 K6,K15	5	31	N2,N9,N10, N11,N14	5	31
		I pour water	K8,K11,K12,	5	31	N3,N4,N8,N15	4	25

		K13,K16					
	It must rain	K15	1	6	-	-	-
	No action can be taken	K7	1	6	-	-	-
Protection of erosion	Step away from the earth	K7	1	6	-	-	-
	Plant flowers and trees	-	-	-	N1,N3,N6,N8,N12	5	31
	Using water consciously	-	-	-	N1,N5,N7,N16	4	25
	Using the soil consciously	-	-	-	N16	1	6

According to Table 35, the rate of erosion being preventable is high in both groups. Students with special needs receiving a mainstreaming education (31%) are more likely than students with normal development (12%) to say that it cannot be prevented. The opinions of the students on the sub-themes of preventability of erosion and ways of protection are given below:

K7: "*Yes. Let's stay away from the land. Let's go to other lands." K8: "Yes. We need to put in more water." K11: "Yes. Let's pour water." K15: "No. It needs to rain." N1: "We can prevent it. We should not take water from the streams." N3: "Yes. We pour water, plant flowers, plant trees." N16: ": Yes. It is prevented by conscious irrigation and conscious use of soil.*"

Conclusion and Discussion

In this research, primary school students with special needs receive inclusive education and their peers with normal development regarding the recognition of natural disasters, their causes, and protective measures. Thus, it is aimed to make a strong case for ensuring access to disaster education specifically for people with students with special needs receiving inclusive education. The findings indicated that these students recognized earthquake (87.5%), forest fire (87.5%), and flood (75%) as the most prevalent types of natural disasters. This finding aligns with Taş's (2003) study, which demonstrates that students who encounter natural disasters enhance their awareness of the subject matter and derive educational benefits from it. Moreover, the recognition of earthquakes as a significant disaster is believed to be associated with the prevalence of such disasters in Turkey and the regular media coverage of their impacts (Karabulut & Bekler, 2019; Erbil, 2023).

The least recognized disaster types by the students with special needs receiving inclusive education were erosion (18.2%), tsunami (12.5%) and hurricane (6.3%). When the recognition rates of disaster types in students with normal development are ranked from small to large, it is seen that erosion (56%), tsunami (50%) and hurricane (25%) are the same disaster types in both groups. Kayıran (2023) emphasized that tsunami and erosion disasters were the least informed in illustrated children's books. This indicates that the degree of awareness concerning disasters, which receives insufficient attention within the curriculum of educators for children, as well as in literature and audiovisual resources, is likewise limited. Furthermore, it is believed that the erosion recognition rates are low due to the geographical area inhabited by the students involved in the study, characterized by abundant rainfall and dense forest. As well as the diminishing likelihood of tsunamis and hurricanes.

It was determined that students with special needs receiving inclusive education did not have a high level of knowledge about the causes of disasters. This finding is not in parallel with Pakalın and Mersin (2023)'s finding that students with special needs receiving inclusive education do not have sufficient safety skills that they should use in disasters due to their different disabilities.

The finding on the preventability of disaster types shows a significant difference between the two participant groups. Students with special needs receiving inclusive education have higher rates of earthquakes (62%> 50%), floods (62%> 43%), landslide (56%> 25%) avalanche (50%> 18%), hurricane (43%> 37%), fire (31%> 12%) and erosion (31%> 12%) as unpreventable disasters than students with normal development. The majority of students with special needs receiving inclusive education see forest fire (56%) and erosion (37%) as preventable. In students with normal development, forest fire (87%), erosion (56%), landslides (75%) and avalanche (82%) disasters are seen as preventable.

It was concluded that the two groups of participants did not have sufficient knowledge about the preventability of hurricane disasters. This result is like the study of Bayer Kurt and Özçakır Sümen (2023) in which students concluded that earthquake, storm, tornado, hurricane, tsunami and volcano eruption cannot be prevented, while flood, landslide, avalanche, fire and erosion can be prevented by taking precautions. It was observed that the concept of collapse-trap-hold and emergency/earthquake bag were not well understood in both groups. It was determined to be 18% in both groups. This result is in parallel with the studies of Adanalı et al. (2022) and Doğan and Kırkıncıoğlu (2020), who concluded that the purpose of the emergency bag was not comprehended in their studies, and that there was not enough information about the collapse-trap-hold technique. In addition, it was concluded that the type of disaster with the least common code in both groups was storm.

The responses regarding the use of an umbrella for earthquake protection, the act of pouring water into a hurricane, the classification of a hurricane as smoke, and the closure of lids to prevent volcanic eruptions illustrate the misconceptions students hold concerning disaster protection. The textbooks used can cause misconceptions (Renner et al, 1990) and textbooks need to be improved on natural disasters (Komac et al., 2013).

Recommendations

In the light of these results, the following suggestions are offered promoting accessibility in disaster education to be given to students with special needs receiving inclusive education.

Suggestions for Teachers

By prioritizing the need for students to better understand the concepts of natural disasters, attention-grabbing visuals, 3D animation films, narrations with effects and computer games such as word well can be used in the lessons to increase children's disaster awareness.

Game-based outdoor disaster training should be included in lesson plans. Learning environments should be prepared by doing, experiencing and having fun.

Suggestions for Teacher Educators

Natural disaster simulation trucks such as AFAD Earthquake Simulation trucks should be prepared in cooperation with institutions and organizations and used in natural disaster education in schools. Disaster training should also be given to parents who will help students with special needs receiving inclusive education in case of a crisis. Families should be ensured to participate in drills in schools.

Suggestions for Decision Makers

School evacuation plans should be prepared and updated considering the situation of students with special needs receiving inclusive education.

Natural disaster acquisitions should be increased in individualized lesson plans prepared for students with special needs receiving inclusive education. Disaster drills in schools should be planned according to the situation of students with special needs receiving inclusive education and should be systematized by conducting them at regular intervals. Through mass media; what should be done before, during and after natural disasters should be covered in cartoons and children's programs in a way to attract the attention of students.

Suggestions for Measurement and Evaluation Experts

Textbooks should include up-to-date information about natural disasters and should be free from factors that may cause misconceptions. Activities such as solving puzzles, riddles and sketches related to natural disasters should be included more in the textbooks.

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Conflict of Interest

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Ethical Committee Decision

This study has Ondokuz Mayıs University Social and Human Sciences Ethics Committee approval (GU Ref No: 2024/798)