

Building Networks of Disaster Preparedness Schools in Taiwan

Tzu-chau Chang & Weiru Lin
Division of Environmental Protection
Ministry of Education

ABSTRACT:

The aims of the education for natural disaster preparedness in Taiwan are to prepare every school disaster free and every student with disaster preparedness. The education for disaster preparedness has been through three stages since 2003: project for cultivating professionals for disaster preparedness education (2003-2006), project for disaster preparedness schools (2006- 2010), and building networks of disaster preparedness schools (2011-2014).

The framework of the disaster preparedness education is composed of three major themes: targets of audience, approaches, and implementing procedures. The targets of audience consist of students of k-9, high schools, and colleges, communities, and people with special needs. The approaches have forming supporting systems, developing teaching materials, holding teacher training workshops, implementing disaster preparedness school project, and conducting evaluation of disaster preparedness education. The procedure of building a disaster preparedness school contains three steps: 1, examining the safety issues of campus, developing disaster preparedness plan, drawing emergency maps, and conducting drills for disaster preparedness; 2, understanding local disasters, learning disaster management, and developing related teaching materials & learning activities; 3, conducting disaster preparedness activities, holding disaster preparedness education exhibitions, and offering mass media reports for disaster preparedness education.

The first year's achievements of the project of building networks of disaster preparedness schools are establishing a supporting system composed of one project management team, three supportive teams, and an information platform for school susceptibility & vulnerability of disasters; helping 79 schools go through the three steps of building a disaster preparedness school; conducting 6 composite disasters drills which consisted of earthquake, fire, and flood; and training 316 seed teachers of disaster preparedness education. The Ministry of Education recognizes the importance of disaster preparedness of students, and will allocate adequate budget to implement this project to educate students with awareness of, knowledge about, attitude to, and skills for dealing with both natural and man-caused disasters.

KEYWORDS: disaster preparedness education, disaster preparedness schools

1. INTRODUCTION

The frequency and impact of worldwide natural disasters have been increasing in recent years, such as the tsunami disaster due to the South Asia earthquake in 2004, the hurricane Katrina and Pakistan earthquake

in 2005, the landslides in island Leyte, Philippine in 2006 and snowstorms and the Wen-Chuan earthquake in China in 2008. A composite disaster at Miyagi, Japan in March 2011, which was caused by a strong earthquake, then a tsunami, and finally radiation leaks due to nuclear power plants failure, shocked the world.

The scale of and damages caused by natural disasters attract public attentions and governments are suggested to take appropriate responses.

In addition, the signs of global climate change are becoming apparent, the frequency of extreme weather is increasing, and the intensity of rainfall and flooding is becoming stronger. The United Nations' Intergovernmental Panel on Climate Change (IPCC) in his 2007 report pointed out that the earth temperature will increase 2-4 degrees in 2100 and many species will be endangered including human beings because of malnutrition, disease, heat waves, droughts and disasters (IPCC, 2007).

Taiwan is located at the route of the western Pacific typhoons and suffered an annual average of 3.6 typhoons. Taiwan is also at the junction of the Eurasia Continental plate and the Pacific Philippines plate, and due to the squeezing and rifting of the plates earthquakes are frequent, and as a result, Taiwan is one of the world most earthquake prone areas. World Bank's 2005 annual report of Natural Disaster Hotspots: a Global Risk Analysis points out that both 73% areas and population of Taiwan are exposed to the threat of natural disasters which is ranked highest in the world, while Japan is ranked eighth and affected areas and population are 10.5% and 15.3% respectively (World Bank, 2005).

After the 921 earthquake, there has been no serious earthquake in Taiwan for the last decade. However, Typhoon Mindulle in 2004, Typhoon Haitang and Martha in 2005, Typhoon Krosa in 2007, Typhoon Sinlaku in 2008, Typhoon Morakot in 2009, and Typhoon Maggie have caused serious both social and economic impacts of Taiwanese. In particular, Typhoon Morakot brought record high rainfall to southern Taiwan, causing severe casualties, property damages and social impacts.

The United Nations World Conference on Disaster Reduction was held at Hyogo, Japan in 2005. "Hyogo Declaration" was issued and "Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities" was adopted to demonstrate the United Nations' resolution to reduce the impacts of natural disasters. Among the following principles, disaster preparedness education plays the last but important role:

- Ensure that the mitigation work is national and local level priority projects, and has a strong institutional basis to implement disaster reduction;
- Identify, assess and monitor disaster risks and enhance early warning;
- Use knowledge, innovation and technology to create all levels of security and resilience;
- Reduce the risk of uncertain factors;
- Strengthen disaster preparedness at all levels to achieve a more efficient response.

Disaster preparedness education and training can effectively improve resilience and reduce vulnerability of schools and communities. However, rigorous indicators for disaster preparedness education have not been developed yet, and appropriate strategies for disaster preparedness education for schools are not well received either. Recognizing the importance of disaster preparedness education, Taiwan government implements a national project to promote and help schools become more efficient response to disasters.

2. METHODOLOGY

The project of building networks of disaster preparedness schools is a national scale with governmental funding to build up a supporting system composed of one project management team, three supportive teams, and an information platform for

school susceptibility & vulnerability of disasters. Five researchers were involved in this project to help schools implement disaster preparedness education, and about 100 professionals including scholars, school teachers, and NGOs were invited to participate in this project. Review meetings were holding once in a month and a symposium of the project achievement prepared by the five researchers and participating schools. 79 schools participate in this project and go through the three steps of building a disaster preparedness school. Each of the 79 schools was required to hold a local workshop to share their experience and achievement of disaster preparedness education with adjacent schools and communities. Totally, this project conducted 6 composite disasters drills which consisted of earthquake, fire, and flood; and trained 316 seed teachers of disaster preparedness education. The 6 composite disaster drills were organized as regional scale to receive 200 to 300 schools' representatives to demonstrate appropriate endeavors of disaster preparedness education.

3. Results

3.1 National efforts of disaster preparedness education

The education for disaster preparedness has been through three stages since 2003: stage 1: project for cultivating professionals for disaster preparedness education (2003-2006); stage 2: project for disaster preparedness schools (2006- 2010), and stage 3: building networks of disaster preparedness schools (2011-2014) (Figure 1). The stage 1 was started a few years after the 921 earthquake while schools buildings were severely damaged and public awareness of the impacts of natural disaster reached the highest level. The purpose of the stage 1 was to build up a good base for disaster education which included teachers, teaching materials, campus environmental management and school administration of disaster education.

Figure 1

Based on the achievement of stage 1, the major endeavors of stage 2 were to help strengthen the preparedness of natural disasters for schools. Teacher training workshops were conducted to improve teachers' capability for disaster education, teaching materials including stories, pictures, cartoon, flash... were developed for all learning stages, disaster evacuation maps and plans were designed with the help of professionals, and a website of disaster education was established to offer all the disaster education information.

The stage 3 is to enhance the achievement of the stage 1 and stage 2, and accordingly to build a network of disaster preparedness schools to share experiences and skills of disaster education. This paper will introduce its first year's result as follows.

3.2 The structure of the disaster preparedness education project

The structure of the disaster preparedness education is composed of three major themes: types of disasters, targets of education, and approaches. The types of disasters include earthquake, typhoon and flood, landslide, and man-caused disasters. The targets of education consist of students of k-9, high schools, and colleges, communities, and people with special needs. The approaches of disaster preparedness education contain five elements: supporting systems, teaching materials, teacher training, disaster preparedness drills, and evaluation system (Figure 2).

Figure 2

3.3 The approaches of disaster preparedness education

The approaches have forming supporting systems, developing teaching materials, holding teacher training

workshops, implementing disaster preparedness drills, and conducting evaluation of disaster preparedness education.

Figure 3

Supporting systems consist of offering professional teams for knowledge and skills of disaster preparedness, establishing the information platform for school susceptibility & vulnerability of disasters, and building a web-site for disaster education. Four professional teams are comprised in research experts, technical persons, and school teachers of both fields of natural disaster engineering and education. Each team has more than 30 professional persons who were grouped to visit, examine, and help build disaster preparedness schools. Each school joining the project has been visited at least five times in the first year.

Many teaching materials of disaster education have been developed during the stage 1 and stage 2. The materials are so many that school teachers have a problem in finding and choosing appropriate ones to teach in their classrooms. This project analyzes and classifies the teaching materials into categories for different learning stages.

Teachers are the key to the success of the disaster preparedness school project. Both pre-service and in-service teacher training for disaster preparedness education have been conducted during the first year project. Totally, this project cultured 316 seed teachers for promoting disaster preparedness education.

In addition to developing disaster preparedness plans, building disaster evacuation maps, conducting teacher training, and improving student's learning of disaster preparedness, schools are required to conduct drills at least once in a semester. Besides, several regional drills were held to demonstrate advanced

disaster evacuation for regional school representatives.

To ensure the effects of the disaster preparedness schools project, the Ministry of Education visits 22 local educational bureaus to evaluate their implementation of the project. The evaluation items include disaster preparedness plans, disaster evacuation maps, teacher training and student's learning of disaster preparedness, and conducting disaster evacuation drills.

3.4 The process for building disaster preparedness schools

Helping schools build up their capabilities of disaster preparedness has been a core theme of this project. The procedure of building a disaster preparedness school contains three steps: 1, examining the safety issues of campus, developing disaster preparedness plan, drawing emergency maps, and conducting drills for disaster preparedness; 2, understanding local disasters, learning disaster management, and developing related teaching materials & learning activities; 3, conducting disaster preparedness activities, holding disaster preparedness education exhibitions, and offering mass media reports for disaster preparedness education (Figure 4).

Figure 4

4. Conclusion

The importance of disaster preparedness of students and teachers has been well recognized by the Ministry of Education in Taiwan. The project of building networks of disaster preparedness schools will be supported to promote students and teachers' disaster literacy for the coming three years. The government will allocate adequate budget to implement this project to educate students with awareness of, knowledge about, attitude to, and skills for dealing with both natural and man-caused disasters.

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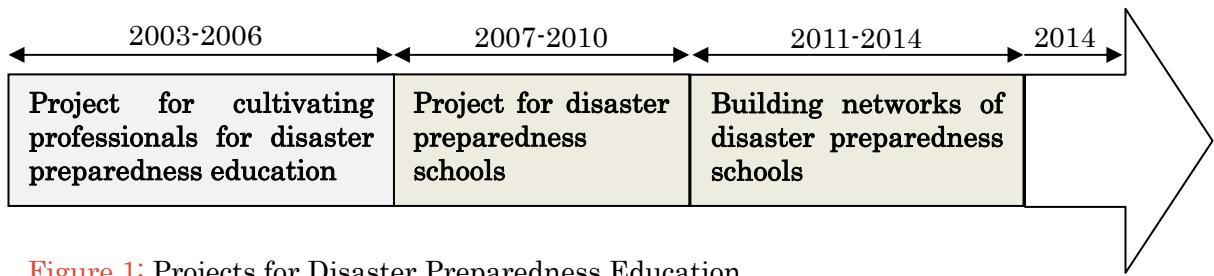


Figure 1: Projects for Disaster Preparedness Education

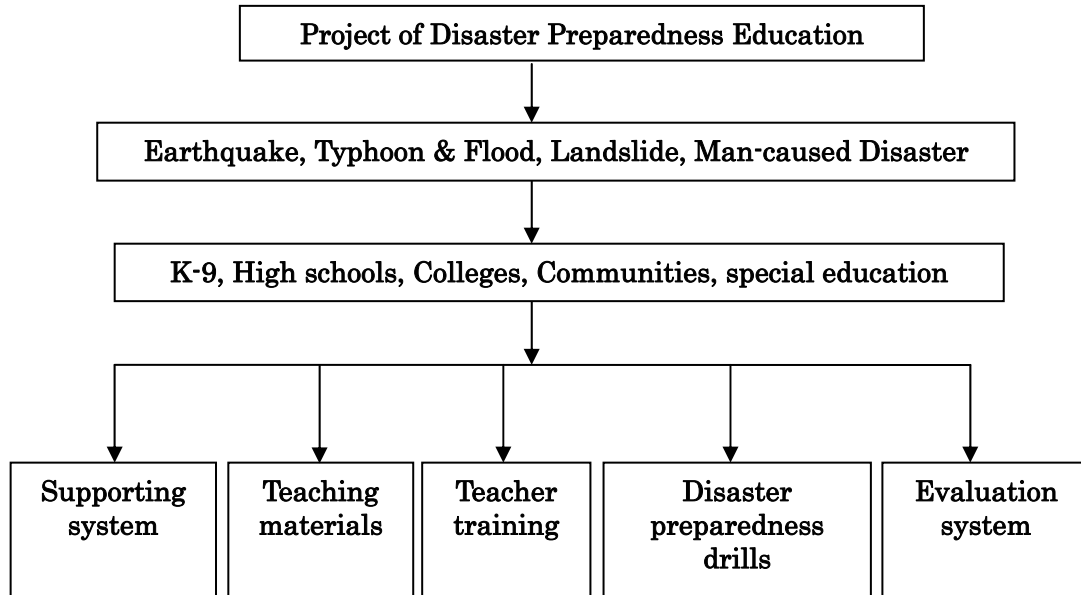


Figure 2: Structure of Disaster Preparedness Education

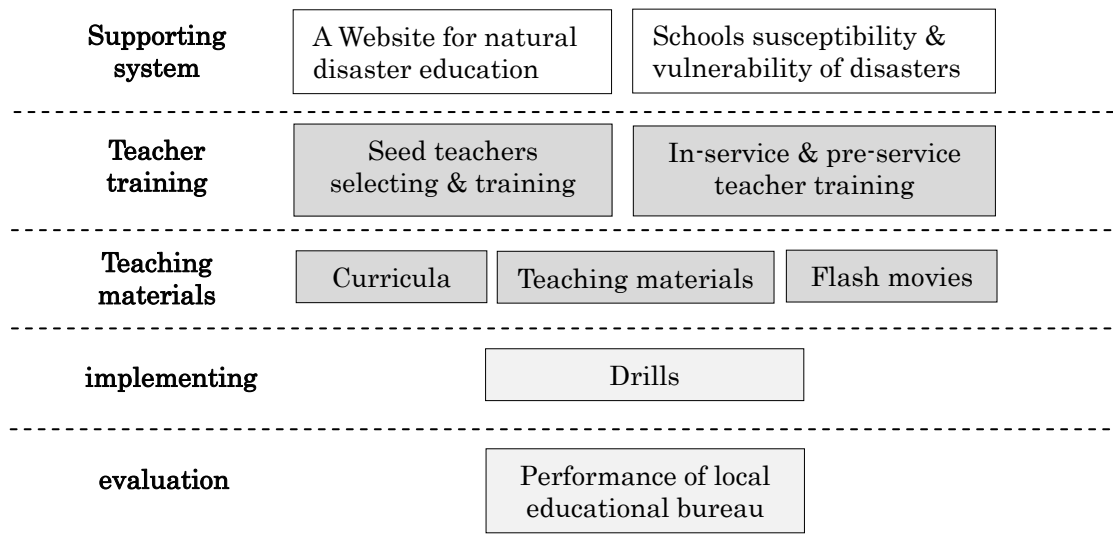


Figure 3: The Approaches for Disaster Preparedness Schools

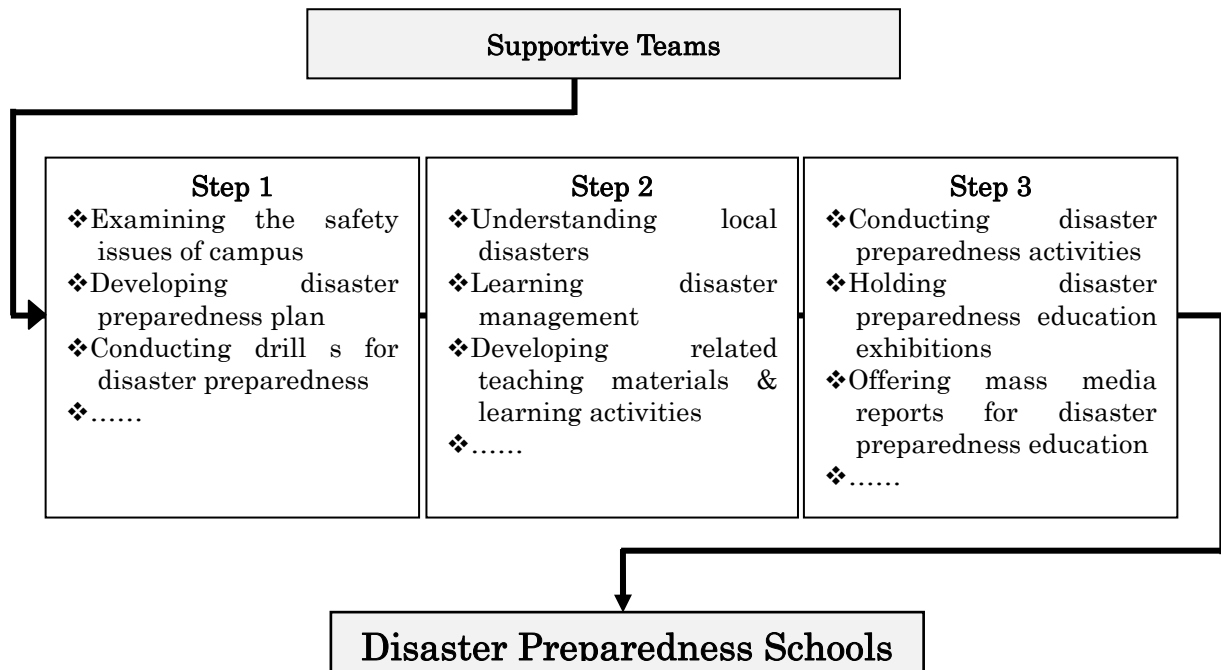


Figure 4: Process for Disaster Preparedness Schools