

Full Length Research Paper

Gifted students' opinions about "earthquake": A qualitative study

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Accepted 21 March, 2011

This study was carried out to put forth gifted students' perspectives towards "earthquake" concept. A total of 156 primary school students participated in the research in Ankara BİLSEM schools in 2010-2011 academic year. The data of the research was gathered by completing "The earthquake means..... ", or I consider earthquake as" statement. In the analysis and interpretation of the data, content analysis technique was used. As a result, the majority of the gifted students stated earthquake as: "quakes due to the movements of earth crust", "destruction", "loss of property and life", "natural disaster", "death" and "calamity". According to the results of the research, the following suggestions were offered: 1) developing and spreading natural hazards education at gifted students' institutions should be handled seriously. 2) Educational programs should be prepared in order to build environmental conscious via social communicational tools. 3) Gifted students should be given opportunities in the projects towards educational programs in relation with earthquakes, in other words, natural hazards.

Key words: Gifted children, earthquake, earthquake education, geography teaching.

INTRODUCTION

The gifted named as "golden children" by Platon are the individuals that have high level of capacity compared to their peers, general and specific skills are developed, sensitive, creative, productive and have high motivation. It has been experienced that the fore runners of the society in making their countries familiar and developing, politics, arts, science, economy, trading, sports, literature, language, history and geography are the "gifted" people. It is known that these individuals are important engines in the development of their countries and may provide contributions to their countries with the right rotations. So determining an individual at early ages and providing contributions to his/her country should be the most important task. In the world, where there is a pitiless debate among the countries, these individuals are transferred to other countries via brain-drain process and are given limitless opportunities and facilities. These individuals are not the instrument of this debate among the countries; on the contrary, they are expected to be

the individuals that serve to human beings. The gifted are the people that need educational programmes and service out of the normal school curriculum to make contributions to themselves and the society as well.

Improving the capabilities of the gifted, to use their capacity to provide the highest level is of great importance for the present and the future of the countries. There has been several studies both local (Ataman, 1976; Akkutay, 1984; Akarsu, 2001; Camurlu, 2001; Gökdere and Kucuk, 2003a; Gökdere et al., 2003b; Çepni et al., 2003; Çepni and Gökdere, 2004; Davasligil, 2004; Uzun, 2004; Enc, 2005) and foreign (Davis and Rimm, 1998; Renzulli, 1999; Schultz, 2000; Gallagher, 2000; Diffly, 2002) studies on gifted students in the literature.

Natural disasters, in short, can be defined as events that occur, negatively affecting the socio-economic and cultural activities, causing significant loss of life and property, mainly or entirely, caused by natural factors (Şahin and Sipahioğlu, 2003: 6). Droughts, tropical cyclones, floods, earthquakes, volcanoes, forest fires, tsunamis, landslides and avalanches are the most important natural disasters. The biggest natural disasters throughout the history of the world are earthquakes. It is

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fact that earthquakes which were recognized as one of the most important disasters among natural hazards in Turkey can not be denied.

Indeed, earthquakes are the natural disasters that influence Turkey, where there is loss of life and property with a high uncertainty rate (Tas, 2003: 225). Earthquakes are "short-term shocks that occur under the influence of natural factors and processes in the Earth's crust and upper mantle (Hosgören, 1997: 27)". In other words, the earthquakes are the short-term oscillation and vibration movements mostly seen in the earth crust due to natural factors that may cause significant changes" (Sahin and Sipahioğlu, 2003: 26).

Turkey is located on the Alpine Himalayan (Mediterranean) earthquake belt which is one of the world's three major earthquake generations (Pacific Earthquake Belt, Alpine-Himalayan earthquake belt and the Atlantic Ocean Earthquake Zone). However, there have not been earthquakes according to the fault lines of the geological-lithological characteristics of different positions depending on the severity and frequency of earthquakes all over the country. Earthquakes in Turkey were collected over three generations. These are the North Anatolian Fault Line (from the Gulf of Saros in the west, the Marmara Sea, Adapazarı, Düzce, western and central part of the Black Sea, Erzurum, Erzincan, Bingöl belt extending from Lake Van), the South-eastern Anatolian Fault Line (from Antioch, Amik Plain, Kahramanmaraş, Hakkari, Bingöl and extending to the belt) and the western Anatolian fault line into areas of subsidence in the Aegean region. According to the seismic zone map, 92% of Turkey is in the earthquake zones of 95% of Turkey's population live under the risk of earthquakes. In addition, 98% of large industrial centers, and 92% of the dams are at the seismic zone (Sahin and Sipahioğlu, 2003: 35-43; Özey, 2000: 110-157; Erinc, 1996: 281; Altay, 2008).

Turkey has been in a turning point before and after the 1999 Marmara earthquake. Institutions of state discussed reconstruction of the destroyed buildings up to the earthquakes in Marmara. However, the educational dimension of the earthquakes after the Marmara earthquake was been taken into account as a result of a national earthquake instead of regional, has so many financial and moral losses (Basibüyük, 2004: 13).

Earthquake is a natural disaster that prevention is impossible. But when necessary precautions are not taken, serious problems would be obvious. The most basic way to deal with earthquakes and other natural disasters is a deliberate and organized training through a natural disaster. The main objective of the earthquake and other natural disasters, education, community awareness of all segments of the environment, and active participation is to provide positive and continuous changes in behaviour. Natural disaster education should be a lifelong education, from pre-school education to all stages of formal and informal education.

The purpose and importance of the research

It is not possible to get rid of the problems that arise as a result of the earthquake completely. However, if each individual can take part in this regard and gain awareness about earthquake, the influence of earthquakes can be reduced. To gain awareness of the earthquake is to know and apply what to do before, during and after the earthquake correctly. Therefore, the necessary things before, during and after the earthquake, should be determined and the students should grasp the effective building awareness of the earthquake according to the current environment (Cakar, 2008: 27).

When the literature was examined, there was no study in putting forward gifted students' metaphors towards "earthquake" concept. From this perspective, this research has been the first in this area. It is considered that this study is important for the researchers' perspectives in this area, thereby providing training to educators and the program writers for the gifted students. On the other hand, it has been seen that there are rather few researches on putting forward students' perceptions towards "earthquake" concept at different class levels (Ross and Shuell, 1993; Tsai, 2001; Simsek, 2007; Demirkaya, 2007; Aydın, 2010; Aydın and Coşkun, 2010; Coskun, Kaya and Aydın, 2010; Kaya 2011). With the investigation of the findings of the researches, at various class levels carried out in different countries, the research students stated earthquake as: "natural hazard", "destruction", "death", "unprevented and unpredictable disaster".

The gifted are extremely sensitive and careful to the people around their environment. They consider themselves having a duty for questing their environment with answering the questions: what, why, where, who or for whom. They follow, investigate and take responsibilities in the solution of the occurrences around them in nature. Their sensitivity towards the troubles and events in nature is worth consideration. Their observational skills, their safe judgement capabilities against problems, reasoning, awareness and attention are the distinguishing features that can be seen at first sight separating them from other people. This issue was chosen with the idea that gifted children have high sensitivity and different approaches with interesting perceptions towards "earthquake" concept. As a result, this study therefore examines whether gifted people have different perceptions than other people towards earthquake concept as a natural level or a natural hazard.

METHOD

Research model

Phenomenography, one of the qualitative research models, was used in this study. Qualitative research can be define as a research in which data collection methods used such as observation, interviews and document analysis and a process are followed for

Table 1. Earthquake definitions of the gifted students.

No.	Definition	Female	Male	Total	Percentage (%)
1	The quake occurred as a result of the movement of the Earth's crust.	26	31	57	36
2	Destruction (The collapse of buildings and houses)	15	20	35	22.5
3	Loss of property and life	12	4	16	10.2
4	Natural hazards	6	6	12	7.7
5	Death	3	7	10	6.4
6	Disaster	4	5	9	5.7
7	1999 Marmara Earthquake	3	1	4	2.5
8	Fear	2	1	3	1.9
9	Poverty	1	2	3	1.9
10	Cracking of the Earth's crust	1	1	2	1,3
11	Replacing of faulty lines	-	2	2	1,3
12	A natural event that must be taken precautions	1	1	2	1,3
13	The revenge of nature from human beings	-	1	1	0,6

the imposition of perceptions and events in their natural environment by a realistic and holistic matter (Yildirim and Şimşek, 2006). In other words, qualitative study is a study to understand the "why" question of the human and group behaviour. The qualitative study looks for an answer for the questions of why? How? and in what way?

Working group

Primary students at Ankara (Turkey), BİLSEM (Center of Science and Arts) schools in the first term of 2010 - 2011 academic year participated in the research. Total number of students is 156 in the research. 70 of these students (45%) are girls and 86 are boys (55%). 34 of the research students are third grades, 43 of them are fourth grades, 40 are fifth grades, 24 are sixth grades and 15 of them are 8th grade students.

The data collection and analysis

The data collected from students were evaluated by phenomenographic analysis method content data analysis technique. In this analysis, first, all responses to the open-ended questions were read very quickly in one session. Then again same answers were read quickly for the second and third times. After the third reading, some categories of temporary pre-outlined were determined. The obtained pre-categories are based on subsequent readings. So these categories were tested against to the responses of the students. Further readings were used to verify the categories and similar responses were placed in categories. In short, written form data were quantified through certain stages during settlement and thus the qualitative data were quantified. Then the frequency analysis was made for the sentences to be coded and placed in.

FINDINGS

Gifted students' thoughts in the research towards earthquake concept are given in Table 1.

As seen in Table 1, 36% of the research students (57 students) expressed earthquake as "a quake caused by the movement of the earth's crust". While these students

are defining the earthquake, they considered the reasons and the occurrence of it at first sight. 22.5% (35 students) of the gifted students stated that when they heard earthquake, they imagined the destruction of the buildings and houses. Destruction of buildings is the most common condition in the earthquake areas. By the visual media, the photos and pictures of the earthquakes that took place in the whole world were exhibited. In accordance with this explanation, 10.2% of the students defined earthquake as "the loss of life and property". In students' emphasis on the loss of life and property, the collapse of 90620 buildings and 14513 workplace and the death of 17480 people in 1999 Marmara earthquake may be influential. 7.7% (12 students) of the students expressed that when they hear earthquake they consider it as a "natural hazard". As known, earthquake is a natural hazard that takes place suddenly without an effect of human beings. 4 gifted students in the research stated that when it is said earthquake, they remember "1999 Marmara earthquake". It was proved with the researches that 1999 Marmara earthquake caused severe psychological problems in most of the people in Turkey. The deep and painful tracks after the earthquake can be seen in the earthquake definitions of these students. In relation with this, 5% of the gifted students defined earthquake as "disaster", 1.9% as "fear" and "poverty", 0.6% as "worrying events". Some of the gifted students in the research emphasized that earthquakes should be taken into consideration seriously and stated as: "a precautionary natural hazard".

DISCUSSION AND RECOMMENDATION

According to the results of the research the perceptions of gifted students at Ankara BİLSEM (Center for Science and Arts) schools towards "earthquake" concept, gifted students used "natural" quakes due to the movements of

earth crust", "destruction", "loss of property and life", "natural disaster", "death" and "calamity" terms to define earthquake.

It can be said that the school education is so significant in students' using these definitions because natural hazards as earthquakes are studied in some lessons (geography, social studies, science, etc.). Therefore, it is clearly seen that students emphasize the terms that they study at school. It can also be inferred that pictures, photos and scientists' views towards earthquake out of school environment are also influential in shaping the students' perspectives on earthquake. It was seen that the recent 1999 Marmara earthquake which took place in Turkey with a big loss has significant impact on the society and students' definitions of earthquake.

The most emphasized expression by the gifted students towards earthquake concept is "*earthquake is the quake of the earth due to the earth crust's movements*". In other researches at varied class levels in Turkey similar findings were reached. For instance, according to Coşkun et al. (2010), 23.7% of the secondary students, Aydın (2010), 18.8% (90 students) of the primary 8th grade students, Aydın and Coşkun (2010) 19.7% of the primary 7th grade students (109 students) stated earthquake as the quake of the earth due to the earth crust's movements.

Some of the gifted research students stated earthquake as "death", "fear", worrying event" and "1999 Marmara earthquake" based on their experience and rumours. These expressions also express the emotional breakdown of the students' imaginary world caused by the earthquake. There are researches supporting this conclusion carried out in various student groups. For instance, Aydın and Coşkun (2010)'s phenomenographic study over 553 primary 7th grade students (Turkey) stated that 5% of the students defined earthquake as "*a disaster effecting human beings psychologically and leaving deep tracks on people*". In his study, Demirkaya (2007) stated that some of the primary students (30 students) defined earthquake as "scream, being in a hurry and worry". Coşkun et al. (2010) stated that 8.5% of the high school students consider earthquake as "an event destroying human psychology". In another study, Berkem and Bildik (2001) stated that children had psychological disorders after the 1999 Marmara earthquake.

Earthquakes give the most significant damages to the psychology of its survivors more than buildings. In such a situation, people severely need a psychological treatment; because the things that they experienced during an earthquake may appear in any condition regardless of the earthquake and make people have a fearful and painful life. In his study, Başibüyük (2004), as a result of the findings over adults stated: "In order to reduce the harms of the earthquake, some precautions must be taken and it should be necessary to be ready for the possible earthquakes".

From this point of view, these truths must be taught to all the individuals in the society:

1. It is impossible to cease the natural mechanism that forms the earthquake.
2. The harmful effects of the earthquake are its social, financial and psychological terms.
3. It is possible to reduce or prevent its damage.
4. People, getting harmed during an earthquake is not because of the direct effect of the earthquake, but it is as a result of not taking necessary precautions.
5. The important thing is to build safe buildings in the earthquake areas and inform the people about the protection from earthquake and hence reducing the damages of the earthquake to the least.

The results of the limited studies on "earthquake" perception studies in Turkey support this finding. For example in the study by Aydın (2010), 22.7% (109 students) of the primary 8th grade students, Aydın and Coşkun (2010), 22.6% (125 students) of primary 7th grade students and Coşkun et al. (2010) 30% of the high school students defined earthquake as: "*Destruction of buildings and people's death*".

In Gölcük earthquake, with 7.4 magnitude, 17480 people died in Turkey, which is an earthquake country. As they cause loss of life, earthquakes collapse the financial balance at the same time and can cause serious disorders over the macro economic structure. For instance, the effect of 1999 Marmara earthquake over the state finance was determined as 6.2 billion dollars (Öcal, 2005: 170). In Marmara earthquake, 90620 buildings and 14513 workplace were completely collapsed (Özey, 2000: 283).

Earthquake is a natural hazard which can not be guessed with the recent technology. However, earthquakes causes harm to everybody in the area where they occur. So, people from every age should be given education on earthquakes (Aydın, 2010).

Earthquake education is the process starting from the earth's crust going through explaining the earthquake and then giving information about protecting from the damages of the earthquakes. Schools are the correct place to give the earthquake education. If students can be given the right and conscious education on earthquakes, the injuries and damages of the earthquakes can be reduced. It is possible to reduce and get protected from the effects of the earthquakes with an influential earthquake education, in other words with a general term, an education on natural hazards. Natural hazards education should start from pre school period and go on through the educational process with particular educational programmes. Because of this educational institutions should carry the necessary conditions and atmosphere to attain the expected education level towards natural hazards. Earthquake should not remain as the issues to be learnt at school, students should be

able to reflect their educational knowledge outside the school. Endeavours to spread and develop natural hazards education in gifted students' educational institutions should be handled seriously.

To have the gifted students attain consciousness about earthquakes and develop it, they should know what to do before, during and after the earthquake and they should know how to apply them. To provide this is to apply a more realistic and up to date curriculum. In order to develop the conscious for earthquake, educational programmes should be prepared via communicational tools. Gifted students should also be given the opportunities to be involved in the projects related to education on natural hazards and earthquakes.

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