



INPUT PAPER

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THE EVOLUTION OF SCHOOL EARTHQUAKE EDUCATION IN IRAN

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Abstract

There is no need to emphasize the role of education in disaster reduction. This conforms to the third priority of the Hyogo Framework for Action (HFA-2005-2015) which highlights 'Using knowledge, innovation and education to build a culture of safety and resilience at all levels'. It can be stated that a well-informed and well-prepared community can initiate a culture of resilience. In the meantime, the high efficiency of educating children and young adults is also clear to those involved in educational programs for disaster mitigation. In fact, hazard education in pre-school as well as school and university levels can play a vital role in helping a community to be ready, willing, and able to prepare for and respond to a disaster. These days, examples around the world are beginning to reveal the power of both formal education in disaster risk reduction, integrated into curricula for all age levels, as well as informal education introduced through co-curricular and extra-curricular activities. Since the inception and adoption of HFA, various educational media, including chapters in textbooks, booklets, pictures, brochures, animations, posters, songs, puzzles, games and drills have been developed and implemented by teachers and instructors as means for better disaster education all around the world. In this regard, there has been an extensive progression in producing and using earthquake education materials, pre-school activities and school curricula initiatives as well as related teacher trainings in the last few years in Iran which will be reviewed in this paper and their strengths, challenges and effectiveness of HFA on these activities will also be addressed. Suggestions for possible missing elements that need to be developed for inclusion in the future framework (Post- 2015) are also proposed.

1. Introduction

Education is the fundamental "bedrock" of a successful disaster risk reduction program. Within the past two decades, there has been a rapid growth in formal and informal attempts to promote learning about disaster threats in order to increase public knowledge and change behavioral patterns to protect lives (Izadkhah and Hosseini, 2005). Disaster education has been effectively implemented in some areas for many years. For example, in USA, the American Red Cross has a long history of educating the public about natural and technological hazards and ways to reduce the effects of these hazards on people and their property. Although, printed documents are rarely available, but there is also evidence of developed public awareness materials from the 1950s onwards. In the 1980s, however, the responsibility for developing and disseminating disaster

safety information was spread in USA. For example, those working in Federal Emergency Management Agency (FEMA) Earthquake Program in the 1980s wrote and disseminated earthquake-related materials for the people (Lopes, 2001). There is a section on issues in "Earthquake Education" in the technical report prepared by NCEEER (National Centre for Earthquake Engineering Research) in 1992 (presently MCEEER), covering articles and case studies relating to earthquake education in general and particularly in school curriculum. This endeavor has been started successfully and has been continued since then. Disaster education therefore has been developed in many countries around the globe such as Japan, Nepal, Turkey, etc. It should also be mentioned that the empowerment of children in matters that affect their own future is being pioneered by many child-oriented NGO's as well (IDRC 1998, Tearfund 2004, Action Aid 2007, Plan International 2007, Schick 2007).

In the field of education, disaster-related issues are mostly treated in an isolated manner and there has been a hope that with integration of activities into the school curriculum, the continuation of awareness may be better retained in people's minds (Izadkhah, 2004). Many experts have noticed this existing lack of priority to earthquake education and indeed its isolation to other related fields. As stated by Twigg (2004), public education has become '*fragmented into separate, one-off, short-term interventions*' whose impact is rarely assessed. He further states that many contributors to the World Conference on Disaster Reduction (WCDR), on-line Conference (2004) believed that education should be seen as a dialogue and exchange of views and not only a one-way information dissemination. During the UN World Disaster Reduction Campaign in 2000 (UN 2000), the theme of "Disaster Reduction, Education and Youth" was introduced. This priority has become integral to the 2005-2015 Hyogo Framework for Action as part of Priority 3, focusing on the 'use [of] knowledge, innovation and education to build a culture of safety and resilience at all levels' (UNISDR 2005). In addition, the 2006-7 UNISDR campaign "Disaster risk reduction begins at school" aimed to promote the integration of disaster risk reduction into government plans for school curricula and to ensure that school buildings are safe from the impacts of natural hazards (UNISDR 2006, Wisner 2006, UNISDR, 2007). Moreover, in conjunction with climate change awareness and environmental education, Ministries of Education are taking on the challenge of disaster risk reduction education. The current International Decade of Education for Sustainable Development led by UNESCO provides a long-term focus for taking this agenda forward in the world (Petal and Izadkhah, 2008). Also, many countries in the world

have now implemented disaster related issues in their schools for students in various levels, such as examples reported by UNESCO and UNICEF, DRR in School Curricula: Case studies from thirty countries (Selby and Kagawa, 2012)

In this paper, first an introduction is provided on earthquake education. The modes of education included formal and informal education are explained and examples of the wide range of the existing formal and informal Iranian disaster materials are provided within the scope of this paper. An overall assessment is then addressed with recommendations for further action post- 2015.

2. Modes of Education

For school disaster education, examples around the world are beginning to reveal the power of both formal education in disaster risk reduction, integrated into curricula for all age levels, as well as informal education introduced through 'co-curricular and extra-curricular activities' (Petal and Izadkhah, 2008) that begin at school.

2.1. Formal Education

Formal curriculum integration (Table 1) may be introduced fairly rapidly in the form of elective courses or modules that plug into other existing courses. Disaster risk reduction can also be systematically and more slowly infused into the curriculum by elaborating its full scope and sequence, undertaking an audit of existing curriculum, and designing the entry points in the course of the 'curriculum adoption cycle' for all subjects and age levels.

Curriculum Integration	Use of specially developed units, modules or chapters concentrating on disaster risk reduction.
Extra-Curricular Integration	Links to community-wide public awareness campaign, and limited teacher training helps to strengthen the program (Civil Defence New Zealand 2006).
Curriculum Infusion	Distributes disaster risk reduction content throughout the curriculum, using lessons, readings, activities and problems, enriching the existing curriculum rather than displacing it.
Stand-alone Courses	Specialized course curricula focused on disaster risk reduction. In some countries where curriculum permits, these courses may supplement the existing curriculum at specific grade levels (Petal et al 2006).
Curriculum Resource Materials	Guidance and lesson plans to be used on a voluntary basis by teachers, for integration into existing curriculum is a strategy that has been used in California and parts of USA (American Red Cross 2008, Team Safe-T 2008).

Table 1: Forms of formal Education (Petal and Izadkhah 2008)

2.2. Informal Education

Informal education can take many forms, offering fun and engaging ways to introduce important knowledge, skills and competencies for students of all ages. This includes (Table 2):

Creative Educational Materials	Toys and games, documentary and short videos, storybooks, comic books, puzzles, and computer games.
Cultural and Performing Arts	Music, song, poetry, dance, puppetry, magic, street theatre, improvisation, pantomime, or artwork are appealing, engaging and creative ways to introduce disaster risk reduction messages.
After School "Safety Clubs", Scouting Badges, and Project Activities	Provide an opportunity to develop awareness materials and displays, plan games and engage in performances and art projects to communicate with others. Small-scale models includes, for example, shake table demonstrations.
Competitions, Awards and Commendations	Generate parent, community and mass media interest and develop enthusiasm for the messages.
Voluntary Drawing and Writing Competitions	Engage many children. DRR Knowledge Tournaments can involve many schools and radio or television broadcast can be used to share knowledge and competencies more widely.
Sports Day Activities	Excellent time for drills and demonstrations, as well as For competitive games that introduce cooperative response skills (e.g. injury transport relays, and knowledge games).
Various Projects that bring students into contact with local community and local government and community-service oriented clubs (Schick 2007).	Practical efforts of the community-service oriented club for developing students' analytic and problem-solving skills, as they research and identify hazards, tap into indigenous knowledge, oral history, general public information, and scientific research and expertise to assess risks and identify solutions.
Disaster Drills	Cornerstone of informal education because they are school-wide rather than single-course events. Simple drills include practice for what to do during earthquake, and other hazards faced. Simulation drills include development and practice of response skills such as fire suppression, first aid, transport of injured, mass casualty non-medical triage, damage assessment, and light search and rescue.
Dissemination of Written Materials	Posters and signage are important ways to share disaster risk reduction messages.

Table 2: Forms of Informal Education (Petal and Izadkhah 2008)

3. Iran Case Study

Iran is located in one of the most active tectonic region of the world. The country has suffered large and destructive earthquakes and experienced several major earthquakes in the past decades. Lack of preparedness usually results in significant material and other losses in a disaster and the goal is therefore to shift from reactive to proactive approaches of 'disaster mitigation and preparedness'. These measures focus mostly on education and training with the aim of enhancing the community disaster preparedness. Earthquake education has been developing consistently in Iran in parallel with improvement of and new methods for construction of disaster-resilient structures. Today, the education of children and young people in disaster preparedness takes place at nursery, elementary, secondary and high school levels on a national scale covering both urban and rural areas. This is accomplished partly through both formal and informal means

including special materials in the textbooks, stand-alone texts, films, nationwide “safety earthquake drills” for children of all ages, writing and drawing competitions and exhibitions, and posters in educational environments, as well as using songs, games, puzzles, and other related educational tools. These activities captivate the interest of children, their parents as well as teachers.

In Iran, the International Institute of Earthquake Engineering and Seismology (IIEES) as a pioneer in earthquake education in Iran, has initiated public awareness and preparedness on both the earthquake phenomenon itself and its consequences, and has consistently and actively promoted a “culture of safety” for various vulnerable groups of society, especially for children, for almost two decades which will be reviewed in this paper.

3.1. School Disaster Preparedness Activities

Education for Disaster Risk Reduction (DRR) is seen as a key component to the 2005-2015 Hyogo Framework for action (HFA) which puts ‘knowledge, innovation and education’ (HFA, 2005) at the heart of its goals for enabling individuals, communities and societies become better prepared for responding to the threat from disasters. However, the term ‘education’ is extremely broad and might conceivably cover anything from a full curriculum, a short-impact project by an NGO, a poster, leaflet, or multimedia campaign, a radio show or series, to TV shows and comic stories (Sharpe and Izadkhah 2013). In this regard, children, engaged in real-world problems in their local communities, can learn and solve problems about measures for disaster risk reduction in their schools, and take messages they have internalized to their families, friends and neighbors (Izadkhah 2005). In the next section, the formal and informal class education will be addressed.

3.1.1. In Class Education

Using School Textbooks

School materials have been integrated within the school curriculum in three stages of elementary, secondary and high schools as part of theoretical education. The objective is to create and develop a safety culture as well as reducing the human casualties and damages due to earthquakes and increase the awareness level. These materials have been designed considering the age and student’s physical and social capabilities. For example, the scientific issues about earth science and earthquakes in science books addresses the earth, its movement, earthquakes, and shows

the seismic risk in the country. Other subjects related to preparedness also exist in the defence preparedness books for both girls and boys. This program is conducted with close supervision, cooperation and assessment of the Ministry of Education (MOE), and disaster education experts in related organizations (Image 1).

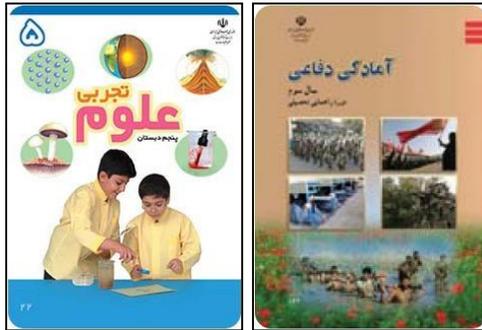


Image 1: Updated school books (Science and Defence Preparedness) containing materials on earthquakes

Using Multi-Media

Besides the textbook materials which is accessible to all school children, other educational publications on understanding earthquakes and preparedness issues have been published for various ages in the form of booklets, brochures, and education-aid materials. A booklet produced in English and Persian, with the cooperation of the UNDP (United Nations Development Program), titled "*E for Earthquake*" helps children to learn the individual precautions necessary to protect themselves from earthquakes. The scientific concepts of earthquakes and the safety measures to reduce its damage have been presented in this workbook in the form of puzzles, illustrations and easy-to-read explanations for children of 7 to 11 years old. While targeting this group, it is however, also useful for younger children and for the age group 11 to 14 years in secondary school level.

Educational films have also been produced for various age groups relating to earthquake and ways to encounter it. Films such as "What is an earthquake?", "Design and construction of retrofitted masonry, concrete, steel buildings" targets the student group. Guidelines and messages in earthquakes with regarding to "Earthquake and Safety" drills in schools and the earthquake song (for elementary and preschool children) are among tapes and CD's which have been produced by IIEES. In addition, with the cooperation of MOE, the IIEES Public Education Dept., has produced a pictorial brochure titled "*Earthquake Hazard Reduction at Educational*

Institutions”. The brochure is widely distributed among Iranian school children. A brochure has also been published on “*Earthquake and Safety*” for elementary school children to show the activities and provisions they should take in earthquakes.

3.1.2. Out of Class Activities

Practical Education

Drills are one of the favorite earthquake education activities that children choose. By performing drills, children can show what they have learnt in schools in the form of a practical performance. In Iran, the “Safety drills” commenced for the first time in November 1999 in 15499 high schools. The Second National Drill on the subject of “*Earthquake and Safety*” was held on 28 November 2000 in all Iran’s secondary and high schools covering 45,000 schools. The objective of this drill was to prepare the students for appropriate and rapid responses during an earthquake. Subsequently, the drill has been performed annually. In December 2001, the drill was held in the secondary and high school levels in all educational centres in Iran. In 2003, the drill was performed at a national level covering 18 million children in 110,000 educational institutes in different primary, secondary and high school levels across the country (IIEES Website 2004).



Image 2: Nationwide earthquake drills held in Iranian schools

The recent “Earthquake and Safety “Drill has been performed on December 1, 2013, (Image 2), covering 114 thousand schools and educational institutes in 31 provinces of the country comprising total of 13 million students. This drill has been developed by the IIEES with the

cooperation of MOE, the Disaster Reduction Committee in Ministry of Interior, the Iranian Red Crescent Society, Tehran Fire Department and Iran National Television and Radio, in which children practiced their skills on correct sheltering, how to exit the building, search and rescue, and fire extinguishing in the school using the advices of the safety school councils. The Drill has become a nationwide annual program for children and youngsters (IIEES Website 2013).

Training and Competitions on "Earthquake and Safety"

Holding workshops have been conducted each year on the anniversary of the "Natural Disasters Week". In these workshops, face to face teaching, and using educational media such as computers, maquettes, showing films, etc have been performed for children in various age groups. Many workshops have been conducted so far for school students in various cultural houses in Tehran. The recent one has been held in October 2013 which covered school students in various levels. Additionally, one of the most effective ways which can stimulate the curiosity of children for research and study and to promote and encourage awareness among children and youth is to hold competitions. With the objective of holding the exhibition in an international level, the drawing competition and exhibitions are held in the Asian level with the cooperation of UNESCO, UNICEF, etc, as well as many local related organizations.

3.3. Training Teachers for Disasters

Guidelines have been prepared by IIEES for teachers in schools and instructors in kindergartens in Persian and English in order to familiarize them with earthquake definition and application. Also, in-service training programs for teachers and head teachers of MOE have been conducted for many years by the IIEES Public Education Department. Special books and video tapes have been produced especially for teachers. The main objective of holding these courses is to update teacher's information, to increase their level of knowledge as well as to prepare children for protecting themselves during an earthquake. Each year, teachers attend a two day course in which two hours has been specified to disaster related issues which will be taught by the experts.

3.4. Holding School Earthquake Safety Councils

In order to benefit the maximum participation of the students and their parents toward the improvement of the school safety, the "School Earthquake Safety Council" is being formed in schools consisting of teams such as: Evaluation and Support team; Information team; Search and

rescue team; First Aid team; Fire Safety team, and Recovery team. With the help of "Teachers and Parents Association" and using the expertise of volunteer parents, this council aims to improve the school preparedness level. This project has been started optionally in few schools and is expected to be expanded throughout all schools in the country.

3.5. Related National Projects

A national project, called 'Daadras' means "Helper", which is the abbreviation of "Student's ready for difficult days" in Persian has been initiated and developed since last year with the cooperation of MOE and Youth Organization of Iranian Red Crescent Society. Teams in groups of 14, provide the response skills to the students in schools in order to prepare them for earthquakes. Last year, 2656 schools were covered by this project and more than 380 thousands students have learned the necessary measures for disaster protection. This year, the project covers 12000 schools, including two and half Million students in the country. Also, 25000 book volumes will be distributed to students later in the school year with regard to this project (Payam Sakhteman Newspaper, 2013).

4. Overall Assessment

In Iran, DRR curricula mostly focus on earthquakes "Zelzeleh", which threat the country. This hazard is actually closest to the country gained experience. However, some sections on volcanoes also exist in the textbooks. The approach of DRR Curricula in Iran is text-book driven in which the Ministry of Education, often work in conjunction with national and governmental organizations to conduct and revise textbooks of particular subjects to include, or broaden the pre-existing hazard-related or disaster-related topics. In Iran, teachers tend to readily take up the new hazard and disaster related textual material as formal education.

In Iranian school curricula contents, the students usually learn the causes and effects of various hazards (e.g., earthquakes and volcanoes). They are mostly provided with tips on the definition of earthquakes and issues on what to do before, during and after it. This has two objectives: To ensure that students acquire relevant knowledge and practical skills on how to behave during disasters such as earthquakes and the fact that students are able to protect themselves in case of its happening.

As for curriculum development, materials development has taken place in Persian language, the approach being one of creating materials by the "Curriculum Development Center" with the help of national related agencies such as IIEES. So far, the developments have included the preparation of few chapters in school textbooks of Science, Geography, Defence Preparedness, etc. The existing course materials comprises 8 pages in the elementary level Science book called "Calmless Earth" which provides information on earth structure, volcanoes, earthquakes and what to do during an earthquake. This is more theoretical and is usually been taught by the teacher in one session. The outcome has been that disaster risk reduction now appears as a focus within a range of subjects in the curriculum. The other school textbook for third grade of secondary school students and second grade of high school students which comprises four lessons on "Earthquakes and ways to confront it", "Safety against earthquakes", "What to do during earthquakes, and "what do to after earthquakes" which is around 22 pages in total under the book "Defence Preparedness". This section is more practical and it is expected that students learn about the necessary measures to take during and after an earthquake. Occasionally, a qualitative assessment and revision on the main contents of the books are performed by the MOE "Curriculum Development Center", but there is no quantitative assessment, for example there is no amendments based on the student's feedbacks. The learning outcomes are expected to comprise knowledge about earthquakes in general as well as appropriate measures that can be taken during and after earthquakes.

As for policy development, planning and implementation aspects, the Iranian MOE is responsible for educational activities concerning disasters. The materials and training-led approaches adopted in Iran have led to further programs that are implemented by teachers as extra-curricular activities. For example, earthquake drills that are performed each year are considered as an interactive activity that can stimulate the interest of students as well as their teachers and families.

As for the pedagogy, teaching of disaster risk reduction employs interactive methods. It contains discussions, brainstorming, interactive presentations, case studies, role-plays, and learning by doing. Teaching implies not only teacher-student engagement, but also the involvement of parents and the community at large, with the activities to be undertaken co-jointly provided. The nexus between effective DRR-related education and interactive learning is present and visible. The contribution of children in disaster related materials can be seen from the knowledge they

gain through the school textbooks. This is somehow revealed in their performance in the annual earthquake drills. It shows that students are more receptive to practical activities than learning issues as theory.

As mentioned earlier, the infusion of DRR themes and materials have been integrated into some course materials in school curricula. However, no documented assessments have been recorded so far for evaluating these disaster-related materials. However, it can be mentioned that the "Curriculum Development Center", which is responsible for revising the contents of school textbooks, has most probably undertaken revisions every now and then. Of all inserted subjects, Science and Defence Preparedness books contain the largest number of sections relating to disasters and safety at the moment. In accordance to some policies of the MOE, some parts of disaster materials that were used in school books are now been removed or integrated within other textbooks or topics. This has been and will be decided by the MOE "Curriculum Development Center" and has been approved by the responsible institutes.

5. Challenges for Post HFA

The Hyogo Framework for Action (HFA) 2005-2015: 'Building the Resilience of Nations and Communities to Disasters', adopted by 168 Member States of the United Nations at the January 2005 World Conference on Disaster Reduction, resolved to 'use knowledge, innovation and education to build a culture of safety at all levels' as an action priority. An indicator of achievement would be the 'inclusion of disaster risk reduction knowledge in relevant sections of school curricula at all levels' (UNISDR, 2005).

It is evident that the adoption of HFA had played a decisive role in making progress in disaster risk reduction in many countries. Sometimes this progress has been indirect and its effective functioning has not been quick but progressive. The other challenge is that the priority of risk reduction issues are most of the time ignored or postponed due to other important problems that a country deals with. Most of the time, limited budget allocated for DRR activities leads to ineffective implementation of the planned programs. At a more micro-level, the political will could be regarded as an important challenge which needs to be strengthened. Although the influence and effectiveness of the HFA and its predecessors can not be ignored, but there is always possible

paths to improvement in school DRR plans based on lessons which have been learnt during the last decade. The DRR activities should be integrated more systematically in the school curriculum in order to put the young generation in regular contact with these activities. Teachers should be trained more on DRR issues. Most of the time, the teachers are only taught with the materials they need to deliver or there is a manual for them to teach based on that which makes their learning as content-based. Teachers teach usually for a short time and there is no follow-up. There needs to be a more systematized, reinforced and sustained professional development.

As for future school disaster activities for post HFA, teachers and school principals should become more sensitized about the disasters and their probable occurrences especially in the capital. Although Iran is an earthquake prone country but the rare occurrence of earthquake happening in the capital have distracted the minds of people from this phenomenon. In recent years, national and governmental organizations including IIEES and Tehran Disaster Mitigation and Management Organization (TDMMO) have developed programs for community prepared-ness and response, but it seems that people are not fully convinced of the dangers that an earthquake might bring. This prerequisite is believed to be among the most important ones and its fulfilment is only possible by awareness-raising in public.

Additionally, Teachers and parents can be consulted for planning programs that are of interest to children and can stimulate their interest in DRR activities. Due to those experiences teachers have gained, they might offer ideas that can help planners to arrange more attractive activities for students or suggest materials that would be of interest to them. This of course will be adopted after consultation with disaster experts to ensure that the proposed materials contain reliable information. Also, it can be safely said that most of the contents which teachers receive by training is how to manage lessons step by-step based on the guidebooks. However, the training does not appear to develop their ability to handle and develop the material provided creatively. The guide is more or less restricted to disaster-related content, with little or no reference to pedagogy, and is usually laid out to parallel the chapters of the student textbook. One of the other important challenges is to sensitize and train more teachers in DRR related issues. More regular meetings of teachers with the parents in regard to familiarizing them with disaster issues are recommended.

In the meantime, it seems that the use of informal education such as performing drills have been very effective in increasing awareness of students about earthquake. It is evident that this can be only proved only if an earthquake happens, however evidences from few earthquakes in Iran such as Bam (Izadkhah, 2004), Silakhore (Izadkhah and Hosseini, 2007) and Bushehr (Tatar et al., 2013) earthquakes have shown the importance of disaster education and how to shelter during earthquakes, especially for this age level.

Usually, the school principals do not have much time to pay enough attention to disaster related issues due to their other daily commitments. This can be a challenge with regard to their important responsibility as the main point of management in a school in case of a disaster. The use of materials produced by NGO's or the international associated organizations can also be looked at for possible use or partly infusion in children programs and activities.

With regarding to the fact that the most frequent disasters in Iran are earthquakes leading to injury and death through collapsing buildings, awareness of structural (building) hazards should be built into the textbook materials. A course topic can be introduced regarding "How to build safe structures". This can help in increasing the student's general knowledge to ensure about the structural design and construction quality of buildings. This course can be inserted in higher levels for eample in high schools.

Although the plan for implementationn of 'Earthquake safety councils' in schools have already been agreed on, but there are only few schools that do benefit from this scheme. This is a challenge that needs to be further expanded for post-2015 in schools.

6. Conclusions and Recommendations

In a country such as Iran which is under the threat of earthquakes, the importance of retrofitting and strengthening the school buildings is of high importance. This is especially important with an approximate of 13 Million students attending schools in 2013. In the meantime, the continuous implementation of formal and informal education through schools, with linkages to community-based risk reduction promises the development of a "culture of safety", of societies less vulnerable and more resilient to the impact of disasters in the future. The effectiveness of HFA on development of DRR issues can be seen directly and indirectly in disaster related activities in the

country. This comprises the activities initiated and developed for children as well as in disaster management plans and programs. The disaster training and 'safe life strand' in the existing curriculum is a direct response to the call for DRR programs.

As post Yokohama Strategy (1994-2004) and HFA (2005-2-015), updating and using novel methods and tools are highly recommended. In addition, the use of simulators can be practical in making children more sensitive to earthquakes. The expansion of disaster drills can also be another advice, since children like to engage in these kinds of activities. These drills can be performed randomly in schools without previous notice, so that students will be put in a more realistic situation to show their actual level of preparedness. Also, the role of mass media in introducing programs for children with themes of disaster preparedness will be important in order to sensitize children and their families. The annual drills, for example can be a good opportunity for mass media to display related programs which can be emphasized more in the post-2015.

There should be monthly meetings arranged by the school principals to review the practical side of earthquake preparedness for students and to assess the degree of which the prerequisites for the successful emergency management are met. Also the curriculum should also aim to provide practical responses to other potential disasters such as floods and droughts in addition to earthquake emergency response. It is hoped that the post-2015 (HFA) scheme can initiate further novel ideas and more appropriate modes of action for encountering future disasters especially for the vulnerable population such as children.

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