

*Full Length Research Paper*

# **A research on the attitude of eight grade students towards earthquake**

**Hülya Kayalı**

Department of Social Sciences and Turkish Education, Marmara University, Turkey.

Received 7 March, 2018; Accepted 13 May, 2018

**The aim of this study is to determine the attitudes of eighth-grade students in secondary schools towards earthquake. For this purpose, the attitude test towards earthquake was applied to 240 eighth grade students (107 females and 133 males) from five secondary schools in Istanbul. Quantitative method was used in the study. Also, to analyze the dataset collected from this study, t-test and variance analysis techniques were used. This study has shown that students generally have positive thoughts and attitudes towards earthquakes and damages.**

**Key words:** Analysing of attitudes toward earthquake, eighth-grade students, earthquake.

## **INTRODUCTION**

Turkey is one of the world's three most important seismic zones on the Alpine-Himalayan seismic belt, located in the Mediterranean region (Şahin and Sipahioğlu, 2002:53; Bikçe, 2017:25). Due to the presence of the active fault segments in the Mediterranean earthquake region from the past to the present, many earthquakes occurred in Turkey. There is a very big broken line in the north of the Anatolia plate and this is called North Anatolian Fault Line (Broken Line). This fault line starts from the Sea of Marmara and extends from Bolu, Corum, Erzincan and Erzurum to Iran. On the other hand, the Eastern Anatolian Fault zone, coming from the south via Amik Ovasi-Kahramanmaraş-Malatya-Elazığ, is connected to the North Anatolian Fault Zone near the Bingöl-Karlıova. Other small fault lines except for these two fault lines are also located in this region. Undoubtedly, these fault lines coincide with the

seismically active zones at the same time (Özey, 2006:32). Here the presented studies indicated that in our country, most of the cities and industrial facilities are located in the 1st-degree earthquake zone. Due to this reason, the region's seismic hazard should be considered when constructing buildings, bridges, hospitals etc. Throughout history, a great number of violent earthquakes occurred in Istanbul because the level of seismic risk of this city is very high (Tütüncü, 2017:4-9; Bikçe, 2015:6). Historical earthquake records prepared by Prime Ministry Disaster and Emergency Management Authority, Republic of Turkey (AFAD) indicated that the oldest known earthquake that occurred in Istanbul was in the year 212. After this year, many hazardous earthquakes occurred in this region. The earthquake catalog of Kandilli Observatory and Earthquake Research Institute, Bogazici University shows that the intensity of

E-mail: [hkayali@marmara.edu.tr](mailto:hkayali@marmara.edu.tr).

Author(s) agree that this article remain permanently open access under the terms of the [Creative Commons Attribution License 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

earthquake was IX in 325, 358, 427, 447, 478, 715, 865, 986, 1344, 1462, 1509, 1659, 1719, 1754 and 1766 years, but in 553 and 1894 years the intensity of earthquake felt was X. In 1509, the IX intensity earthquake caused many people to lose their lives, caused a great destruction in Istanbul, over 1,000 houses were collapsed, and between 4 and 5 thousand people lost their lives (Sezer, 1996:169). Nearly 4000 people lost their lives and many peoples were also injured due to the earthquake that occurred in the 1766 year. Particularly, the earthquake also caused serious damages in Büyük and Küçük Çekmece with Karamürsel on the southern shore of the Gulf of Izmit and surrounding area and some official buildings (e.g., the court building) were collapsed (Afyoncu and Mete, 2002:85-87). The earthquake that took place in 1894 led to the death of 474 people, the injuries of 482 people, the damage of 387 durable structures and 1087 houses, 299 shops (Sezer, 1996:171). The various intensity of earthquakes occurred in Istanbul from 1900 to the present day. In 1999, the intensity of the Izmit earthquake was X and caused great damages. On August 17, 1999, due to the Izmit earthquake, the city of Istanbul became one of the most affected provinces. Due to this earthquake, 976 people died and 3547 people were injured in Istanbul. In addition to this, many buildings collapsed. For example, the number of damaged or severely damaged buildings was 3614 and the number of moderately damaged and slightly damaged buildings was 12.370 and 10.630, respectively (Ceylan, 2003:57). Various levels of damages in the houses were observed due to the ground structure and the fact that the structures were not constructed properly.

Especially after the 1999 Izmit earthquake, improving understanding of a conscious society and making necessary preparations for earthquake hazards became important. After the Izmit earthquake, scientific studies carried out in Turkey and the international arena are related to the emerging post-earthquake psychological problems (Aksoy, 2013:249). Additionally, activities related to earthquake education have become widespread in primary and secondary education institutions, but the activities are not at the desired level in adult level (Başibüyük, 2004:1). Due to the fact that many devastating earthquakes occurred in Istanbul throughout history, preparedness against earthquakes and improvement of knowledge and consciousness about them are required.

As aforementioned, generally devastating earthquakes that occurred in Istanbul caused serious damages such as loss of many human lives and properties. Due to the earthquakes, amount of loss of human lives and properties strongly depend on people's knowledge and education in this field. These people living in Istanbul should be aware of the earthquake fact and be in a positive attitude towards earthquake and conservation. Also, individuals must be ready for the possibility of occurrence of an earthquake at any time and learn to live

with an earthquake. Because of this reason, students at the young age should be provided with earthquake training and taught how to protect themselves against earthquake hazards. As a result of this, it can be expected that the students can have positive attitude towards earthquake like a natural event. As shown, the attitude of the students in secondary education towards earthquake becomes significant. Therefore, this study aims to investigate the attitudes of eighth grade secondary schools students towards earthquake. Also, it aims to reveal whether attitudes of the students towards earthquake are based on their gender and the types of schools they attend or not. In addition, in basic training and especially in secondary education, students' attitude towards earthquake is very important.

## DATA AND METHODS

The study was conducted on students from five secondary schools in the provinces of Avcılar, Bahçelievler, Maltepe, Pendik, and Ümraniye located in Istanbul. The test subject students were randomly selected. In total, they were 240, of which 107 are girls, and 133 are boys. In selecting the primary schools, socio-economic and cultural levels of the students were considered as the main criteria. For this, environment and living conditions of the students and their families were also considered. It means that the selected students' families have different socio-economic and cultural levels. In this study, Likert type scale consisting of 40 items was used to measure the attitudes of the students towards earthquake. This method was modified by Demirkaya (2007a). To improve validity and reliability of this method, Cronbach's alpha test (0.73) is additionally used for this study because it is a better way of measuring the strength of consistency, especially internal consistency of test items. A quantitative method was used for attitude towards earthquake; the collected data from the study were analyzed in a computer environment. Additionally, to analyze the data, t-test and variance methods were used.

## RESULTS

In this study, a significant difference in the level of  $P < 0.05$  ( $P = 0.00$ ) in favor of female students between the sex of the students and attitude scores for the earthquake was found. However, an important difference between the students' attitude scores for earthquake and the school they attend was not detected.

When the answers of the attitude test of the students toward earthquake were examined, it was observed that 66.7% of the students completely agreed that earthquakes cause serious damages to human lives and properties. In addition, 28.3% of the students approximately agree with the previous group. But, 3.8% of the students did not decide on it. 0.8 and 0.4% of the students do not agree and never agree on this, respectively. If the findings are analyzed according to the gender differences of the students, 96% of the female students reported that they agreed on the negative influences of the earthquakes on human lives and properties, but 4% of the female students said that they

could not decide on it. Furthermore, 94% of the boy students said that they agree on this like the large percentage of the female group. On the other hand, 2% of the male students said that they do not agree completely with the other boys mentioned. It can be concluded that 95% of students are aware that earthquake seriously causes loss of life and property. It shows that the girls are more aware than the boys.

The students were asked if they could predict the time earthquakes occur. Their answers are as follows: 12.1% of the students fully agreed with it. 33.3% of the students agreed with it. 32.9% of the students were undecided about it. 10.8% of the students reported that they did not accept its possibility and the other 10.8% of students said that its possibility is non-existent. Moreover, 40.2% of the female students report that they agree with it, while 23.4% of the female student do not agree with it. On the other hand, 50% of the boy students report that they thought that the prediction of earthquakes is possible, while 20.3% of the boy students do not agree with it.

Up till now, various studies on the forecasting of earthquakes in the world are conducted. However, it is not possible to forecast earthquakes' occurrence time yet. It is seen that only 21.6% of the students know this when asked about the subject. Also, it was observed that the information on this subject is sufficiently not known except for 21.6% of the students. Earthquakes are bad shakes. This question's answers are listed as follows: 40.4% of the students fully think about it like that. 64.3% of the students thought that the subject is not fully correct but acceptable. 9.2% of the survey students are undecided about it. 3.3 and 0.8% of the students do not completely accept this and never agree on this subject, respectively.

90.7% of the female students stated that they agree but 3.8% of the female students do not agree with this. While 83.5% of the male students agreed with the subject, 4.5% of the male students did not agree with the subject.

The next question from the Likert list is that is earthquake a natural event that hurts people. The given answers of the test subject students for this are listed as follows: 50.4, 36.7, 10, 2.5 and 0.4% of the students fully agree, agree, undecided, do not agree, never agree with this, respectively. While 86% of the girls reported that they agree, 3.7% disagree with this. 88% of the male students agree but 3% disagree with this. This finding indicates that the students are obviously aware of the damage caused by the earthquakes.

The students were asked if small earthquakes prevent large earthquakes. Their answers are as follows: 6.3% of the students fully agree, 15% nearly agree, 40% remain undecided, 20.8% do not agree and 17.9% never agree with this. While 23.4% of the female students stated that they agree, 35.5% disagree with this. Whereas 19.5% of the male students stated that they agree, 41.3% disagree with this.

The students were asked if earthquakes occur

everywhere. Their answers are as follows: 47.5% of the students fully agree, 30.8% nearly agree, 11.7% remain undecided, 7.5% do not agree and 2.5% never agree with this. While 81.3% of the female students stated that they agree, 6.5% disagree with this. Whereas 76% of the male students stated that they agree, 12.8% disagree with this.

Furthermore, they were asked if earthquakes give people pain and sadness. Their answers are as follows: 60.4% of the students fully agree, 27.1% nearly agree, 9.6% remain undecided, 2.9% do not agree with this. While 87% of the female students stated that they agree, 4.7% disagree with this. Whereas 88% of the male students stated that they agree, 3.8% disagree with this.

The students were asked if earthquakes give people fear. Their answers are as follows: 52.1% of the students fully agree, 41.7% nearly agree, 4.6% remain undecided, 0.8% do not agree and 0.8% never agree with this. While 94% of the female students stated that they agree, 1.9% disagree with this. Whereas 93% of the male students stated that they agree, 1.5% disagree with this. This observation suggests that the test subject female students are more afraid of earthquakes than the male students.

Also, the students were asked if earthquake is an exciting natural event. Their answers are as follows: 15.8% of the students fully agree, 21.7% nearly agree, 13.3% remain undecided, 21.7% do not agree and 27.5% never agree with this. 35% of the female students stated that they agree; however, 50.5% disagree with this. While 40% of the male students stated that they agree, 48% disagree with this.

The students were asked if earthquakes are always destructive. Their answers are as follows: 10% of the students fully agree, 10.8% nearly agree, 13.8% remain undecided, 44.2% do not agree and 21.3% never agree with this. 18.7% of the female students stated that they agree; however, 66.4% disagree with this. While 22.6% of the male students stated that they agree, 64.7% disagree with this.

The students were asked if human beings can resist earthquakes. Their answers are as follows: 9.6% of the students fully agree, 17.1% nearly agree, 16.7% remain undecided, 27.1% do not agree and 29.6% never agree with this. 21.5% of the female students stated that they agree; however, 76.6% disagree with this. 31% of the male students stated that they agree, but 46.6% disagree with this.

The students were asked if earthquakes happen suddenly. Their answers are as follows: 46.7% of the students fully agree, 35.8% nearly agree, 10.8% remain undecided, 5.4% do not agree and 1.3% never agree with this. While 85% of the female students stated that they agree, 6.5% disagree with this. 80.5% of the male students stated that they agree, 6.8% disagree with this.

The students were asked if earthquakes have benefits. This interesting topic is answered by the students. Their

answers are as follows: 4.2% of the students fully agree, 9.6% nearly agree, 24.2% remain undecided, 24.6% do not agree and 37.5% never agree with this. While 5.6% of the female students stated that they agree, 72% disagree with this. 20% of the male students stated that they agree, but 54% disagree with this.

The students were asked if earthquakes are necessary for the construction of the earth shapes such as mountains. Their answers are as follows: 9.2% of the students fully agree, 20% nearly agree, 40% remain undecided, 16.3% do not agree and 14.6% never agree with this. While 24.3% of the female students stated that they agree, 33.6% disagree with this. 33.1% of the male students stated that they agree, but 28.6% disagree with this.

Moreover, the students were asked if earthquake is nothing to be feared. Their answers are as follows: 4.6% of the students fully agree, 12.9% nearly agree, 18.8% remain undecided, 36.3% do not agree and 27.5% never agree with this. While 14% of the female students stated that they agree, 64.5% disagree with this. 20.3% of the male students stated that they agree, but 63.2% disagree with this.

Durable buildings are not destructed by the earthquakes larger than 6 magnitudes. This issue is also asked the students as a topic. Their answers are as follows: 26.3% of the students fully agree, 43.3% nearly agree, 19.6% remain undecided, 7.9% do not agree and 2.9% never agree with this. While 71% of the female students stated that they agree, 11% disagree with this. 68.4% of the male students stated that they agree, but 10.5% disagree with this. It is seen that the students are commonly thinking about the fact that durable houses are generally not damaged by earthquakes

After a destructive earthquake, many buildings collapsed. As a result of this, the environment got worse. This issue is also asked the students. Their answers are as follows: 42.5% of the students fully agree, 40% nearly agree, 12.9% remain undecided, 3.8% do not agree and 0.8% never agree with this. While 84% of the female students stated that they agree, 1.9% disagree with this. 81% of the male students stated that they agree, but 6.8% disagree with this.

It is impossible to prevent earthquake. The answers of the students to this question are as follows: 22.5% of the students fully agree, 19.6% nearly agree, 26.7% remain undecided, 15% do not agree and 16.3% never agree with this. While 42% of the female students stated that they agree, 29% disagree with this. 42% of the male students stated that they agree, but 33% disagree with this.

After earthquakes, people start to construct the durable buildings. This is very significant. The answers of the students to this question are as follows: 28.8% of the students fully agree, 46.3% nearly agree, 19.2% remain undecided, 2.9% do not agree and 2.9% never agree with this. While 74% of the female students stated that they

agree, 8.4% disagree with this. 76% of the male students stated that they agree, but 3.8% disagree with this.

Buildings and goods cause more serious damages to human lives than the earthquakes that are happening. The students were also asked this question. The answers of the students to this issue are as follows: 22.1% of the students fully agree, 24.2% nearly agree, 27.9% remain undecided, 18.3% do not agree and 7.5% never agree with this. While 44% of the female students stated that they agree, 27% disagree with this. 48% of the male students stated that they agree, but 25% disagree with this.

To protect ourselves from the earthquakes, we can shelter ourselves under resistant goods. This approach is asked to the students as a topic in this study. The answers of the students to this issue are as follows: 41.7% of the students fully agree, 39.6% nearly agree, 11.3% remain undecided, 5.4% do not agree and 2.1% never agree with this. While 83.2% of the female students stated that they agree, 6.5% disagree with this. 80% of the male students stated that they agree, but 8% disagree with this. It is seen that 81.3% of them know how to protect themselves during the earthquake, have sufficient information about how to be protected by taking shelter under earthquake-resistant goods. This obviously shows that the students have knowledge about the things to be done during the earthquake.

Earthquake affects people's psychology negatively. The answers of the students to this issue are as follows: 43.3% of the students fully agree, 35.8% nearly agree, 17.9% remain undecided, 2.1% do not agree and 0.8% never agree with this. While 77% of the female students stated that they agree, 2.8% disagree with this. 81% of the male students stated that they agree, but 3% disagree with this.

After the earthquake, epidemic diseases occur. This important issue is discussed with the students. The answers of the students to this issue are as follows: 6.7% of the students fully agree, 19.6% nearly agree, 43.8% remain undecided, 22.1% do not agree and 7.9% never agree with this. While 25.2% of the female students stated that they agree, 36.4% disagree with this. 27.6% of the male students stated that they agree, but 25% disagree with this.

No action can be taken against earthquake and damages. The answers of the students to this issue are as follows: 5.8% of the students fully agree, 6.3% nearly agree, 17.9% remain undecided, 31.3% do not agree and 38.3% never agree with this. While 14.3% of the female students stated that they agree, 72.9% disagree with this. 14.3% of the male students stated that they agree, but 67.7% disagree with this. This result indicates that 69.6% of the students have the consciousness that cautions can be taken against damages caused by earthquakes.

In the areas which are under an earthquake risk, the settlement units should not be constructed. The answers of the students to the question are as follows: 38.8% of

the students fully agree, 22.5% nearly agree, 22.9% remain undecided, 10.4% do not agree and 5.4% never agree with this. While 58% of the female students stated that they agree, 17.8% disagree with this. 64% of the male students stated that they agree, but 14.3% disagree with this.

In every home, there should be a preparation bag for the earthquake. The answers of the students to this question are as follows: 81.3% of the students fully agree, 10.8% nearly agree, 6.7% remain undecided, 0.4% do not agree and 0.8% never agree with this. While 93% of the female students stated that they agree, 2% disagree with this. 92% of the male students stated that they agree, but 0.8% disagree with this.

During the earthquake, buildings collapse because people steal from materials of the constructed buildings. The answers of the students to this topic are as follows: 20.4% of the students fully agree, 26.3% nearly agree, 25.8% remain undecided, 13.8% do not agree and 13.8% never agree with this. While 42.5% of the female students stated that they agree, 33.6% disagree with this. 50.4% of the male students stated that they agree, but 22.5% disagree with this.

The earthquake is a significant cause that negatively changes people's lives. The answers of the students to this question are as follows: 40.8% of the students fully agree, 32.9% nearly agree, 22.9% remain undecided, 2.9% do not agree and 0.4% never agree with this. While 70.1% of the female students stated that they agree, 3.7% disagree with this. 76.7% of the male students stated that they agree, but 3.0% disagree with this.

Earthquake in this region causes negative influences on industry and economics of the region. The answers of the students to this question are as follows: 32.1% of the students fully agree, 43.3% nearly agree, 21.3% remain undecided, 2.1% do not agree and 1.3% never agree with this. While 72% of the female students stated that they agree, 5.6% disagree with this. 78% of the male students stated that they agree, but 1.5% disagree with this.

The important thing here is that people must be trained in order to decrease the damages of the earthquakes. The answers of the students to this topic are as follows: 50.4% of the students fully agree, 29.6% nearly agree, 15.4% remain undecided, 2.5% do not agree and 2.1% never agree with this. While 79.4% of the female students stated that they agree, 4.7% disagree with this. 80.5% of the male students stated that they agree, but 4.5% disagree with this. This suggests that 80% of the students agree on this matter and they are aware of the importance of the education in this respect.

The students were asked if they watch earthquake with interest. The answers of the students are as follows: 41.7% of the students fully agree, 31.7% nearly agree, 12.9% remain undecided, 7.5% do not agree and 6.3% never agree with this. While 75% of the female students stated that they agree, 14% disagree with this. 72% of the male students stated that they agree, but 13.5%

disagree with this.

The students were asked if they do not panic during an earthquake. The answers of the students to this topic are as follows: 17.5% of the students fully agree, 21.3% nearly agree, 26.3% remain undecided, 15.4% do not agree and 19.6% never agree with this. While 35.5% of the female students stated that they agree, 41% disagree with this. 41.4% of the male students stated that they agree, but 30% disagree with this.

The students were asked if they help people wounded during earthquake. The answers of the students to this are as follows: 50.8% of the students fully agree, 34.2% nearly agree, 10.4% remain undecided, 3.3% do not agree and 1.3% never agree with this. While 88.8% of the female students stated that they agree, 2.8% disagree with this. 82% of the male students stated that they agree, but 6% disagree with this.

The students were asked if they would want to move from the place where earthquake occurs. The answers of the students to this are as follows: 32.9% of the students fully agree, 26.7% nearly agree, 22.1% remain undecided, 10.8% do not agree and 7.5% never agree with this. While 58% of the female students stated that they agree, 14% disagree with this. 61% of the male students stated that they agree, but 22% disagree with this.

The students were asked if they do not want to think about anything about the earthquake. The answers of the students are as follows: 18.3% of the students fully agree, 24.6% nearly agree, 32.5% remain undecided, 14.2% do not agree and 10.4% never agree with this. While 42.5% of the female students stated that they agree, 26.2% disagree with this. 43.6% of the male students stated that they agree, but 23.3% disagree with this.

The students were asked if they think that developing technology can help to predict the location, magnitude and time of occurrence of earthquake in the future. The answers of the students are thus: 37.9% of the students fully agree, 23.3% nearly agree, 25.4% remain undecided, 7.5% do not agree and 5.8% never agree with this. While 53.3% of the female students stated that they agree, 16.8% disagree with this. 67.6% of the male students stated that they agree, but 10.5% disagree with this.

The students were asked if earthquakes can be prevented. The answers of the students are thus: 16.3% of the students fully agree, 10% nearly agree, 30% remain undecided, 16.3% do not agree and 27.5% never agree with this. While 23.4% of the female students stated that they agree, 44% disagree with this. 28.6% of the male students stated that they agree, but 43.6% disagree with this.

The students were asked what they do during earthquake. The answers of the students are thus: 31.7% of the students fully agree, 22.5% nearly agree, 20.4% remain undecided, 12.9% do not agree and 12.5% never

agree with this. While 54.2% of the female students stated that they agree, 21.5% disagree with this. 54.1% of the male students stated that they agree, but 28.6% disagree with this.

## DISCUSSION

When the attitude scores of the eighth-grade students of the secondary school are examined, it can be said that the attitudes of the students are generally positive. A significant difference in favor of female students between the gender of the students and the point average scores towards earthquake was found in this study. However, the study of Demirkaya (2007a) indicated that male students' attitudes toward earthquake are more positive than female students. On the other hand, an important difference between attitude scores of the students towards earthquake and the school they attend was not found.

According to the results of attitude test towards earthquake, it was found that nearly 62.4% of male students and approximately 63.8% of female students were in a positive attitude toward earthquake. The percentage of those who are undecided in the responses to the attitude test is around 20%, which is almost the same for girls and boys.

The topics with the highest student attitudes are listed as follows: earthquake causes loss of life and property; earthquakes are bad shakes; earthquake is a natural event that hurts people; earthquakes occur suddenly; earthquake gives people pain and sadness; earthquake gives people fear; after earthquake, the appearance of the environment gets bad; in every home, there should be a preparation bag for the earthquake; to protect people from earthquakes, they can shelter themselves under resistant goods; I will help people damaged by the earthquake; people must be trained to in order to decrease the damages of the earthquakes. The findings strongly indicate that it is seen that students have positive thoughts and attitudes towards earthquake and its damages.

In addition to the topics mentioned above, the other topics with the higher student attitudes are listed as follows: durable buildings are not destructed by the earthquakes larger than 6 magnitude; after the destructive earthquakes, people start to construct the durable buildings; the earthquake is a significant cause that negatively changes people's lives; the earthquake occurred in the region causes negative influences on industry and economics of the region.

In this paragraph, the findings of the study are compared with previous studies such as Demirkaya (2007a). One of the highest student attitude topics is that the earthquake causes serious loss of life and property. According to this study, 66.7% of the students fully agree and 28.3% agree with this. However, for the same topic,

Demirkaya (2007a) found that 73.9% of the students fully agree and 18.9% agree with this. The study carried out by Karakuş (2013) also supports this article.

In every home, there should be a preparation bag for the earthquake. According to this study, 81.3% of the students fully agree and 10.8% agree with this. However, for the same topic, Demirkaya (2007a) found that 70.3% of the students fully agree and 16.2% agree with this.

While 21.6% of the students stated that they could not previously predict when earthquakes would occur, 32.9% were undecided. In the study conducted by Demirkaya (2007b), most of the students stated that earthquake cannot be determined previously. 69.6% of the students stated that measures against earthquake and its damages can be taken so that damages of the earthquake could be reduced to a minimum level. The studies carried out by Aydın (2010) and Aydın and Coşkun (2010) support the result. 50.4% of the students totally participate in it, 29.6% of the students participate in the item which is that people should be trained for not suffering from the earthquake. Similar results were also obtained in the study conducted by Aksoy and Sözen (2014).

In the fields under earthquake risk, the settlement units should not be constructed. The answers of the students are thus: 38.8% of the students fully agree and 22.5% agree with this. However, Demirkaya (2007a) found that 45% of the students fully agree with this. Although it is seen that the students' attitude towards earthquake is positive attitude generally, the ratio of those who are undecided in this subject is also high due to the fact that the students do not have enough knowledge about earthquakes and their effects. The information about earthquake and the preparation for natural disasters should be given in schools (Çoban, et al., 2017:131). Dikmenli and Gafa (2017) emphasize the importance of earthquake education in their researches (Dikmenli and Gafa, 2017).

As known, earthquakes are a significant subject in the course of social studies because they cause severe loss of life and property. Due to the findings of the study, it is suggested that lessons should be given before and during a possible earthquake, during and after the earthquake, what the students should do and what they should not do. The methods and techniques should be used to ensure the permanence of this information.

The effectiveness of cooperative learning method and traditional teaching methods in the teaching of earthquake topic in the 5th-grade social science lesson of elementary school was investigated and compared in the study of Kutay Atar (2003).. The important result of this study is that the teaching of earthquake topic by cooperative learning method increases the success and permanency of the students than traditional teaching methods. In a study conducted by Yılmaz (2015), Arı and Yılmaz (2016), it is found that that inquiry-based learning methods have an effect on students' attitudes towards

earthquake. With the application of these methods, students will be more informed and conscious about a possible earthquake.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

## REFERENCES

- Afyoncu E, Mete Z (2002). 1766 İstanbul Depremi, Tarih Boyunca Anadolu'da Doğal Afetler ve Deprem Semineri (22-23 Mayıs 2000), İstanbul Üniversitesi Edebiyat Fakültesi Tarih Araştırma Merkezi Yayını, İstanbul (in Turkish).
- Aksoy B (2013). Depremi Yaşamış Olan 9. Sınıf Öğrencilerinin "Deprem" Kavramına Yönelik Algılarının Nitel Açıdan İncelenmesi, Zeitschrift für die Welt der Türken Journal of World of Turks, ZfWT 5:1.
- Aksoy B, Sözen E (2014). Lise Öğrencilerinin Coğrafya Dersindeki Deprem Eğitimine İlişkin Görüşlerinin Çeşitli Değişkenler Açısından İncelenmesi (Düzce İli Örneği). Uşak Üniversitesi Sosyal Bilimler Dergisi 7(1), (in Turkish).
- Arı E, Yılmaz S (2016). Sorgulayıcı Araştırma Odaklı Fen Bilimleri Uygulamaları: Afetten Korunma ve Güvenli Yaşam Ara Disiplini, International Journal of Humanities and Education, 2(3).
- Aydın F (2010). İlköğretim Sekizinci Sınıf Öğrencilerinin "Deprem" Kavramını Algılamaları: Fenomenografik Bir Analiz. Turkish Studies International Periodical For The Languages, Literature and History of Turkish or Turkic. Volume 5/3.
- Aydın F, Coşkun M (2010). Observation of the students' "earthquake" perceptions by means of phenomenographic analysis (primary education 7th grade – Turkey). International Journal of the Physical Sciences. 5:8.
- Başbüyük A (2004). Yetişkinlerde Deprem Bilgisi ve Etkili Faktörlerin İncelenmesi, Milli Eğitim Dergisi, Sayı: 161, (in Turkish).
- Bikçe M (2015). Türkiye'de Hasara Ve Can Kaybına Neden Olan Deprem Listesi (1900-2014), 3. Türkiye Deprem Mühendisliği ve Sismoloji Konferansı, 14-16 Ekim-DEÜ-İzmir (in Turkish).
- Bikçe M (2017). Türkiye'deki Depremlerde Alınan ve Alınabilecek Önlemler, Uluslararası Mühendislik Araştırma ve Geliştirme Dergisi, International Journal of Engineering Research and Development, Cilt:9 Sayı:2.
- Ceylan MA (2003). Marmara Depreminin (17 Ağustos 1999) Yalova Şehrini Etkileri, Gündüz Eğitim ve Yayıncılık, Ankara (in Turkish).
- Çoban M, Sözbilir M, Göktaş Y (2017). Deprem Deneyimini Yaşamış Kişilerin Deprem Öncesi Hazırlık Algılarının Belirlenmesi: Bir Durum Çalışması, Doğu Coğrafya Dergisi, Sayı:37, (in Turkish).
- Demirkaya H (2007a). İlköğretim 5. 6. Ve 7. Sınıf Öğrencilerinin Depreme Yönelik Tutumlarının Çeşitli Değişkenlere Göre İncelenmesi, Türkiye Sosyal Araştırmalar Dergisi, Yıl:11, S:3, Ankara (in Turkish).
- Demirkaya H (2007b). İlköğretim Öğrencilerinin Deprem Kavramı Algılamaları Ve Depreme İlişkin Görüşleri. Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi. 8, (in Turkish).
- Dikmenli Y, Gafa İ (2017). Farklı Eğitim Kademelerine Göre Afet Kavramı, Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi Sayı: 44, (in Turkish).
- Karakuş U (2013). Depremi Yaşamış ve Yaşamamış Öğrencilerin Deprem Algılarının, Metafor Analizi İle İncelenmesi. Doğu Coğrafya Dergisi, Sayı: 29, (in Turkish).
- Kutay AS (2003). Sosyal Bilgiler Dersinde Deprem Konusunu İşbirlikli Öğrenme Yöntemi İle Öğretimin Etkliliğinin Araştırılması, Marmara Üniversitesi Eğitim Bilimleri Enstitüsü Yayınlanmamış Yüksek Lisans Tezi (in Turkish).
- Özey R (2006). Afetler Coğrafyası, Aktif Yayınevi, İstanbul (in Turkish).
- Sezer H (1996). 1894 İstanbul Depremi Hakkında Bir Rapor Üzerine İnceleme, Tarih Araştırmaları Dergisi Cilt: 18 Sayı:29, Ankara (in Turkish).
- Şahin C, Sipahioğlu Ş (2002). Doğal Afetler ve Türkiye, Gündüz Eğitim ve Yayıncılık, Ankara (in Turkish).
- Tütüncü S (2017). Deprem Hasar Tahmin Programı İle İstanbul İçin Olası Deprem Kayıplarının Belirlenmesi (Yayınlanmamış Yüksek Lisans Tezi, Yıldız Teknik Üniversitesi Fen Bilimleri Enstitüsü), İstanbul (in Turkish).
- Yılmaz S (2015). Sorgulayıcı Araştırma Odaklı Fen ve Teknoloji Uygulamaları: Afetten Korunma ve Güvenli Yaşam Ara Disiplini (Yayınlanmamış Yüksek Lisans Tezi, Çanakkale Onsekiz Mart Üniversitesi Eğitim Bilimleri Enstitüsü), Çanakkale (in Turkish).