


Evaluating The Turkish Textbooks In Terms Of Sufficiency Of Disaster Education

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Abstract

This study evaluated the appropriateness of disaster-themed texts and activities in Turkish textbooks for disaster education competence. The evaluation was based on the criteria established by the United Nations International Strategy for Risk Reduction (UNISDR) for the education curricula of developing countries. The method used for the study was document analysis, with content analysis used to analyze the data. The sample of the study consists of Turkish textbooks. Expert opinion was sought for validity, while inter-rater agreement was determined for reliability (Reliability = 90%). The study revealed that the texts and activities in Turkish secondary school textbooks are inadequate in reflecting regional and local hazards, vulnerabilities, and the possible effects of disasters in terms of disaster education competence. Particularly, texts at the 6th-grade level are unsatisfactory in creating the desired behavior due to the type of text used. Furthermore, disaster risk reduction is not discussed in most of the texts, highlighting the insufficiency of Turkish textbooks. Even though disaster-themed texts are included in Turkish textbooks, they fail to create a holistic consciousness for disaster education that covers the before, during, and after aspects of disasters. As a result, it can be concluded that Turkish textbooks are inadequate in terms of disaster risk reduction and disaster education in general.

Keywords

Disaster education, Cross-curriculum discipline, Textbooks, UNISDR.

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INTRODUCTION

A disaster is a natural, technological, or human-induced event that results in physical, economic, and social losses for the whole society or certain segments. Additionally, a disaster stops or interrupts normal life and human activities, and the coping capacity of the affected society is not enough to handle it (Disaster and Emergency Management Authority [AFAD], 2014, p. 23). Turkey is a country that experiences disasters frequently. Every year, one or more disasters, such as earthquakes, landslides, avalanches, or floods, are witnessed throughout the country (AFAD, 2018). In the Kahramanmaraş earthquake on 6 February 2023, over 48,000 people lost their lives, and more than half a million buildings were damaged (Presidency of Strategy and Budget, 2023).

Disaster education aims to increase citizens' awareness about hazards and risks and inform people and institutions about the activities carried out in all stages of disaster (risk reduction, preparation, response, and recovery) to minimize the damages affecting society (Coppola & Maloney, 2009). In disaster education, disaster risks and hazards of their environment should be explained to individuals, and information should be given about the institutions where they can get help during and after the disaster (Tanaka, 2005).

Awareness training and capacity-building programs on disaster risk are vital in developing resilience against disasters. Two action plans have been initiated by United Nations International Strategy for Risk Reduction (UNISDR, 2005) to reduce disaster damages and increase society's resistance to disasters. The first plan is the Hyogo Framework for Action (HFA, 2005-2015), an international program defining actions to reduce disaster risks (UNISDR, 2005). The program emphasized the critical importance of disaster education in schools, and the need to include disaster risk reduction content in school curricula was also highlighted (UNISDR, 2007). The second plan is the Sendai Action Plan (2015-2030), which aims to create a disaster-resilient society. Turkey has approved both of these international strategies.

In 2010, the Japan International Cooperation Agency (JICA) and the Ministry of National Education [Millî Eğitim Bakanlığı (MEB)] signed a protocol for the 'School-Based Disaster Education Project' in Turkey. The 'School-Based Disaster Education Project' project aimed to promote disaster education in the country. To achieve this, this project involved comparing curricula in Japan and Turkey, evaluating educational materials, creating in-class activity plans, reorganising disaster and emergency plans in schools, and implementing them more effectively (Özmen & İnce, 2017). The project provided teachers and school administrators face-to-face and online training, including disaster awareness and proactive response to disasters. The ultimate goal was to create a culture of preparedness for disasters throughout Turkish society by ensuring that schools, teachers, students, and parents all gained awareness of disasters. In this way, the project aimed to establish standardized disaster training and ensure its sustainability.

According to Davis et al. (2003), formal education received by children in schools is crucial in enhancing disaster awareness because the knowledge acquired can be effectively disseminated to society. However, children are one of the most vulnerable groups during disasters worldwide. Therefore, it is imperative to educate children about disasters, the risks they pose in their region, and methods for reducing these risks from an early age (Peek, 2008).

Disaster education is a cross-curriculum discipline introduced into the Turkish curriculum in 2006. The curriculum, constructed with a constructivist approach, aims to develop multidimensional skills in

students and assist in the realisation of course outcomes through intermediate disciplines associated with the main discipline (Taş, 2010). The objective is for students to integrate and apply the knowledge and skills acquired in different school and social life disciplines. In the Turkish curriculum (MEB, 2006), the theme of "disaster education and safe life" was established as a cross-curriculum discipline. However, upon further examination, it was discovered that only the 7th-grade textbook included the topic "Explains the reasons for what should be done in closed and open areas during landslides," indicating that disaster education was not structured to cover all grades, regional hazards, sensitivities, or disaster risk reduction at the desired level (Kansızoğlu, 2014).

In the 2018 revised curriculum, it was emphasized that Turkish textbooks were structured according to the thematic approach. One of the themes deemed appropriate to be covered in the Turkish curriculum and to be included in teaching materials is the theme of "Nature and the Universe." Among the topic suggestions related to this theme is the topic of "natural disasters" (MEB, 2019). Primary school age is the most appropriate period for students to gain disaster awareness (Özgüven, 2006). It has been reported that regional disaster awareness and preparations of students at different levels of education are insufficient (Adanalı et al., 2022; Şahin et al., 2018). Primary and secondary school teachers attach importance to disasters and training related to disasters and welcome the integration of the subject with teaching (Demirdelen & Çakıcı, 2021; Bulu, 2023). However, although teachers care about disaster education, they consider themselves inadequate in disaster preparedness for various reasons (inadequate materials, not integrating the course with the expectations and outcomes of disaster education) (Çelik & Gündoğdu, 2022).

To foster a secure community, the materials crafted for disaster education should target enhancing knowledge and skills related to preparedness, protection against, and prevention of risky situations. Every year, Turkey experiences various disasters, such as earthquakes, floods, and landslides. In the event of a disaster, the awareness of society plays a crucial role in dealing with the situation. One of the recommendations made by UNSDR in 2007 for increasing disaster awareness and reducing disaster risk is to incorporate disaster education into the education system. In the Turkish lessons, disasters are taught as a cross-curricular discipline. To provide a comprehensive and interdisciplinary approach to disaster education, creating texts and activities that relate to the subject in a manner that supports disaster education will help to reinforce students' sensitivity towards this issue. The most commonly used material in Turkish lessons is the textbook. Programme achievements are tried to be realised through textbooks. Therefore, the texts and activities in the textbook must be structured for the purpose. This study examined whether the texts and activities in Turkish textbooks reflect the knowledge and skills related to disasters and disaster risk reduction. In this way, it aims to contribute to structuring the disaster subject in Turkish lessons by international standards by evaluating whether the contents in the textbooks are sufficient in terms of disaster education. For this purpose, the criteria related to formal education prepared by the United Nations International Strategy for Risk Reduction (UNISDR) and reflecting the expectations of developing countries regarding disaster education in curricula were used, and the following problem was sought:

1. Do secondary school Turkish textbooks (5th-8th grade) align with UNISDR criteria for disaster education?

METHOD

Research Model

This study was conducted to evaluate the appropriateness of disaster-themed texts and activities in Turkish textbooks regarding disaster education competence. The evaluation was based on the criteria established by the United Nations International Strategy for Risk Reduction (UNISDR) for the education curricula of developing countries. The texts and activities in Turkish textbooks were analysed using the document analysis technique, a qualitative research method. In document analysis, the researcher systematically collects written sources such as books, newspapers, and magazines related to the research and evaluates them systematically (Merriam, 2018).

Sample

The research analysed the Turkish textbooks (grades 5 to 8) approved by the Ministry of National Education for the academic year 2022-2023. All the texts and activities in the textbooks were inspected to determine if they included any disaster-related content. The contents that reflected disaster-related information were assessed based on the predetermined international criteria.

Table 1

Turkish Textbooks Analysed in the Study

Grade	Author(s)	Publication	Content related to disaster education
5th	Şule ÇAPRAZ BARAN, Elif DİREN	Anittepe	Yes
6th	Nihal ERTÜRK, Seray KELEŞ, Damla KÜLÜNK	MEB	Yes
6th	Mehmet Ozan SARIBOYACI	ATA	Yes
6th	Gülten ERKEK, Kadir DURU, Murat PASTUTMAZ, Sabri CEYLAN	MEB	Yes
7th	Ahmet AKGÜL, Ali UYSAL, Duygu KARADAŞ, Ebubekir GÜRCAN, İlkay KARAHAN, Nurcihan DEMİRER	MEB	No
7th	Emine KIRMAN, Seda YAĞIZ, Tolga KIR	MEB	No
7th	Hilal ERKAL, Mehmet ERKAL	Özgün	Yes
8th	Hilal ESELİOĞLU, Sıdıka SET, Ayşe YÜCEL	MEB	Yes

Table 1 shows no content related to disaster education in two different 7th-grade Turkish textbooks of MEB Publication. Therefore, these books were not included in the sample.

Data Collection

Data were obtained from textbooks. Official and unofficial documents prepared for curricula on educational issues can be examined (Patton, 2002). The United Nations International Strategy for Risk Reduction (UNISDR, 2007) prepared seven (7) questions that should be used in evaluating the education curricula of developing countries regarding disaster education. Three of these seven questions aim to analyse formal education in terms of disaster education.

In a general question form prepared for formal education curricula, these items were reorganised as a checklist to examine the texts and activities in the Turkish textbook. The data obtained were evaluated according to the criteria in the checklist. Firstly, the original questions were translated into English-

Turkish bilaterally and checked by a field expert. The following questions are related to the UNISDR curriculum (2007, p. 65):

1. Does the curriculum reflect hazards and vulnerabilities in both national and local scales? Does it make the information locally relevant by focusing on the social, economic and environmental dimensions of hazards and on wider public exposure to risk where students and their families live?
2. Does the primary school curriculum communicate information in an appealing manner (e.g. through games, field trips, dramatic arts and other forms of student engagement)?
3. Do schools and other learning centres engage external speakers and experts, and seize opportunities to bring together younger and older generations to discuss disaster risk reduction?

The above-mentioned general items were reorganised for the texts and activities in the Turkish textbooks. Five experts in the field were consulted to ensure that the reorganised items were appropriate in terms of language expression and scope. The characteristics of the experts are as follows:

Table 2

The characteristics of the experts

List	Gender	Experience	Education	Expert field
1	Female	19	Master	Turkish education
2	Female	14	Master (ongoing)	Turkish education
3	Male	20	PhD	Educational science
4	Female	12	Master	Turkish education
5	Female	14	PhD (ongoing)	Classroom education

The questions generated six items initially. However, with the expert opinions, the number of items increased to eleven. The experts reviewed the items and provided feedback. The form correction process was repeated until all experts agreed. For instance, the original Q1 was lengthy and contained multiple evaluations. Therefore, it was split into two, then four, and finally, six items. The second question generated two items, while the third question produced three items. Table 3 displays the items designed to assess the disaster education competence of Turkish textbooks regarding their text and activities.

Table 3*Disaster Education Sufficiency Checklist for Turkish Textbooks*

Items for question 1	Yes	No
I1. Do the texts on disaster in Turkish textbooks reflect regional and local hazards and vulnerabilities in terms of disaster education?		
I2. Do the activities in the disaster-themed texts in Turkish textbooks reflect regional and local hazards and vulnerabilities in terms of disaster education?		
I3. Do the texts on disaster in Turkish textbooks focus on the social, economic, and environmental effects of hazards at regional and local scales in terms of disaster education?		
I4. Do the activities in the texts on disaster in Turkish textbooks focus on the social, economic, and environmental effects of hazards at regional and local scales in terms of disaster education?		
I5. Do the texts on disasters in Turkish textbooks provide information at the local level in terms of disaster education when students and their families are more exposed to risks in the region where they live?		
I6. Do the activities in the disaster-themed texts in Turkish textbooks lead students and their families to obtain information at the local level (about what will happen) when they are more exposed to risks in the region where they live in terms of disaster education?		
Items for question 2		
I7. Are the texts on disasters in Turkish textbooks structured to provide the desired behaviour in terms of disaster education (visuals, font, content information, message, other forms to attract students' attention)?		
I8. Do the activities in the texts on the disaster in Turkish textbooks convey information for the desired behaviour (through games, field trips, dramatic visuals, and other forms to attract students' attention)?		
Items for question 3		
I9. Do the texts on disasters in Turkish textbooks discuss disaster risk reduction in terms of narration? (In terms of showing witnesses, comparison, discussion, conflict elements)		
I10. Do the activities in the disaster-themed texts in Turkish textbooks encourage students to benefit from external speakers and expert individuals and organisations?		
I11. Do the texts and/or activities in the Turkish textbooks provide opportunities to bring together older and younger generations to discuss disaster risk reduction?		

Analysis

Content analysis was used to analyse the data. With content analysis, the texts and activities in the textbooks were evaluated and interpreted according to the determined criteria. In this way, it is aimed to reach concepts or relationships that can explain the data (Yıldırım & Şimşek, 2013). The data obtained in content analysis can be coded and digitised in various ways (Balci, 2016). The texts and activities in the textbooks were analysed one by one in terms of the adequacy of disaster education and coded as "1" for the appropriate ones and "0" for the inappropriate ones and classified as present (1)/absent (0). For the validity and reliability of the study, the text units and visuals obtained were analysed separately by two different researchers. At last, common views were determined by coming

together. The formula $[\text{Reliability} = \text{Consensus}/(\text{consensus}+\text{disagreement}) \times 100]$ was used for reliability (Miles & Huberman, 1994). There are eight themes in Turkish textbooks. There are four texts in each theme. A total of 192 texts in six textbooks were analyzed. Accordingly, disaster content was identified in eight texts in the textbooks, and each text was evaluated according to 11 criteria. Reliability = $80/88 \times 100 = 90\%$ and this result was considered sufficient for reliability. For the evaluations with disagreement, common views were determined by coming together at the last stage.

RESULTS

This section presents the findings and analysis of the data collected from documents related to the sufficiency of disaster education. The study evaluated the texts and activities in the textbooks based on specific criteria for disaster education. Samples that met the criteria were coded as 1, indicating their presence, while samples that did not meet the criteria were coded as 0, indicating their absence. The results are presented in Table 4.

It is seen in Table 4 that two texts in the 5th-grade textbook of Anıttepe Publishing have disaster content. In the 6th grade textbook, one text in the book of Ata Publishing and two in the book of MEB Publishing have disaster education content. In 7th grade, one text in the book of Özgün Publishing, and in 8th grade, one text in the book of MEB Publishing had disaster content.

Table 4

The Middle School Turkish Textbooks in Terms of Disaster Education Sufficiency

Grade/ Pub.	Theme/ Title of the Text	11. Do the texts on disaster in Turkish textbooks reflect regional and local hazards and vulnerabilities in terms of disaster education?	12. Do the activities in the disaster-themed texts in Turkish textbooks reflect regional and local hazards and vulnerabilities in terms of disaster education?	13. Do the texts on disaster in Turkish textbooks focus on the social, economic and environmental effects of hazards at regional and local scales in terms of disaster education?	14. Do the activities in the texts on disaster in Turkish textbooks focus on the social, economic and environmental effects of hazards at regional and local scales in terms of disaster education?	15. Do the texts on disasters in Turkish textbooks provide information at the local level in terms of disaster education when students and their families are more exposed to risks in the region where they live?	16. Do the activities in the disaster-themed texts in Turkish textbooks lead students and their families to obtain information at the local level (about what will happen) when they are more exposed to risks in the region where they live in terms of disaster education?	17. Are the texts on disasters in Turkish textbooks structured to provide the desired behaviour in terms of disaster education (visuals, font, content information, message, other forms to attract students' attention, etc.)?	18. Do the activities in the texts on the disaster in Turkish textbooks convey information for the desired behaviour (through games, field trips, dramatic visuals and other forms to attract students' attention)?	19. Do the texts on disasters in Turkish textbooks discuss disaster risk reduction in terms of narration? (In terms of showing witnesses, comparison, discussion, conflict elements etc.)	110. Do the activities in the disaster-themed texts in Turkish textbooks encourage students to benefit from external speakers and expert individuals and organisations?	111. Do the texts and/or activities in the Turkish textbooks provide opportunities to bring together older and younger generations to discuss disaster risk reduction?
5th/ Anittepe	Nature and Universe/ Deprem	0	0	0	0	0	0	1	1	0	0	0
5th/ Anittepe	Nature and Universe/ Bu Nehir Bizim	0	0	1	0	1	0	1	1	1	1	0
6th/Ata	Nature and Universe/ Rüzgar	0	0	0	1	0	0	0	0	0	0	0
6th/MEB	Science and Tecnology/ İklim Değişikliği ve Toplum	0	0	1	0	0	1	0	0	0	0	0
6th/MEB	Nature and Universe/ Su Kirliliği	0	0	0	0	1	0	1	1	0	1	0
7th/Özgün	Nature and Universe/ Su Kirliliği	1	0	0	0	0	0	1	1	0	1	0

Küçük Yunus												
Nature and Universe/												
8th/MEB	Hava Kirliliği	1	0	1	0	0	0	1	1	1	0	0

5th-grade Turkish textbook results and comments on the sufficiency of disaster education

In the 5th-grade Turkish textbook (Çapraz-Baran & Diren, 2022), there were expressions found in two items related to disaster education competence in the text titled "Deprem (Earthquake)" under the "Nature and Universe" theme. I7 and I8 evaluate whether the texts and activities aim to gain the desired behaviour and whether the content is interesting. The sentence, "Then my father came with a flashlight and took us to the kitchen, near the table (I remember they taught something like this at school. I wish I had listened to the lessons more carefully). Finally, the earthquake was over. Mum and Dad held our hands tightly and took us downstairs," aims to raise awareness about how to behave during an earthquake. The activity "Learn what to do during an earthquake" (Çapraz-Baran & Diren, 2022, p. 85) in the preparatory work also directs students to obtain information on this subject. However, although Turkey is an earthquake country, the textbook does not include statements about where earthquakes can occur in our country at regional and local levels, how to be prepared for earthquakes, and the dangers and effects of earthquakes. The absence of expressions and activities related to disaster risk reduction is also evident. Disaster education should cover before, during, and after the disaster. Therefore, the limited focus on the disaster sequence suggests that this text is insufficient in terms of disaster education.

The fifth-grade Turkish textbook contains a text titled "Bu Nehir Bizim (This River is Ours)" in the "Nature and the Universe" theme, which discusses disaster content. Although water pollution is not directly labelled as a disaster in the literature, it can be included in the disasters that develop suddenly or slowly due to natural and human causes. The text highlights the pollution of a river due to toxic wastes flowing from a factory and the damage it causes to the environment. It also explains what citizens can do in such situations. In terms of disaster education competence, the text provides findings related to I3, I5, I7, I8, I9, and I10. I3 and I5 focus on the social, environmental, and economic effects of hazards at regional and local levels and provide information about what will happen in the long term.

"He remembered their picnics and swimming races by the river. "I learnt to swim in this river, and so did my father and his father. My children should continue to swim in this river. I cannot let them destroy it!" They said that the fertility of the district's land depended on it. Why were they so insensitive to something so important in their lives? I will not let our river die." (Çapraz-Baran & Diren, 2022, p. 68)

The text explains that the social activity area of the people living in the region will be destroyed as a result of the factory continuing to release toxic wastes into the river. Agricultural productivity will decrease, and an environmental disaster will occur with the destruction of the river. I7 and I8 focus on the information about what kind of behaviour individuals should acquire during a disaster. I9 and I10 focus on what can be done to reduce the risk of disaster. The text explains that the students noticed the polluted water flowing into the river, and they wanted to meet with the owner of the factory. They collected signatures by displaying an example of social responsibility on the issue, and they took

samples from the river water to justify their claims and had them analysed. Finally, they tried to take measures to reduce the risk of disaster by reporting the issue to the local authorities and the press with the evidence they had.

The preparatory activities in the text direct the students to search for environmentally sensitive organisations. Additionally, Activity 12 in the textbook (Çapraz-Baran & Diren, 2022, p. 77) provides information on reducing the risk of disaster and establishing a club to protect nature. To reduce the risk of disaster and to provide information on this subject, firstly, information about ÇEVKO was given, and students were asked to establish a club to protect nature and to write a story by researching this subject. The students are asked to imagine that they have established a club for the protection of nature and write a story about their work with this club.

"12th Activity

b) Imagine that you and your friends have established a club for the protection of nature and write a story about your work with this club." (p. 77)

Overall, the text serves as a valuable resource for students to learn about the effects of disasters and the importance of taking action to prevent them.

6th-grade Turkish textbook results and comments on the sufficiency of disaster education

In the 6th grade Ata Publications Turkish textbook, the text titled "Rüzgâr (Wind)" (Sarıboyacı, 2022, p. 134) in the "Nature and Universe" theme is in accordance with an item related to disaster education competence. The activities in the I4 textbook draw attention to the social, economic and environmental effects of regional and local hazards on disaster. The activity in the preparatory work of the text draws students' attention to the situations caused by wind (Sarıboyacı, 2022, p. 133):

"1. Research how wind is formed, in which regions it is most common and the events it causes."

With the above activities, it was tried to raise awareness that wind is a disaster. However, there is no content in the content and activities of the text to create disaster awareness about how to be protected from this disaster, what precautions can be taken, and what can be done during and after the disaster.

In the 6th grade Turkish textbook of MEB Publishing, there are four items (I5, I7, I8, I10) related to disaster education competence in the text titled "Su Kirliliği (Water Pollution)" (Ceylan et al., 2021, p. 152) in the "Nature and Universe" theme.

I5 evaluates what can happen in case of prolonged exposure to disaster in the environment where they live. In the statements in the text, it is stated that the use of contaminated drinking water can cause various epidemics and the extinction of living things. "As a result of using contaminated fresh water as drinking water, epidemics may occur. The drinking water problem occurs. In addition, various animals and plants living in rivers, lakes and seas are damaged by pollution." (Ceylan et al., 2021, p. 153)

I7 and I8 are related to whether the texts and activities on disaster contain information appropriate for the desired behaviour. The text includes information about the causes of drinking water pollution, the importance of water, the negative consequences, and how to clean drinking water. When the activities are analysed, in Activity 3 (Ceylan et al., 2021, p. 155), there is a visual with the slogan "Take your rubbish along with your memories" in a picnic area with a river. There is a visual with the slogan. It can be said that the students were directed to the desired behaviour by asking them to share their

thoughts about this slogan. The question "What do you think life would be like without water?" (Ceylan et al., 2021, p. 152), also included in the preparatory activities, directed the students to think about not polluting water and using it consciously. I10 is about getting information/assistance from external sources for disaster risk reduction. In Activity 4 (Ceylan et al., 2021, p. 156), information about recycling was given, and students were directed to the Ministry of Environment and Urbanisation website to access more information. It can be said that with this activity, an awareness towards risk reduction was tried to be created in students.

In the 6th grade Turkish textbook of MEB Publishing, there are two items (I3, I6) related to disaster education competence in the text titled "Climate Change and Society" (Ertürk et al., 2021, p. 206) in the "Science and Technology" theme. The texts and activities in the M3 and M6 textbooks focus on the social, economic and environmental effects of hazards regionally and locally and the effects that may occur when exposed to the region for a long time. Although climate change itself is not a disaster, it can lead to various situations that may cause climatic, social, and human disasters. These situations include destroying agricultural areas due to droughts, melting glaciers, floods, depletion of water resources, spreading epidemics, and migration. The following text provides information on the potential outcomes of climate change.

"If the sea level rises even by 1 metre due to climate change, 17% of Bangladesh will be flooded, and millions of people will be displaced. If there is a hurricane disaster on top of this, millions of people could die, just like in 1970." (Ertürk et al., 2021, p. 207)

In activity 2 (Ertürk et al., 2021, p. 208), the question "What kind of problems does climate change cause in your neighbourhood?" draws students' attention to the problems in their region.

7th-grade Turkish textbook results and comments on the sufficiency of disaster education

In the 7th grade Turkish textbook, the text titled "Küçük Yunus" (The Little Dolphin) (Erkal & Erkal, 2022, p. 132) in the "Nature and Universe" theme includes four items (I1, I7, I8, I10) in terms of disaster education competence.

I1 evaluates whether the texts in the textbook reflect regional and local hazards and sensitivities about the disaster. In the text, it is explained that a small member of a dolphin family swimming in the Black Sea died after being hit by radioactive barrels thrown into the sea uncontrollably. In the text, the danger and sensitivity related to the pollution of the seas and the extinction of sea creatures as a result of human disasters are indicated in bold: "Sewage, toxic factory wastes, rubbish dumped carelessly and barrels loaded with chemicals were the killers of the living sea." (Erkal & Erkal, 2022, p. 134)

I7 and I8 are related to whether the texts and activities on disaster include information appropriate to the desired behaviour. It tried to create disaster awareness for the desired behaviour in students through the message intended to be given in the text. The visuals used in the text (the dead dolphin fish washed ashore and the barrels on the sea) convey the message of "not polluting the water for the life of living things". The information about dangers and sensitivities in Activity 9 tries to direct students to positive behaviour based on negative information.

"Activity 9

1 litre of waste oil can pollute 1 million litres of drinking water and threaten the lives of fish and other living things in the water,

A glass bottle does not disappear in nature for 4000 years, plastic for 1000 years, bubble gum for five years, tin can for 10-100 years, cigarette filter for two years,

Which of the above information interested you the most? Based on this information, talk to your friends about the benefits of recycling." (Erkal & Erkal, 2022, p. 139)

I10 is about getting information/assistance from external sources for disaster risk reduction. The question "Give information to your friends about non-governmental organisations working to protect the environment." (Erkal & Erkal, 2022, p. 132) in the preparatory work of the text directs students to research the subject.

8th-grade Turkish textbook results and comments on the sufficiency of disaster education

In the text titled "Hava Kirliliği (Air Pollution)" in the "Nature and the Universe" theme in the Turkish textbook of the MEB Publishing (Eselioğlu et al., 2021, p. 242), there is content for five items (I1, I3, I7, I8, I9) related to disaster education competence. I1 and I3 include hazards and vulnerabilities related to disasters and evaluate the social, environmental and economic impacts of these hazards regionally and locally. In the text, it is explained that the air pollution in Ankara and Istanbul is at a disaster level. A curfew was declared due to the pollution, schools were cancelled, official delegations gave up coming to Ankara, and in the long run, people suffered from chronic diseases. Air pollution has reached dangerous dimensions for people by explaining that the Anatolian side cannot be seen from the European side of the Bosphorus due to air pollution.

I7 and I8 evaluate whether the text and activities are aimed at gaining the desired behaviour. The text includes information about what causes air pollution, its damages and how to find a solution (e.g. installing filters on the chimneys of factories, using natural gas as fuel). In activity 7 (Eselioğlu et al., 2021, p. 245), two cartoons reflecting air pollution give a message about preventing air pollution.

I9 assesses whether the textbook contents cover the topic of disaster risk reduction. The text describes the measures taken to reduce air pollution since 1995 and includes air pollution maps. It also explains the improvement activities undertaken after taking measurements.

CONCLUSION AND DISCUSSION

The study analysed Turkish textbooks used in middle schools for the 2022-2023 academic year. Out of the eight textbooks examined (one for 5th grade, three for 6th grade, three for 7th grade and one for 8th grade), only five contained content related to disasters. Two textbooks for 7th grade published by MEB had no disaster content. The disaster content was limited to specific themes within the textbooks. Two texts in the "Nature and Universe" theme for 5th grade, two texts for 6th grade (one in "Nature and Universe" and one in "Science and Technology"), and one text each in the same theme for 7th and 8th grade contained disaster content. The disasters covered in the textbooks included natural disasters like earthquakes and wind and climate disasters like air pollution. The other five texts discussed climate change and water pollution, which can lead to humanitarian or climatic disasters in the long run. Although climate change and water pollution are not disasters per se, they were included in the study as they have disaster content. The Sendai Declaration, a global strategy for disaster risk reduction, highlights the importance of health, climate change, and sustainable development (Aitsi-Selmi et al., 2016).

The criteria determined by UNISDR for disaster education competence were adapted to the texts and activities in the Turkish textbook. Accordingly, it is possible to summarise the results under three headings:

1. The first six items (I1, I2, I3, I4, I5, I6) aim to evaluate the adequacy of Turkish textbooks about disaster education. These items provide information on the long-term effects of risks on individuals in their environments by assessing whether hazards and vulnerabilities are reflected at the regional and local and their social, economic, and environmental impacts. It has been observed that the Grade 5 Turkish textbook does not include any regional and local level information regarding the subject of "Deprem (Earthquake)."

Turkey is a country prone to earthquakes, which is why students need to be aware of the potential risks of earthquake disasters at regional and local levels. Students should also learn how to prepare for earthquakes and deal with their dangerous effects. According to a report by the Investigation Commission of the Grand National Assembly of Turkey (Turkiye Buyuk Millet Meclisi [TBMM], 2010), the primary education curriculum in Turkey should include topics on earthquake preparedness and how to behave during and after an earthquake.

Most textbooks only cover one or two specific topics, usually at a regional or local level. For example, the 7th-grade textbook covers water pollution in the Black Sea region, while the 8th-grade textbook focuses on air pollution in Istanbul and Ankara. Some textbooks try to make the subject relevant to students' lives by encouraging research on their local regions. However, these textbooks lack an integrated and spiral structure. A recent study found that secondary school students have insufficient awareness and preparation for regional disasters. They do not understand the purpose of emergency kits, their families do not contribute enough to disaster preparations, and they experience negative emotions such as anxiety, sadness, and fear during natural disasters (Adanalı et al., 2022).

According to Petal and Izadkhah (2008), disaster education for children should focus on the dangers of natural disasters and how to prepare before, during and after the disaster from a holistic perspective. A study revealed that even adult students have inadequate levels of pre-disaster preparedness (Şahin et al., 2018). For instance, in Cuba, a project was undertaken to enhance disaster preparedness through the addition of educational content specific to the types of disasters prevalent in the region to school programs (United Nations, 2006).

It would not be wrong to characterise Turkey as a country of disasters because almost every year, one or more disasters, such as earthquakes, landslides, avalanches, and floods, are experienced throughout the country (AFAD, 2018). The "Nature and the Universe" theme in Turkish textbooks that are thematically prepared usually focuses on disasters. Upon analysis, it is evident that the texts convey messages that aim to prevent, avoid, or cope with disasters. These texts in the textbooks indicate that the intention is to raise disaster awareness among students through Turkish language lessons. Therefore, including current information, sensitivities, and potential disasters at the regional and local level in the disaster texts and activities in the textbooks can significantly contribute to disaster education at all grade levels.

2. Items 7 and 8 (I7 and I8) of the study are focused on evaluating the adequacy of Turkish textbooks in educating students about disasters. The evaluation criteria for these items examine whether the textbooks and related activities provide sufficient information to encourage desired behaviour. The

results of the evaluation show that the texts titled "Rüzgar (Wind)" and "İklim Değişikliği ve Toplum (Climate Change and Society)" in the 6th-grade textbooks do not provide the necessary information to promote desired behaviour. The text type used in the "Wind" poem does not focus on disasters but only aims to raise awareness that wind can be a disaster. Similarly, the text titled "Climate Change and Society" provides only brief information about the disasters that result from climate change. Therefore, it can be concluded that the 6th-grade textbooks are inadequate in terms of disaster education. It is crucial to pay attention to the structure and content of the text used to raise students' awareness about disasters in the sixth grade. In contrast, at other grade levels, the texts generally contain visuals, expressions, and messages that promote desired behaviour.

The majority of disaster awareness activities tend to focus on research-based information gathering, with very few practical activities being carried out. According to Mızrak (2018), practical disaster awareness activities are more effective in helping students acquire the necessary knowledge and skills. Another study by Musacchio et al. (2016) found practical disaster education activities attract students' attention and increase participation rates. Additionally, research has shown that individuals who have experienced disasters have a higher level of disaster awareness than those who have not (Yakar & Dikmenli, 2019; Özen, 2020).

To effectively integrate disaster education into Turkish lessons, teachers can use the sample lesson plans and activity book with material ideas in the "School-Based Disaster Education" project, which covers all levels and disciplines (MEB, 2021a; MEB, 2021b). These resources can be accessed via the Education Information Network (EBA). Integrating disaster education into course content is important, as this ensures that the knowledge and skills gained are retained and applied in practice. In the past, various institutions and organisations developed disaster awareness training programs after the 1999 earthquake, but they were not sustainable due to a lack of integration into the education system (Sanduvac & Petal, 2010).

3. Items 9, 10 and 11 (I9, I10, I11), which evaluate Turkish textbooks in terms of disaster education adequacy, evaluate the texts and activities in the textbooks in terms of disaster risk reduction. According to the Global Risk Index, Turkey ranks 45th among 191 countries and is among the countries in the "high-risk" group. Risk reduction is the basis of successful disaster management. Thus, planning, response and recovery processes can be carried out more successfully (AFAD, 2018). Today, in addition to raising awareness of individuals about disasters through disaster education, individuals are also expected to take an active role in disaster risk management processes. In the Sendai Framework for Disaster Risk Reduction (2015-2030) adopted at the United Nations World Conference on Disaster Risk Reduction III (2015), it was emphasised that all segments of society should be made aware of disaster risk reduction through education (MEB, 2021b). The participation and awareness of civil society, the private sector and citizens will ensure progress in terms of disaster management and risk reduction (AFAD, 2018).

Upon analysis of the findings, it was discovered that the text entitled "Deprem (Earthquake)" in Grade 5 and the texts entitled "Rüzgâr (Wind)" and "İklim Değişikliği ve Toplum (Climate Change and Society)" in Grade 6 did not include any expression or activity related to disaster risk reduction. It is important to incorporate disaster risk reduction in Turkish lessons by discussing the subject matter within the context of the text, bringing together young and old generations and directing them to relevant institutions and organisations for information. Unfortunately, none of the texts have content that would enable young and old generations to come together to reduce disaster risk. However, it is critical

for them to work together to gain a broader perspective and experience (İnal et al., 2018). Collaborating with relevant institutions such as AFAD, Red Crescent, fire brigade, non-governmental organisations, can also be effective in raising awareness about disasters. Most of the textbooks did not discuss disaster risk reduction, which indicates that the Turkish textbooks are inadequate.

As part of the School-based Disaster Education Project, teachers were given training to improve their knowledge and skills in disaster risk reduction. The goal was to empower our teachers to conduct disaster education activities in their classrooms and prepare our children for disasters at an early age (MEB, 2021b). Updating the content of disaster programs and involving families can enhance the effectiveness of disaster risk reduction education programs.

Recommendations

Textbooks are important in gaining knowledge and skills for all courses. For adequate disaster education in Turkish lessons:

Disaster education can be integrated with the content of the course and text selection, and this content can prepare activities. Disaster types can be diversified. Students can learn about a variety of disasters, not just natural ones. Current information and visuals can be used in textbooks. Practical activities can be emphasised while preparing activities. Disaster education can be planned as before, during and after. Social responsibility projects can be prepared with students to develop disaster awareness.

In future studies, primary school Turkish textbooks can also be analysed in terms of disaster education adequacy, and a holistic perspective on the subject at the primary education level can be put forward. Course contents suitable for disaster education can be designed, and their effectiveness can be measured from various aspects.

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