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An Analysis of Primary School Students' Earthquake Awareness

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Abstract

Although earthquake phenomena concerns all levels of society, explaining this phenomena to primary school students well is highly important in terms of creating a society prepared for disasters. In addition, relevant studies show that the group who is affected by earthquakes worst is primary school students. It is observed that earthquakes affect some children in this age groupa not only physically but also emotionally and pschologically more. In the aftermath of an earthquake some children experience bedwetting at night, sleep disorder, behavioral problems, obesity, suicidality and decline in literacy skill levels. Plus, when it is considered that the fastest and the most permanent learning occurs in primary school ages, givingearthquake education and awareness appropriate to these children's ages will enable the society to be more prepared for other possible earthquakes in the future. In the light of this information, this study aims to discuss how earthquake education is given to primary school students, what kind of actions are taken and how students perceive them.

Keywords: Earthquake, Istanbul, Disaster management, Primary school, Disaster Education

Introduction

Turkey is a country which sits along seismically- active Alpine- Mediterranean belt. Some 42 percent of its territory is first- degree seismic zone. According to Boğaziçi University Kandilli Observatory and Earthquake Research Institute's data, the earthquake with the highest magnitude (M_s) was recorded in Erzincan in 1939. It was 7.9. Another destructive earthquake was Golcuk (Kocaeli) earthquake in 1999 with a magnitude of 7.8 M_s. That earthquake affected 9 cities with a total population of 14,5 million (Bolu, Bursa, Duzce, Eskisehir, Istanbul, Kocaeli, Sakarya, Yalova, Zonguldak). Turkish Grand National Assembly report published in 2010 show that 18.373 people died, 48.901 people were injured, 505 people were left permanently disabled. Also 96.796 residential houses and 15.939 workplaces were left unusable. According to official figures, that earthquake with the epicenter was 120 kilometres away from Istanbul caused 981 people die in Istanbul. In Avcilar town of Istanbul, 1823 residential houses and 326 workplaces were left unusable. Approximately 4000 buildings in overall Istanbul were heavily damaged. (Özmen, 2000., TMMOB, 2017)

Actions about earthquake have gained momentum in recent years in Turkey where such frequent and severe earthquakes occur. The most important parts of these actions are earthquake education and schools. Within this framework, Ministry of National Education and Japan International Cooperation

Agency carried out "School- Based Disaster Education Project" on October 18th, 2010. The aim was generalizing disaster education and actively performing works about disaster mitigation in schools (İnce & Özmen 2015).

Apart from this, many ministries, public institutes, non- governmental organizations and private sector carry out many works to increase students' awareness about earthquake.

For this study, questionnaires were arranged for the students of Baki Gündüz Primary School located in Gurpinar, Istanbul and what kind of works he school carried out and plans for a possible earthquake were analyzed. The purpose is to analyze how far those works have come along and make suggestions for the future.

Earthquake Education in Primary Schools

How to explain what an earthquake is to primary school students is as important as the earthquake itself. If the narrative is not filtered well, it might affect the students negatively just as the earthquake itself. Thus the very first point to be careful about during earthquake education is creating a perception that they are safe.

The main concern of the children who ask many questions about earthquakes is whether they are safe or not. For this reason, one must explain what an earthquake is to children of this age without giving many details. One should tell what children should do before, during and after an earthquake without making a big deal of it. One must establish trust by telling them that earthquakes might occur in this geography they live in but their schools are safe and all precautions are taken.

It is highly important for managers and teachers to keep calm and direct students during an earthquake. A crying, yelling or even running teacher or a manager might betray this environment of trust. This might cause the children to be skeptical about their future and not to adapt to their courses in appropriate levels.

On the contrary, when the narrative is filtered well and earthquake phenomena is explained accurately to the children in this age group,learning will be permanent and future works about earthquakes will be internalized more easily. For this reason, what to do before, during and after an earthquake must be explained to children by various means. Children's awareness must be monitored constantly with the help of various questionnaires, interviews and observations.

Photo 1,2. Baki Gündüz Primary School earthquake drill

School Disaster and Emergency Plan

School disaster plans are prepared in order to turn schools in Turkey into disaster- resistant institutions, physically protect students and employees, minimizing the disruption in the education period in face of possible threats and creating a safety environment. "Integrated School Disaster and Emergency Management" perception which includes preparing schools for disasters, creating school disaster plans and implementing these plans is the core of of all plans.

In line with this perception, three main scopes in schools.

- Risk evaluation and planning
- Physical protection
- Improving disaster response capacity

Taking these scopes into account, Integrated School Disaster Management is implemented under those titles;

- Setting up and Authorizing School Disaster and Emergency Board of Management.
- Risk Evaluation for Safety and Continuity of Education and Developing Action Plan.
- Taking Measures for Physical Protection.
- Improving Disaster Response Capacity and Sources.
- Announcing and Testing the Plan.
- Implementation and Evaluation of the Plan and Carrying out Drills to Update the Plan. (AFAD,2022)

Schools' preparing those plans well and internalizing them with the help of drills are important processes. Those plans should be explained to students in general terms and implemented in real life using drills. Authorized managers and teachers' implementing those plans to the letter during an earthquake and keeping calm are the main points for those plans to be successful.

Purpuse, Method and Scope of Study

The purpose of this study is to measure the perception of primary school students and present the current situation as to risk- reducing process. In this respect, a questionnaire with 13 questions was used to gather data in Baki Gündüz Primary School (Istanbul) which is located in 1st degree earthquake zone. This questionnaire was conducted face to face among 3rd and 4th grade students (9-10 years old). In this framework, 348 questionnaires were conducted on 03.01.2023. All the data collected using 348 questionnaires were analyzed. As a result of this analysis, current situation was presented, analysis and evaluations were made.

Table 1. Your gender

	Number of Participants	Percentage(simplified)
Male	180	52
Female	168	48
Total	348	100

According to Table 1, all the participants answered the question about their gender. 180 of all 348 participants who answered, namely 52% of them are male. 168 of them, namely 48% are female. (The percentages in all the tables are simplified.)

Table 2. Have you ever experienced the earthquake?

	Number of Participants	Percentage
Yes	333	96
No	15	4
Total	348	100

According to Table 2, majority of participants (96%) have experienced an earthquake. The other 4% who have not experienced an earthquake are the ones who either moved to this region from somewhere else or did not feel the earthquake as they were not in a building at that time. That big part of the participants have experienced an earthquake shows that this questionnaire was answered by a more conscious crowd.

Table 3. Do you think that you are personally prepared for an earthquake?

	Number of Participants	Percentage
Yes	183	53
No	49	14
Neutral	116	33
Total	348	100

Table 3 shows that the number of the students who think they are prepared for an earthquake is almost half of all the participants. Among the main reasons why the percentage of the students who think they are not prepared or are neutral hit 47% are worries that the school is not strong enough for an earthquake, the earthquake drill at school is not enough, there are many people who expect an earthquake in the near future and their houses are not safe enough.

Table 4. Do you think that you have been informed or educated well about earthquakes at school?

	Number of Participants	Percentage
Yes	294	84
No	22	7
Neutral	32	9
Total	348	100

According to Table 4, with a high percentage of 84%, the students said that they were educated well enough at school. However, in spite of this education, the worries of the students were not evenly diminished due to the other factors listed in Table 3. This shows that awareness about earthquake is high among the children in this age range.

Table 5. Do you know what you should do at school in case of an earthquake?

	Number of Participants	Percentage
Yes	336	97
No	4	1
Neutral	8	2
Total	348	100

Table 5 shows that the students have at least the necessary knowledge about what to do in case of an earthquake and they are confident thanks to the education given at school and drills.

Table 6. Have you ever participated in the earthquake drill at your school?

	Number of Participants	Percentage
Yes	325	93
No	23	7
Total	348	100

For Table 6, according to our observation, that the 93% of the students have participated in the earthquake drill at school raised trust in the students. This enabled the students to worry less in case of an earthquake.

Table 7. Do you think that the earthquake drill at your school was enough?
(If your answer to the 6th question is "yes", you can answer this 7th question.)

	Number of Participants	Percentage
Yes	233	71
No	38	12
Neutral	54	17
Total	325	100

According to Table 7, although three- quarter of 325 students who participated in the drill think that the drill was okey, that the rest's answer is "no" and "neutral" caused the students worry more about earthquakes. When the 7% who said they did not participate in a drill in Table 6 is considered as well, the reason why the students worry that much becomes much cleaerer.

Table 8. Do you think that your school is earthquake resistant?

	Number of Participants	Percentage
Yes	215	62
No	36	10
Neutral	97	28
Total	348	100

As one can see, the percentage of the students who think their school is not earthquake resistant or are neutral about this issue is 38% and this is one of the main reasons why the students are highly concerned.

Table 9. Should there be course on "Disasters and Disaster Management" in primary schools?

	Number of Participants	Percentage
Yes	272	78
No	32	9
Neutral	44	13
Total	348	100

According to Table 9, although the students have specific level of information about earthquakes, 78% of them want a course on "disasters and disaster management." Face-to-face interviews with the students helped us to understand that some worries lie at the heart of this choice although the students were reluctant to express this loudly. It is true that they have specific level of knowledge but it is also clear that each one of them has their own question marks.

Table 10. Do you expect an earthquake could happen in the near future?

	Number of Participants	Percentage
Yes	159	46
No	89	25
Neutral	100	29
Total	348	100

Table 10 is the most important question which explains why the level of worries about earthquakes increased. The fact that more than half of the students expect an earthquake could happen is the main reason of those worries. The reasons why so many students said "yes" to that question are that the region's history is full of serious earthquakes and there are news which say there can be an earthquake soon in TV, internet, newspaper etc. One can also say that social discourse also leaves a negative impact on the students.

Result

Educational institutions have important roles and responsibilities when it comes to disasters and disaster management. They share the big part of responsibility to increase awareness about disasters and especially earthquakes in society and create a disaster- resistant society.

Disaster management is more than a management process on an institutional level. Also individuals who must be considered as local actors have a role and responsbility in disaster management and risk mitigation (Özer, 2017). Increasing awareness of future generations, enabling them to act with a sense of responsibility, providing main education about disasters and teaching them how to act in case of a disaster should be the main targets. The very first step o reach these targets is primary school.

Although it is known that most primary schools have a disaster plan, these disaster plans are often confused with civil defence plans. This might lead to ignoring the relationship between how disasters occur- develop and protection ways from them in most cases. Each school should have a seperate disaster plan (Öcal, 2007). School management, students, parents, administrative personnel and school bus drivers should be taken into account as a whole while creating this plan. Students should be informed about school's disaster plan and there often should be drills to implement the plan. According to the questionnaire, although most of the students know what to do in case of a disaster, most of them answered "no" when asked "Are you informed about the disaster plan of your school?". Students should know that disaster drills are a part of the plan.

Baki Gündüz Primary School, where this study was conducted, is located in Beylikduzu, Istanbul. It geographically sits just in the north of North Anatolian Fault Line, which is the most important fault line in Turkey (Map 1). Recent research shows that an earthquake with a magnitude of 7 or above is expected in this fault line which is in Marmara Sea (Ertek et al, 2001., Kaya et al, 2002).As one can see in the map below, the school is approximately 10 kilometres away from this fault line. This fault line has not broken for the last 400 years and experts expect it to break soon. Both this possible earthquake in the foreseeable future and earthquakes in neighbour cities cause a high level of concern among primary school teachers.

Map 1. North Anatolian Fault Line (Görür, 2019)

This study was conducted in order to evaulate earthquake awareness and resistance of the students in the school. On the one hand, not only the questionnaire but also face-to-face interviews have shown that awareness level is high among the students. On the other hand, the destructice earthquakes happened so far and the big earthquake experts expect to occur in the near future raise the worry level of the students. The worry level remained high as 50% in spite of the relevant education and drills. Whether the school building is strong enough or not is in the first place among worries. Inadequacy of the drills and students' worrying that the expected earthquake will be very strong are the following reasons.

For this reason, earthquake education should be given more importance, there should be more drills, psychological support should be provided for the students and they should be informed about the strength of their schools.

In the light of this data, one can say that students who face the risk of an earthquake any time should not be informed about precautions theorotically and should be enlighened using concrete scientific data for them to be provided with healthy and sustainable education.

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