

学位論文の要旨 (論文の内容の要旨)  
Summary of the Dissertation (Summary of Dissertation Contents)

論 文 題 目  
Dissertation title

Disaster Management and Prevention Education for Volcanic Eruption: A Case of Merapi Area Primary Schools in Java Island, Indonesia

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This study aims at analyzing the implementation of disaster management and prevention education for a volcanic eruption at the primary schools in Yogyakarta Special Region province in Indonesia which has the most active and dangerous volcano in the country named Merapi.

The study focuses on the schools preparedness to the volcanic eruption disaster and the implementation of the most up-to-date disaster prevention education curriculum among the 24 selected primary schools in Merapi volcano area, through assessment of the current curriculum content for the disaster prevention education in the basic school level and the learning content concerning with the volcanic eruption, the schools preparedness to Merapi volcanic eruption disaster from the headmasters' point of view, the teachers' performance in teaching the disaster prevention, the students' achievement in learning the disaster prevention, and the educational merits of the lecture and the discussion teaching methods for improving the students' achievement in the disaster prevention learning.

The research has been conducted in five phases.

Phase-One: *Disaster Management and Prevention Education in Indonesia*; in this phase, the present policies, act, legislation, etc. related to the disaster management and the disaster prevention education in Indonesia were reviewed. The current curriculum content for the disaster prevention education in the basic school level was explored. The learning content concerning with the volcanic eruption for all grades of the primary school (1-6) was also analyzed. Based on the result of this analysis and the review of related literature, the research design and the framework of this study were formulated.

Phase-Two: *Schools Preparedness to Merapi Volcanic Eruption Disasters*: in this phase the participant headmasters were selected from the 24 primary schools in Merapi volcano area. To assess the school preparedness in anticipating Merapi volcanic eruptions based on their perceptions, the headmasters were given a questionnaire which consisted of 10 main statements to be responded by choosing one of the 3-4 alternative options followed by their brief reasons for each response which were written in the provided column. The collected data were then statistically analyzed. The result shows that, despite the fact that the schools were vulnerable to get the bad impacts of Merapi volcanic eruptions, it was found out that not all the schools had good preparedness system to anticipate the impacts of natural disasters including the volcanic eruption. Using two parameters by looking at the soft and hard components of the preparedness system, this study reveals that only 6 schools had well-preparedness level with both good soft and hard components; Thirteen schools still needed to improve the preparedness level due to either their critical soft or hard components, and five schools were categorized in the worst condition with both critical soft and hard components.

Phase-Three: *Teachers' Performance in the Disaster Prevention Teaching*; in this phase the implementation of the disaster prevention curriculum in the researched schools was assessed based on the teachers' perceptions on their performance in teaching. One hundred and ninety-one (191) teachers were participating as the research respondents for the purpose of this study. They were given a five-point Likert-type scale questionnaire which consisted of 10 main statements to be responded, followed by their brief reasons written on the provided column in the questionnaire sheet. The research findings show that, firstly, in relation to the teaching materials and media, for the lesson of natural disaster and prevention, 72% of the teachers used textbooks or modules, and 91% of the teachers used teaching media. The common teaching media used by the teachers based on their choice were pictures, maps, video/movie, and toys/puppets. Secondly, in relation to the teaching method, there were only 39 teachers who were consistent in using the integrated teaching method. In addition, in relation to the teaching topics, it was found out that most of the teachers had already introduced to the students the topics of earthquake, volcanic eruption, flood, and landslide. Finally, in relation to their professional capacity in teaching the disaster prevention, the teachers admitted that they still lacked knowledge regarding how to teach effectively due to the low frequency of having in-service teacher training. In spite the fact that the teachers had weaknesses, the teachers reported that their students were motivated to learn about natural disaster and prevention.

Phase-Four: *Students' Achievement in Learning Disaster Prevention*; in this phase the attained curriculum of the disaster prevention education in the researched schools was examined through assessment of the students' achievement in terms of their knowledge, attitude, and behavior. For this purpose, 548 students of grade-five participated as the research respondents by taking the questionnaire survey which mainly tested their knowledge, perceived attitude, and perceived behavior in preventing themselves from the negative impacts of the volcanic eruption and its related hazards. The research findings show that in spite the fact the students had already learnt about natural disasters and prevention at schools, there were still confusions or problems regarding their effective knowledge, attitude, and behavior. The first problem was the students' poor knowledge regarding the consequences of an earthquake: there were the students (44%) who did not know that running out of a home while a big earthquake occurred was dangerous to do; that a big earthquake could cause a house fire (51%); that a big earthquake was sometimes followed by a volcanic eruption (29%); and that the phenomenon of many animals going down to people's settlement was one of signs that a volcano might erupt (22%). The second problem was the students' poor attitude: 30% of the students did not feel that their living area was prone to natural disasters; 35% of them still believed about the myth of supernatural being prediction about natural disasters, and 38% of them did not realize that humans' misbehavior could anger God and result in disasters. The third problem was the students' behavior: there were 20% of the students who did not discuss or share the information about natural disasters from the schools to their family, and there were 22% of them who did not often read books related to the natural disasters and prevention.

Phase-Five: *Toward Improvement of the Students' Knowledge, Attitudes and Behavior in Natural Disaster Prevention*; in this phase an action research through experimental teachings by the researcher himself using two different methods (lecture and discussion) for improving the students' achievement in learning the disaster prevention was conducted which involved the fifth-grade students in the 2 selected primary schools. The result shows that in general, the students' knowledge view-point regarding the consequence of a big earthquake that can cause a house fire disaster changed significantly after the experimental teaching, in which the change of the students' knowledge in the lecture group was bigger than the change of the students' knowledge in the discussion group. The students' attitude view-point regarding their awareness of living in a disaster-prone area also significantly changed after the experimental teaching. The change of the students' attitude in the lecture group was bigger than the change of the students' attitude in the discussion group. In details, after having the experimental teachings, the students' knowledge view-point regarding the appropriate action indoor when there is a big earthquake for both groups was significantly different. In addition, the students' knowledge view-points regarding the consequence of a big earthquake that can cause house fire disaster was significantly different for the lecture group only. Moreover, the students' attitude view-point regarding their awareness of living in a disaster-prone area was significantly different for the lecture group only, too. In short, the lecture method could improve two viewpoints of students' knowledge, one regarding the appropriate actions while indoors during a big earthquake, and the other regarding the consequences of a big earthquake in relation to a house fire disaster. Students' attitude viewpoint regarding their awareness of living in a disaster-prone area was also found improved by the use of lecture method. The discussion method was found helpful in improving only one viewpoint of students' knowledge about the appropriate actions while indoors during a big earthquake.

Based on the whole research findings, the following recommendations are proposed: Firstly, for the improvement of the school preparedness in terms of the hard components, for example in building construction quality, it is recommended for the headmasters to report their schools' shortage to either a local or central government in order to get immediate appropriate assistance; while, for the improvement of the soft components, each school should set up educational activities, such as dissemination of schools resilience program toward volcanic eruption and in-service teacher-training program for designing and implementing effective lessons on the volcanic eruption disaster prevention. Secondly, due to the fact that there are still problems regarding the students' effective knowledge, attitude and behavior on natural disasters that can be caused by some factors including the ineffective teaching practice; it is highly recommended for the local government and schools to make strategic efforts in order to improve the teachers' performance including in developing their skills of making and using appropriate diverse teaching media for the disaster prevention education through in-service teacher training. In addition, information sharing within families' members about disaster prevention is another important point to be developed through children education at schools. Third, in relation to the educational effort of improving the students' knowledge, attitude and behavior, effort should be taken to develop effective volcanic disaster prevention education at school focusing not only on the changes in the students' knowledge and attitude, but also their behavior. Moreover, due to the fact that both teaching methods have their own educational merits and demerits; in teaching the disaster prevention, teachers are recommended to carefully use either a discussion or a lecture method / or even the combination of the two by firstly considering the teaching objectives, the teaching materials and media, as well as the available time.

備考 論文の要旨はA4判用紙を使用し、4,000字以内とする。ただし、英文の場合は1,500語以内とする。

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