

The 4<sup>th</sup> International Conference on Sustainable Future for Human Security, Sustain 2013

## Disaster Prevention Education in Merapi Volcano Area Primary Schools: Focusing on Students' Perception and Teachers' Performance

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### Abstract

This paper described the implementation of disaster prevention education curricula in 24 purposely-selected primary schools in Merapi volcano area in Java Island by looking at the students' perceptions (knowledge, attitude, and behavior) and the teachers' performance. The study took 548 student and 191 teacher respondents through a field survey with the use of questionnaires for the data collection instruments. The findings showed that, despite of the fact that students in the researched schools have already learnt about natural disasters and prevention for years either under the integrated or isolated teaching method, there are still confusions or problems regarding their effective knowledge, attitude and behavior on natural disasters. This condition is possibly caused by the ineffective disaster prevention teaching practice which relies much on textbooks and pictures as teaching media. The findings also highlight that teachers still have lack of knowledge and skills related to disaster prevention teaching due to limited teacher trainings. Therefore, it is strongly recommended for the local government together with the schools to make efforts in improving the teachers' performance through appropriate teachers' professional development programs by involving the existing related non-governmental organizations for their valuable assistance.

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Selection and peer-review under responsibility of the Sustain conference committee and supported by Kyoto University; (RISH), (OPIR), (GCOE-ARS) and (GSS) as co-hosts

*Keywords:* Natural disasters, prevention education, primary schools, Merapi volcano, perceptions, performance

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## 1. Introduction

At present, in many parts of the world, both natural and man-made disasters have been threatening the lives, rights and needs of millions of children. Various kinds of natural disasters like earthquake, volcanic eruption, tsunami, typhoon, and flood which often occur in countries have made people understand that children are becoming the most vulnerable groups who get direct impacts of disasters. It is predicted that in the coming years, children's vulnerability to disasters is increasing as frequency and intensity of natural hazards rises [1]. Therefore, preparing for disasters has also been the priority on the educational agendas of countries in the world.

Indonesia, one of extremely vulnerable countries to natural disasters, has been making efforts to increase its people's resilience toward natural disasters. In education sector, since the academic year of 2011-2012, Ministry of Education and Culture has newly established and implemented special disaster prevention education curricula at all school levels from primary (students with 7-12 years of age) to lower and upper secondary schools (students with 13-18 years of age). This policy has immediate objective to make children safer during disasters and to prepare them as agents of change who are able to spread knowledge to larger communities, especially to their own families [2].

Volcanic eruption is one of deadly natural disasters that often happen in Indonesia. It is because the country contains over 130 active volcanoes. In Java Island itself, there are 129 volcanoes [3] and the most active and dangerous one is Merapi which is located about 30 kilometers north of Yogyakarta City and administratively situated in two provinces, Yogyakarta Special Region and Central Java [4]. More than 1 million people live on the flanks of this volcano, which erupts effusively (non-explosive) almost continuously and explosively every 8-15 years, and violently every 26-54 years [4].

Historical records showed that Merapi volcano has already experienced at least thirteen major eruptions with death tolls since 1006. The deadliest eruption in historical times happened in 1672, leaving a reported of 3,000 people dead [3]; while in 1930, Merapi volcanic eruption killed at least 1,300 people. Then, in 1994 eruption, it was reported that 64 people were dead and over 2,000 were made homeless [4]. The recent major eruptions of Merapi volcano were in October and November 2010 that killed 339 people and destroyed at least 217 schools.

## 2. Children and the Importance of Knowledge, Attitude, and Behavior Related to Disasters

There are many influencing factors of attitudes development among students who are actively engaged in environmental protection and disaster prevention [5]; however, it is evident that two most important factors are teaching-learning process at schools and the ties that the students have with their families and communities. Looking at the importance of teaching-learning process, disaster prevention education is continuously practiced at primary schools (for I-VI graders) in Merapi volcano area with the support from both government and privates.

A study by Becker et al. [6] described the effectiveness of disaster prevention education at schools by stating, children would come home with information about preparing for a disaster, and the family or parents and the child would make plans or prepare resources together for their home. This means in homes with children getting disaster prevention education program at school, not only do the children themselves get benefit from an effective program, but also potentially the entire family unit becomes better prepared as a result of the information. Preparedness within the home environment, such as having supplies and plans in place, as well as an emotional awareness of the possibility of a disaster and understanding that they can get through it, has a positive impact on the likelihood that the child will be able to get through a disaster event, both physically and emotionally [7].

Disaster prevention education can reduce anxiety among children [8]. In times of anxiety or stress due to natural disasters, as the children in the family feel overwhelmed, they can model their behaviors on the positive coping of the adults around them. Information from school that effectively flows to homes has a great value, both for the family members and for the children in order that they have a better understanding on how to protect themselves in a disaster.

Another study by Ronan and Johnston [9] reported that, students participating in disaster prevention education at schools perceived a higher risk of personal injury from disasters, but, in the same time, reported significantly lower levels of fear than those who have not taken part in disaster prevention education programs.

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