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The objectives of disaster education from teachers' perspectives[1]

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Abstract

This study aims to examine teachers' judgments on the objectives of disaster education regarding basic three aspects; clarity, measurability and attainability. A 3-point Likert-type scale was developed, and completed by 142 teachers who participated in several in-service trainings about disaster education. Descriptive statistics were carried out to analyze the data. Results of this study revealed that there was no single objective that teachers perceived as clear, measurable and attainable at one hundred percent. So, there is an urgent need to do a comprehensive list of learning objectives in a way that they are perceived clearer, more measureable and attainable for the purpose of achieving a well-qualified disaster education including all domains of disaster education, namely cognitive, affective and psychomotor.

Keywords: Disaster Education; Curriculum Analysis; Curriculum Literacy; Learning Objectives; Teachers

Introduction

Every country is prone to disaster events that are either natural or human-caused. According to the report by the United Nations International Strategy for Disaster Reduction (UNISDR) (2012a), the number of disasters around the world has been dramatically increasing. In the last 12 years, economic and human impacts of disasters were 1,1 million deaths and 1,3 trillion dollars of financial damage (UNISDR, 2012a).

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A disaster is defined as "a result of a combination of hazards, vulnerability, and inability to reduce potential negative impacts of events." (Dey & Singh, 2006, p.3) A disaster occurs only when the impacts of hazard cannot be reduced due to inadequate community, organization, and individual level of capacity development (Santha & Sreedharan, 2010). Sims and Baumann (1983) discuss two possible causal links between education, awareness and behavior change. It is believed that education may cause awareness, and hence awareness may cause change in behavior. Therefore, increasing awareness through disaster education can be considered as a prerequisite to the development of disaster management skills.

Disaster education is any learning process or activity, which builds community resilience to natural disasters (Dufty, 2008). Examining the related international literature reveals that school-based disaster education has been planned and implemented based on different approaches across the world with a common purpose of managing risk and reducing vulnerability (UNISDR, 2012b). Another long-term goal of disaster education is creating disaster resilient culture, which is in line with the Universal Declaration of Human Rights (Komac et al., 2010). It is believed that people who have gained useful knowledge and skills through qualified education are much better prepared to contribute to the process of rebuilding their own lives and even others' lives around them (Faupel, Kelley, & Petee, 1992). Hence, evaluating whether school-based disaster education is effective in building related knowledge, developing necessary skills, and raising awareness to be prepared for and to respond to any disaster event appears to be vital. School-based disaster education is also essential for the following reasons: First of all, children are seen as one of the most vulnerable populations after a catastrophic event (Cutter, Boruff, & Shirley, 2003). Therefore, schools are the best places to develop both individual and social awareness on disasters and disaster mitigation as they are in the center of any given society. In fact, research findings point out the importance of schools' role in disseminating the information of disaster safety and preparedness to students, parents and to wider society through disaster education (Adiyoso & Kanegae, 2012; Johnston, Tarrant, Tippler, Coomer, Pedersen, & Garside, 2011; Petal & Izadkhah, 2008; Shaw & Kobayashi, 2001; Shiwaku & Shaw, 2008). Secondly, children can potentially serve as an effective way to communicate disaster mitigation, preparedness, response, and recovery information to their parents. Research studies have suggested that educated children on disaster risk reduction lead to increase preparedness at home. The more a child is educated and encouraged to share information, the more there exists the potential for caregivers to be better informed (Cardona, 2007; Finnis, Standring, Johnston, & Ronan, 2004; Hosseini & Izadkhah, 2006; Ronan & Johnston, 2001; Ronan & Johnston, 2003; Shiwaku & Shaw, 2008; Tanaka, 2005). In the light of the review of global picture of disaster education, it is revealed that most of the countries fall short of formulating the

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objectives of disaster education. As the way of teaching disaster-related issues varies greatly, there is no agreed taxonomy of the objectives of disaster education. Although comprehensive learning objectives, which are aligned with the development stages of children, are considered as a prerequisite to effective disaster education, the objectives of disaster education are mainly knowledge-based, and those, which aim at developing required skills and attitudes, are scarce (Selby & Kagawa, 2012). Therefore, there is an urgent need to do a comprehensive list of the objectives of disaster education regarding cognitive, affective and psychomotor domains. Hence, students can gain simpler concepts at lower age and more complex ones at subsequent age level, and teachers can evaluate students' understanding of disaster-related issues, abilities to act properly for the purpose of disaster risk reduction, and their attitudes toward those issues.

Turkey is one of the disaster prone countries because of its tectonic evolution, geological structure, and topographic and meteorological characteristics (Japan International Cooperation Agency [JICA], 2004). The most common and the most devastating natural disasters in Turkey are earthquakes, which are followed by floods, landslides, erosions, droughts, rock falls, and avalanches (Ergunay, 2006). Despite Turkey's disaster proneness, disaster education has not been given enough attention so far. Until the 1999 Istanbul earthquake, all the preparations were done for how to respond and rehabilitate the results of earthquakes and other natural disasters. Since the 1999 Istanbul earthquake, several national and international projects have been developed and implemented on disaster mitigation and preparation, most of which seem to be focusing on disaster management and structural preparation. Thus, disaster education is the neglected part of the disaster mitigation efforts. Examination of the current education system in Turkey reveals that there is not a separate curriculum developed to be used for disaster education. Instead, the objectives of disaster education were included in both primary and middle school curriculum in 2003. The objectives of disaster education were integrated into the objectives of different subject areas, such as mathematics, science, social studies, etc. Therefore, in the current education system, disaster education is one of the eight cross-curricular themes, along with entrepreneurship, human rights and citizenship, guidance and psychological counseling, special education, health culture, sports culture and Olympics education, and career awareness. However, the effectiveness of the current form of disaster education has yet to be tested. Only a few researchers (e.g., Buluş-Kırıkkaya, Oğuz-Ünver, & Çakın, 2011; Erdur-Baker, 2013) report some preliminary findings about the current form of disaster education in Turkey. For example, Buluş-Kırıkkaya et al. (2011) claim that disaster education is mostly associated with life sciences and social studies at primary school level, but with science and technology at middle school level. These researchers point out some problem areas, most of which are related to the objectives of disaster education. Therefore, there

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appears to be a need for a closer examination of those objectives. Not all course-based curricula taught at primary and middle school levels include the objectives of disaster education. Only life sciences, mathematics, social studies, Turkish language, agriculture, and science and technology curricula have the objectives of disaster education. Table 1 depicts the objectives of disaster education integrated into both primary and middle school curriculum.

Table 1. *Objectives of Disaster Education Integrated into Primary and Middle School Curricula*

Science and Technology (7-8th grades)	
Explains reasons behind forest fires.	Explains what to do during floods with examples.
Be motivated to participate in practices of preventing forest fires.	Exemplifies preventions from the dangers after the flood.
Exemplifies reasons behind forest fires due to carelessness and ignorance.	Questions reasons behind landslides.
Lists what to do in forest fires.	Lists characteristics of a landslide.
Exemplifies effects of the wind.	Explains what to do in in-and outdoors during a landslide with reasons.
Exemplifies damages of tornados according to their strength.	Explains what to do after a landslide.
Determines ways of being protected from tornados.	Explains relation of the concept "danger" to earthquake.
Lists preventions from the danger of avalanche.	Exemplifies how buildings stand on the ground by his body.
Lists ways of being protected from storms.	Calculates differences between Richter values.
Describes what to do for being protected from floods.	
Life Sciences (1st-3rd grades)	
Be aware of what humans need to survive.	Asks and answers questions on earthquake and earthquake preparedness.
Be aware of how to feel during an earthquake.	Investigates dangers to be encountered after an earthquake.
Knows and applies the required position during an earthquake.	Does earthquake hazard hunt in a determined place and lists dangers found.
Applies what should be done during an earthquake.	Investigates how to reduce dangers and provides appropriate solutions.
Knows evacuation exits after an earthquake.	Applies simple preventions from an earthquake in class.
Gets ideas on possible negative situations to be encountered after an earthquake.	
Mathematics (4th grade & 6-8th grades)	
Explains reasons behind forest fires.	Questions reasons behind landslides.
Exemplifies effects of the wind.	Calculates differences between Richter values.
Compares durations of earthquakes.	Be aware of how much time an earthquake takes at average.
Exemplifies preventions from the dangers after the flood.	Describes technical information about an earthquake.
Social Studies (4-5th grades)	
Be aware of what humans need to survive.	Discusses what should be done during an earthquake in different settings.
Differentiates between necessary and unnecessary stuff during an earthquake.	Applies what should be done during an earthquake in earthquake drill.
Gets ideas on which stuff is necessary after an earthquake.	Applies what should be done during aftershock.
Lists stuff that will be necessary and used during an emergency in various settings.	Knows evacuation exits after an earthquake.
Plays an active role in preparing a classroom release bag and providing stuff.	Be aware of dangers to be encountered while exiting from a building.
Supports community awareness about earthquake by preparing posters.	Explains what to do against dangers to be encountered while exiting from a building.
Turkish Language (5th grade & 7th grade)	
Investigates dangers to be encountered during an earthquake.	Explains what to do in in-and outdoors during a landslide with reasons.
Agriculture (6-8th grades)	
Although related to the 5th, 10th, and 13th objectives, they are not clearly defined.	

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As Table 1 shows, there is an unbalanced distribution of the objectives of disaster education included in both primary and middle school curriculum. Earthquake-related issues are more emphasized in general. For instance, almost all of the objectives of disaster education in life sciences focus on earthquake preparedness. Besides, half of the objectives of disaster education in mathematics are related to earthquake. The Turkish language curriculum addresses only two objectives, which is very limited number. Petal and Izadkhah (2008) clarify that language arts, such as literature and composition should be integrated with the content of disaster risk reduction. Social studies curricula (4-5th grades), another essential subject area for disaster education (Mitchell, 2009), are also dedicated to earthquakes mostly.

Examination of these learning objectives also reveals that a systematic taxonomy of the objectives of disaster education has yet not been established. In some major subject areas, such as social studies, life sciences, etc., there are some objectives specific for disaster-related issues. On the other hand, there are some objectives, which do not have a direct relationship to disaster-related issues. For instance, one of the objectives in the 4th grade mathematics curriculum, namely "At the end of this lesson, students will be able to explain the relation between minute and second" is associated with one of the objectives of disaster education, and students are expected to use data on earthquake durations to practice measurement. However, in this example, the main focus is not disaster risk reduction. It is a carrier resource for learning of time measurement. Another example for this issue is as follows: The study of numbers, which takes place in the 6th grade mathematics, includes comparing and arranging data on the effects of wind, and the work on probability and statistics uses data on the potential flood hazard.

Erdur-Baker (2013) discusses that the objectives of disaster education need some improvement in terms of the way that they are stated and integrated. Across different grade levels, the same objectives with the same level of difficulty appear to be inserted into the current curriculum although it is claimed to be spiral. For example, the 1st grade life sciences and the 4th grade social studies curricula have the same objective about the needs of people to survive for life. Instead of this, learning objectives should be mutually complementary and give students a chance to make progress step-by-step during the school years.

The second issue is the assessment of student learning of disaster risk reduction. Although different forms of assessment are proposed in the curriculum, the most frequently used one is written tests. As Selby and Kagawa (2012) point out, assessment of student learning of disaster-related issues is considered as a less important element than the other elements of disaster education. In most cases, assessment is restricted to be knowledge-based through either written or multiple-choice tests. Therefore, because student learning of disaster-related skills and behaviors cannot be assessed

through these tests, they are generally ignored in the Turkish context as well. For instance, there are several learning objectives in the curriculum, which cannot be assessed through written tests. In the 4th grade social studies curriculum, there are two interdisciplinary objectives, which focus on necessary actions to be taken during an earthquake and its aftershocks. Students are expected to display appropriate safety behaviors in an earthquake drill. However, it is difficult to assess students' performance during a drill. A teacher should be well-prepared and prepare a checklist or rubric in order to illuminate the extent of attainment of those objectives while observing students' performance during a drill. Erdur-Baker (2013) discusses that teachers, who are well-trained in disaster education, and better developed materials and activities are needed to make students attain the objectives of disaster education. Other related Turkish studies on disaster education primarily focus on the assessment of implementation of disaster education, which is provided through different subject areas, in particular, middle school science and social studies curricula, through teachers' perceptions. According to Öcal (2005), there is a need for the development of instructional strategies and materials in order to implement disaster education more effectively.

Apart from this, according to the other overview of disaster education in Turkey, teachers, regardless of their subject areas, consider themselves pedagogically inadequate with respect to their levels of knowledge on disaster-related issues (Buluş-Kırıkkaya et al., 2011). The underlying reason of teachers' deficiencies in disaster education in Turkey can be related to their low levels of curriculum literacy, which refers to a teacher's understanding of what a curriculum says. Teachers play a vital role in all related to a curriculum (Carl, 2005). If teachers have difficulty in understanding intended learning experiences that students should gain, they confront challenges in filling in a gap between what a curriculum says and what they understand from it because of a lack of guidance. Therefore, in the present study, in order to improve the effectiveness of current disaster education, teachers' judgments on its objectives are sought out. Because Turkish education system is top-down and highly centralized, policy-makers and curricularists state all learning objectives and define others related to curricula through the curriculum development process. Therefore, a curriculum including learning objectives takes its final form and is ready to be run after the curriculum development committee discuss and comment on each curriculum component separately. In such a system, a clear, easy to understand curriculum is essential as well as teachers with strong curriculum literacy. Nicholson (2011) emphasizes that ideal learning objectives should be **specific**, **measurable**, **action-oriented** (i.e. are written using only one verb), **results-oriented** (i.e. they describe what students should be able to do at the end of learning), and **timely** and **tangible** (i.e. they can be reasonably accomplished, and demonstrated by the student, within the allotted timeframe). This present study examines teachers' judgments on the objectives of disaster

education regarding basic three aspects; *clarity, measurability and attainability*. The research questions of the study are as follows;

(1) To what extent do teachers judge the existing objectives of disaster education as clear enough to understand (clarity)?

(2) To what extent do teachers judge the existing objectives of disaster education as measurable (measurability)?

(3) To what extent do teachers judge the existing objectives of disaster education as attainable (attainability)?

Hence, the findings of this study can contribute to understanding how teachers internalize the objectives of disaster education, which are included in the primary school curriculum, in respect to their clarity, measurability, and attainability so that necessary steps for improvement can be planned and implemented accordingly.

Method

Participants

The participants of this study consisted of 142 teachers (28 females and 114 males), who participated in several disaster education trainings organized by the Ministry of National Education and the JICA. The average teaching experience was 15.12 years with a standard deviation of 8.24. Among all, 39.8% of them had an experience of teaching for 11-20 years, 34.0% of them for 1-10 years while 26.2% of them had an experience of teaching for more than 21 years. Among all, 89.4% of them participated in disaster mitigation activities, 88.7% of them attended in-service training seminars on disaster education, and 13.6% of them worked as volunteers in governmental and/or non-governmental organizations serving for resiliency to disasters.

Data Collection Instrument

Data were collected through a survey with four parts, three of which consisted of 25 items developed by the researchers according to the objectives of disaster education included in the recent primary school curricula offered to 1st-5th graders. The first three parts include 25 identical objectives, and teachers were asked to judge them in terms of their clarity, measurability and attainability, respectively. Teachers reflected their opinions on a 3-point Likert-type scale for both clarity (0= undecided, 1= unclear, 2=clear) and measurability (0=undecided, 1=unmeasurable, and 2=measurable). The inter-item correlation coefficients of .86 and .85 were found for clarity and

measurability, respectively. The attainability of the objectives of disaster education was also rated on a 3-point Likert-type scale ranging from 0 (undecided) to 2 (attainable), and an inter-item correlation coefficient of .91 was found. Finally, certain questions were asked in the last part to obtain data on demographic characteristics of teachers as follows: their gender, teaching experience, participation in disaster mitigation activities and in-service training seminars on disaster education, and finally working as volunteers in governmental and/or non-governmental organizations serving for resiliency to disasters.

The instrument introduced above was administered during the training session, where the current form of disaster education in Turkish education system and the objectives of disaster education were summarized. Later, participating teachers were asked to reflect their own ideas about those objectives in terms of their clarity, measurability, and attainability.

Data Analysis

The quantitative data were analyzed via SPSS (Statistical Package for Social Studies) for Windows™ Version 15.0 (Green & Salkind, 2008) using descriptive statistics. Background characteristics of in-service teachers and the perceived clarity, measurability, and attainability of the objectives of disaster education were reported in terms of frequencies and percentages. Data were screened to check for missing values and for incorrect data entry. No incorrect entry was detected, but both in demographic variables and scale items, there were some missing values more than 5%. Although data were collected totally from 166 teachers, 24 cases including missing values exceeding 5% were deleted. For the remaining 142 cases including missing values less than 5%, it was decided that data needed to be remedied. To do this, Little's MCAR Test was employed to determine whether the missing data were completely at random. It was found out that missing data did not follow a completely random pattern ($p<.05$) by running Little's MCAR Test (Little & Rubin, 1987). Therefore, it was not decided to impute the missing values. After missing value analysis, the descriptive analysis of the data was conducted.

Results

Since teachers are expected to deliver the objectives of disaster education to students exactly as the curricula say (Carl, 2005), they should be able to understand them without any doubt. But, this requires the objectives to be very clearly stated. Table 2 shows frequencies and percentages of the *perceived clarity* of each objective of disaster education.

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Table 2. *Perceived Clarity of Each Objective of Disaster Education (N=142)*

	Undecided		Unclear		Clear	
	0		1		2	
A learner will be able to	*f*	%	*f*	%	*f*	%
Know the required position during an earthquake.	2	1.4	1	0.7	139	97.9
Apply simple preventions from an earthquake in class.	10	7.0	3	2.1	128	90.1
Do earthquake hazard hunt in a determined place and lists dangers found.	5	3.5	10	7.0	127	89.4
Be aware of what humans need to survive.	7	4.9	6	4.2	127	89.4
Ask and answer questions on earthquake and earthquake preparedness.	8	5.6	9	6.3	125	88.0
Apply the required position during an earthquake.	13	9.2	3	2.1	125	88.0
Know evacuation exits after an earthquake.	8	5.6	9	6.3	124	87.3
Apply what should be done during aftershock	9	6.3	8	5.6	124	87.3
Apply what should be done during an earthquake in earthquake drill.	12	8.5	7	4.9	123	86.6
Get ideas on which stuff is necessary after an earthquake.	15	10.6	7	4.9	120	84.5
Explain what to do against dangers to be encountered while exiting from a building	12	8.5	12	8.5	118	83.1
Be aware of dangers to be encountered while exiting from a building.	12	8.5	13	9.2	117	82.4
Play an active role in preparing a classroom release bag and providing stuff.	17	12.0	7	4.9	117	82.4
Differentiate between necessary and unnecessary stuff during an earthquake.	16	11.3	12	8.5	114	80.3
Support community awareness about earthquake by preparing posters.	16	11.3	12	8.5	114	80.3
Investigate how to reduce dangers and provide appropriate solutions.	16	11.3	15	10.6	110	77.5
Get ideas on possible negative situations to be encountered after an earthquake.	14	9.9	20	14.1	107	75.4
List stuff that will be necessary and used during an emergency in various settings.	16	11.3	20	14.1	106	74.6
Investigate dangers to be encountered during an earthquake.	24	16.9	19	13.4	98	69.0
Discuss what should be done during an earthquake in different settings.	27	19.0	18	12.7	97	68.3
Apply what should be done during an earthquake.	29	20.4	26	18.3	87	61.3
Be aware of how much time an earthquake takes at average.	19	13.4	42	29.6	81	57.0
Compare durations of earthquakes.	24	16.9	42	29.6	76	53.5
Describe technical information about an earthquake.	31	21.8	44	31.0	65	45.8
Be aware of how to feel during an earthquake.	28	19.7	51	35.9	63	44.4

According to Table 2, there was no single objective that all participants perceived as clear at one hundred percent. However, only the 5th objective was perceived clear by almost all participants (97.9%). Some objectives were found unclear to a larger extent. For instance, the 7th and the 20th objectives were only found clear by less than half of the participants (44.4% and 46.4%, respectively), and the 9th, 12th, 13th, 16th and 21st objectives were perceived unclear by minimum 40% of participants. According to these results, it was revealed that some objectives have some problems in terms of clarity. Therefore, further work on clarity of the objectives appears to be useful. Table 3 below displays frequencies and percentages of the *perceived measurability* of each objective of disaster education.

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Table 3.*Perceived Measurability of each Objective of Disaster Education (N=142)*

	Undecided		Can not be measured		Measurable	
	0		1		2	
A learner will be able to	*f*	%	*f*	%	*f*	%
Know the required position during an earthquake.	4	2.8	8	5.6	130	91.5
Do earthquake hazard hunt in a determined place and lists dangers found.	9	6.3	6	4.2	127	89.4
Ask and answer questions on earthquake and earthquake preparedness.	9	6.3	10	7.0	122	85.9
Know evacuation exits after an earthquake.	11	7.7	8	5.6	121	85.2
Be aware of what humans need to survive.	12	8.5	9	6.3	120	84.5
Apply what should be done during an earthquake in earthquake drill.	11	7.7	11	7.7	120	84.5
Apply simple preventions from an earthquake in class.	14	9.9	8	5.6	119	83.8
Apply the required position during an earthquake.	15	10.6	9	6.3	118	83.1
Get ideas on which stuff is necessary after an earthquake.	16	11.3	12	8.5	114	80.3
Explain what to do against dangers to be encountered while exiting from a building	19	13.4	12	8.5	111	78.2
Play an active role in preparing a classroom release bag and providing stuff.	21	14.8	11	7.7	110	77.5
Apply what should be done during aftershock	14	9.9	17	12	109	76.8
Support community awareness about earthquake by preparing posters.	21	14.8	13	9.2	107	75.4
Differentiate between necessary and unnecessary stuff during an earthquake.	18	12.7	17	12.0	106	74.6
Be aware of dangers to be encountered while exiting from a building.	19	13.4	18	12.7	105	73.9
List stuff that will be necessary and used during an emergency in various settings.	21	14.8	19	13.4	102	71.8
Investigate how to reduce dangers and provide appropriate solutions.	23	16.2	17	12.0	101	71.1
Get ideas on possible negative situations to be encountered after an earthquake.	24	16.9	25	17.6	91	64.1
Investigate dangers to be encountered during an earthquake.	30	21.1	24	16.9	87	61.3
Discuss what should be done during an earthquake in different settings.	26	18.3	28	19.7	87	61.3
Describe technical information about an earthquake.	29	20.4	37	26.1	74	52.1
Apply what should be done during an earthquake.	28	19.7	42	29.6	72	50.7
Compare durations of earthquakes.	30	21.1	39	27.5	71	50.0
Be aware of how much time an earthquake takes at average.	26	18.3	46	32.4	69	48.6
Be aware of how to feel during an earthquake.	34	23.9	67	47.2	41	28.9

It cannot be expected that an unclear objective can be perceived as measurable. Not surprisingly, a great number of participants detected unclear objectives as unmeasurable. For instance, the 7th and the 9th objectives were found unmeasurable by more than half of the participants. Other remarkable objectives that at least 40% of participants perceived unmeasurable were the 13th, 16th, 20th, 21st, and 12th objectives. On the other hand, just two objectives, namely the 2nd and the 5th objectives, were regarded as measurable by most of the participants (89.4% and 91.5%, respectively).

Table 4 below displays frequencies and percentages of the *perceived attainability* of each objective of disaster education.

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Table 4.*Perceived Attainability of each Objective of Disaster Education (N=142)*

	Undecided		Unattainable		Attainable	
	0		1		2	
A learner will be able to	*f*	%	*f*	%	*f*	%
Apply what should be done during aftershock.	1	0.7	19	13.3	121	85.9
Do earthquake hazard hunt in a determined place and lists dangers found.	0	0	14	9.8	128	90.1
Explain what to do against dangers to be encountered while exiting from a building.	1	0.7	23	16.2	118	83.1
Be aware of dangers to be encountered while exiting from a building.	1	0.7	25	17.6	116	81.7
Know the required position during an earthquake.	2	1.4	4	2.8	136	95.8
Apply the required position during an earthquake.	2	1.4	12	8.4	128	90.1
Be aware of how to feel during an earthquake.	9	6.3	68	48.2	64	45.4
Know evacuation exits after an earthquake	4	2.8	15	10.6	123	86.8
Be aware of how much time an earthquake takes at average.	10	7.1	63	44.7	68	48.2
List stuff that will be necessary and used during an emergency in various settings.	3	2.1	32	22.5	107	75.4
Differentiate between necessary and unnecessary stuff during an earthquake.	5	3.5	28	19.8	108	76.6
Investigate dangers to be encountered during an earthquake.	6	4.3	31	22.2	103	73.5
Apply what should be done during an earthquake.	10	7.0	39	27.4	93	65.5
Apply what should be done during an earthquake drill.	0	0	15	10.6	127	89.4
Get ideas on which stuff is necessary during an earthquake.	3	2.1	19	13.4	120	84.5
Compare durations of earthquakes.	13	9.3	54	38.5	73	52.2
Ask and answer questions on earthquake and earthquake preparedness.	4	2.8	20	14.1	118	83.1
Get ideas on possible negative situations to be encountered after an earthquake.	3	2.1	25	17.6	114	80.3
Apply simple preventions from an earthquake in class.	0	0	17	12.0	125	88.0
Describe technical information about an earthquake.	11	7.8	63	44.6	67	47.5
Discuss what should be done during an earthquake in different settings.	6	4.2	41	28.9	95	66.9
Be aware of what humans need to survive.	2	1.4	14	9.9	125	88.6
Support community awareness about earthquake by preparing posters.	4	2.8	31	21.8	107	75.4
Play an active role in preparing a classroom release bag and providing stuff.	5	3.5	15	10.5	122	85.9
Investigate how to reduce dangers and provide appropriate solutions.	5	3.5	36	25.3	121	71.1

As shown in Table 4, there is not even a single objective perceived as attainable by all of the participants. On the other hand, there are several objectives found attainable to a larger extent. For instance, most of the participants detected the 5th (95.8%), the 6th (90.1%), the 2nd (90.1%), the 15th (89.4%), the 23rd (88.6%) and the 20th (88%) objectives as attainable. However, there are three objectives listed in this study, the 7th, the 21st, and the 9th objectives, considered as attainable by less than half of the participants (45.4%, 47.5% and 48.2%, respectively).

Discussion, Conclusion and Suggestions

There are several learning objectives featured in this study that need to be paid more attention. The following objectives "be aware of how to feel during an earthquake", "be aware of how much time an earthquake takes at average", and "describe technical information about an earthquake" were perceived less clear, less measurable and less attainable than others. The close examination of these objectives firstly reveals that they include the verb of "be aware of", which is vague and unclear. Even if they are clearly stated, it can still be difficult for students to attain and for teachers to measure whether students attain these objectives. Previous studies showed that teachers

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experienced ambiguity about the objectives formed with vague verbs (e.g., be familiar with, be exposed to, be aware of, understand, know, etc.), and this resulted in fall short of the teaching process (Berberoğlu, Arıkan, Demirtaşlı, İş-Güzel, & Özgen-Tuncer, 2009; University of Malta Academic Programs Quality and Resources Unit, 2009).

Secondly, although the verb of "describe" is not one of these vague verbs, there still exists an ambiguity in the objective developed with this verb. What is meant by "technical information about an earthquake" is not clear. Teachers cannot be sure of what is covered by the technical information about an earthquake. Therefore, it is more than probable that teachers encounter some problems while teaching such objectives. This objective also needs to be recast as it includes more specific information. Some arrangements made for these less clear, less measurable and less attainable objectives are as follows: (1) Instead of "A learner will be able to be aware of how to feel during an earthquake"; "A learner will be able to embrace a sense of responsibility to help protect others from disasters", (2) Instead of "A learner will be able to be aware of how much time an earthquake takes at average"; "A learner will be able to estimate how much time an earthquake takes at average", (3) Instead of "A learner will be able to describe technical information about an earthquake"; "A learner will be able to describe what an earthquake is."

On the other hand, there is an objective with the "be aware of" verb that was perceived clearer, more measurable and more attainable. It addresses the essentials for people to survive, which makes sense more and is easier to understand. Teachers might consider this objective regardless of the criteria for ideal learning objectives: Specific, measurable, action-oriented, results-oriented, and timely and tangible. Therefore, it needs to be revised to avoid this hazy picture that researchers have come across in this study.

As a matter of fact, a substantial number of the learning objectives seem problematic in terms of the criteria for ideal learning objectives. In the list, there are several objectives consisting of more than one verb, which is another cause of ambiguity (Kennedy, Hyland, & Ryan, 2007). For instance, "A learner will be able to do earthquake hazard hunt in a determined place and list dangers found", "A learner will be able to ask and answer questions on earthquake and earthquake preparedness", and "A learner will be able to investigate how to reduce dangers and provide appropriate solutions". Those learning objectives break the rule of using only one verb per objective. To measure and observe both actions at the same time in a given context is more difficult and is not something that we expect to encounter because these objectives are supposed to be formulated by experts and to be piloted before putting into practice. They should be stated in a way that it is ensured that learning objectives are capable of being assessed.

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Overall, participants perceived learning objectives clear, measurable, and attainable although they are not actually based upon the criteria determined for ideal ones. This result can be explained through teachers' inadequate knowledge on the characteristics of ideal learning objectives. Teachers are expected to be well-equipped with required curriculum literacy after they graduate from teacher education programs. However, it can be claimed that these programs do not provide teachers with required knowledge of curriculum to have a word to say on its strengths, gaps, and overlaps.

Although feedbacks, about strengths, weaknesses, opportunities, and threats of a curriculum, provided by teachers are significant for better and more effective teaching (Loucks & Pratt, 1979), little attention is paid to teachers' voice in the curriculum development process (Carl, 2005). Also, teachers' roles in co-constructing the curriculum along with students fail to be noticed (Kilpatrick, 2009). However, as Finch (1981) highlights, the more teachers are involved, the more effective the curriculum is. Piloting the curriculum can be a way of receiving feedback from teachers as it makes a curriculum draft be a real one and ready for actual implementation. But, existing unideal objectives of disaster education in the primary school curriculum make the researchers think of ineffective development and testing of that curriculum. Hence, the objectives of disaster education should be reconsidered again in a way that they should carry ideal characteristics. Also, ideally, teachers as curriculum implementers should have been expected to determine problematic objectives of disaster education based on their implementation in pilot schools selected to represent the whole country. However, there are still objectives that are not ideal, and teachers still consider them as ideal. Hence, it can be inferred that testing the curriculum might not serve this purpose. It seems also debatable whether teachers are asked for any idea on the curriculum piloted. Teachers might also blindly accept a state-mandated curriculum as assumed (Hjelle, 2001) and take their illiteracy of the curriculum for granted. Thus, the curriculum developed should be piloted in a way that teachers can provide feedback in order to determine its strengths, gaps, and overlaps. Another possible explanation for this result can be social desirability. Teachers might be biased in reflecting on clarity and attainability of the objectives of disaster education, while more critical in reflecting on their measurability. Teachers might think that clarity and attainability of those are related to their own thinking and teaching skills and might have a high sense of efficacy. However, rather than a high sense of efficacy, efficacy doubts or uncertainty of teachers about their efficacy may enhance their learning of a curriculum (Smith, 1996).

All in all, the present study focuses on teachers' judgments on the clarity, measurability, and attainability of the objectives of disaster education. As a further step, the data collected can be triangulated by means of other techniques, such as classroom observations and in-depth interviews

with teachers. Other people who may also be potential data sources, such as curriculum developers, school administrators, and rescue team members, etc. might be involved in further studies.

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