School Preparedness toward Kelud Eruption Hazard (Case Study on Kelud Disaster Prone Area)

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Abstract. Preparedness is an important thing to be prepared by schools in disaster prone areas. One of volcanic disaster prone areas is Kelud. Schools around Kelud are known not to have good preparedness in the face of eruption hazard. This study aims to understand the school preparedness, especially primary school in the face of Kelud eruption. The research is located in disaster prone area II Gunung api Kelud in Kediri and Malang Regency. Site selection is based on the impact caused during the eruption period of Kelud Volcano in 2014 includes: SDN Puncu 1 and SDN Pandansari 3. Research subjects include: Principals, Teachers, Students, and Parent Students. The research design used qualitative descriptive technique through in-depth interview data collection and documentation. The results showed that preparedness in the face of disaster is low. Student knowledge is based only on the experience of eruption Kelud in 2014.

1. Introduction
Indonesia lies on ring of fire. It consists of 127 active volcanos. Eruption one of potential hazard derived from the volcanoes. One active volcano is Kelud. Kelud has last eruption on 13 February 2014.

Disaster education in Indonesia is growing up followed by time. After tsunami shock on 26 December 2004 increasing the people attention to preparedness for disaster [1]. Actually it did not work well in several places. People is still waiting for disaster occur then they have well preparedness toward disaster.

Primary school-aged children are groups that need special attention when disaster occurs. This is because disaster events can effect on their cognitive development, behavioral and emotional abilities. On the other hand, the risk of disaster can potentially lead to disruption in the process of growth and development. Often encountered children who experience trauma due to disaster.

Children as a vulnerable group have condition in dealing with disasters is something that needs attention. Children's preparedness in dealing with disasters is measured by the extent to which children can be shown effectively respond to disasters. It is measured through indicators, among others, capable of protecting themselves and avoiding hazards, being able to identify hazards, risks, vulnerabilities and impacts of disasters in the surrounding environment, having information, knowledge and ability to respond to disasters, acting appropriately to minimize losses, and develop the ability to cope themselves during disasters. In addition, as a young generation who will be the
successor in a region should they have sufficient knowledge so that later can live safe and harmony in areas that potential to hazard and disaster risk.

This research was conducted from 2014-2017 in two regencies they are Kediri and Malang. Kediri have several experience facing with disaster. On the other side Malang have not an experience about volcano eruption before. Although Kediri have long experience to disaster it is not represent the area have a good preparedness.

Preparedness can be built from education. Early education or elementary education should have attention to disaster education. Disaster education should become a compulsory for student on prone area. Especially on Kelud Volcano Disaster area.

Kelud disaster area occupy at least three areas they are: Kediri, Blitar and Malang. This research focus on school preparedness toward hazard and disaster from Kelud Volcano. This research obtains to reach goal; they are:

1. Describe school’s preparedness in Kelud disaster prone area
2. Evaluation of school program dealing with coping mechanism toward Kelud eruption

2. Methods
This research used survey method and in-depth interview with qualitative approach. Qualitative research aims to understand the phenomenon of what the subject of research is experiencing holistically in order to get descriptions, in a specific context that is natural and by utilizing various scientific methods [2]. In-depth interviews are used to collect detailed information from specific sources to determine the condition of the research area. Research subjects include: principals, teachers, parents, students, and communities around the school. The result of the interview is then reduced to obtain the exposure of the data in accordance with the research objectives.

Surveys were conducted at several locations representing disaster prone area of Kelud Volcano. The selected survey sites are located in Disaster Prone Areas (KRB) II Kelud in Puncu, Kediri Regency, and Pandansari, Malang Regency. Location selection is due to Puncu and Pandansari are the most affected areas at the last Kelud eruption on 2014.

3. Results and Discussion
School is a place of learning where students will be introduced to the values of culture, religious values, traditional-modern knowledge, without exception knowledge of the problem of disaster. Dewey explained that schools are the most effective medium for reconstructing and improving society through education. Furthermore [3] Education is a continuous learning process that aims to inform and develop societies that have the ability to solve problems, scientific and social thinking and have a commitment to engage in individual responsibility and act cooperatively. One form of education that needs to be developed nowadays is disaster education.

Schools located in disaster prone areas should have good preparedness to deal with natural disasters around them. Schools should also have a role in improving student preparedness in the face of disasters. The aim of disaster learning in schools is to build a culture of safe and secure culture in schools, and build resilience in the face of disasters by elementary school students.

3.1. Schools preparedness in Kelud disaster prone area
Some schools that have a high level of threat to the eruption of Kelud volcano is SDN 1 and SDN Pandansari 3. Both schools are located in Disaster Prone Region 2 Volcano Kelud. The existence of schools in disaster-prone locations have consequences for the students. SDN Pandansari 3 is the most affected schools of events Kelud Volcano eruption in 2014.

All locations closed school volcanic ash fallout from the eruption of Volcano Kelud. As a result of the damage is the roof and building walls. School conditions can not be used for learning activities for some time. The condition of SDN Pandansari 3 post-eruption of Gunungapi Kelud can be seen in Figure 1.
Figure 1. SDN Pandansari 3 Post Kelud eruption
Source: http://news.liputan6.com/read/830523/menyusuri-pandansari-desa-mati-akibat-letusan-kelud [4]

Another affected school of Kelud volcano eruption is SDN Puncu. SDN Puncu on the eruption of Gunung api Kelud Year 2014 was affected by the fall of pyroclastic material in the form of volcanic ash and gravel. Damage at SDN Puncu in the eruption period of Gunung api Kelud Year 2014 can be shown in Figure 2.

Figure 2. SDN Puncu Post Kelud eruption
Source: https://news.detik.com/foto-news/d-2502489/sdn-puncu-ii-kediri-rusak/5#share_top [5]

SDN Puncu 1 is the school that has the largest number of students in Puncu District. The number of students in SDN Puncu 1 in the academic year 2016/2017 as many as 444 students. SDN Puncu 1 has a total of 20 teachers. SDN Puncu 1 students are 144 students divided into 12 classes. Grade 4 consists of 2 classes with a total of 76 students. As for class 5, the number of students is 70 students divided into 2 classes.

Interviews were conducted with one of the teachers at SDN Puncu 1. The teacher concerned was a Puncu resident who had been teaching since 2004. Interview result explained that Puncu Village is the most affected area of Kelud volcano eruption in Kediri Regency.

Respondents explained that when Kelud eruption most Puncu villagers have not been displaced. Residents in general residents still take refuge in the house. Some residents chose to take shelter under tables and cupboards. Post-eruption of Kelud new residents is urged to evacuate.

Residents do not know the location of the evacuation causing confusion during the evacuation process. Residents are just walking down the road directed by the officers and looking for a location that can still be a shelter. Some family members are separated from their families due to different refugee locations. Explained that the location of refugees is located in Kepung and Ngrringging.

The results of the interview can be seen that the teacher's knowledge of disaster mitigation is still very limited. Suparno explained that the teacher acts as a mediator and facilitator who helps to make the students' learning process work well. The teacher's role demands a wide and profound material
grasp. If the teacher does not have sufficient knowledge about disaster, then the student will have difficulty in getting knowledge about disaster. This condition is alleged the teacher concerned has no experience related to the eruption of Kelud Volcano.

Attempts to complete the study were interviewed by the students. Selected 4 students consisting of 2 grade students and 2 students of grade 5. The reason for choosing grade 4 and 5 students is because according to Piaget's cognitive development theory, 7-11 years of age has entered a concrete operational stage where children can develop the ability to use thinking Logical in dealing with the problem of the concrete. This logical thinking ability is important in developing perceptions, knowledge and skills. According to the Disaster Education Consortium, the basis of every human attitude and action is the perception, knowledge and skills it possesses. Disaster alert schools want to build the ability of all school residents, especially students to have the attitude and action to face disaster quickly and appropriately.

The results of the interviews show that all respondents experienced the impact of volcanic eruption and have been displaced. Students have prior knowledge about the types of hazards, hazards and the impact of the eruption of Volcano Kelud experiential 2014. Students explained that Kelud Volcano disasters are disasters that are quite large and cause severe damage. Students generally have not understood the vulnerability and capacity of the community in their school or district. The condition is caused students have not had education on disaster so that it cannot identify the concept of disaster in the surrounding environment, particularly related to Volcano Kelud.

Students do not know the appropriate action to confront the threat of disaster. All respondents did not know what to do before the disaster. Parents do not have good preparedness for disaster. In addition, students also do not know and have the ability to identify the signs of disaster events.

Students do not have the skills to implement emergency response plans. Respondents only know that when disaster strikes, they are required to evacuate. Students do not yet understand how the response or behavior should be taken in responding to natural disasters. This is because students do not have knowledge about the emergency response procedure is good and right.

Students have sufficient ability to recover psychologically after a disaster. Although the respondents still admit to fear in the face of disaster but the respondent did not experience significant traumatic symptoms. Respondents can retell their experiences during disasters without excessive threat to disaster.

3.2. Evaluation of school program dealing with coping mechanism toward Kelud eruption

The results showed that SDN 1 Puncu and SDN Pandansari 3 have no specific policies to deal with the disaster. Decision-making in disaster actions is included in the emergency response yet. Emergency response means actions to be taken to respond to disasters. The form of emergency response activities such as repatriating students is faster when there is a Kelud Volcano rising status and scheduling the school by all post-eruption schoolchildren as proposed by the Principal of SDN Pandansari 3.

Lahar flood is one of form of hazard that did not recognize well. Post-eruption of lahar floods became a major concern but after several years of eruption and lava floods passed the introduction and understanding of lahar floods are not continuously developed. Schools have not yet developed programs related to the development of student preparedness for volcanic eruptions and lahar floods.

The school is a social institution that has the task of preparing students to become citizens in accordance with the ideals, expectations and values that prevail and adopted by the community [6]. The school program must be able to meet the needs in terms of social, ideological, political and cultural aspects of society. One of the needs of the community, especially the residents of schools that exist in disaster prone areas is a good disaster planning. Therefore, a school policy is needed that supports efforts to improve school preparedness in the face of disasters. Disaster-based school management policies that can be implemented include:

1. Establishment of the tasks of the school disaster management team from representatives of school committees and teacher representatives.
2. Cooperate with BPBD and the public in planning decision-making procedures in emergency conditions.
3. Making modules and disaster handbooks for students, teachers and parents.

The school policy on disaster makes the implementation of disaster activities in schools more focused and structured. School policies should be tailored to the existing resources and culture of the local community, so that achievement will be able to meet the needs of the community.

The perceptions and attitudes of the students will be influenced by the knowledge, experience, horizon, beliefs, learning process and the result of this perception process will be the opinions or beliefs of the individual regarding the object of attitude and this is related to the aspect of cognition [7]. The attitude and action factors of students in dealing with disasters can be enhanced by incorporating disaster knowledge in school subjects. Disaster mitigation education needs to be taught for elementary school students. Lessons about disaster or local wisdom are not specifically designed as school subjects in Indonesia. The substance of disaster material can be incorporated into subjects that have a correlation with daily life such as social studies lessons (IPS) [4]. Teaching materials will be adapted to the ability of primary school age children who will be devoted to students from grades 4 and 5.

Development of Disaster curriculum has a purpose in cognitive and affective domains. In terms of cognitive students are expected to know the theory and principles of disaster and able to apply what has been learned in community life. Students are required to have the ability to apply concepts, rules and ways of dealing with disasters appropriately to be applied in their environment correctly. Disaster education taught includes basic knowledge of students about natural disasters, especially the volcano eruption Kelud. Students are given knowledge based on experience in Kelud eruption 2014. The role of teachers is to correlate between the experience that students have with scientific explanations that can be understood by students.

Affective learning in terms of affective has a goal so that students are aware of the problems of disaster in the environment and can provide appropriate response to the problem. The goal is that students can understand the effort to conduct disaster mitigation including the importance of conducting disaster mitigation and how to mitigate disaster. In addition, mentoring from teachers to prepare mentally in the face of disaster is also important. This accompaniment includes mentoring before, during and after the disaster. From the results of research students admitted enthusiastic with the plan to add disaster lessons at school. According to students, disaster lessons at school can increase their knowledge and can be shared with parents [8]. If students already have knowledge about disaster then students can teach to parents and the environment. So the dissemination of information about disaster can be more effective.

4. Conclusions
Three year post Kelud Eruption on 2014 most school on Kelud disaster prone area have not a well preparedness in facing disaster. The most affected area such as Puncu and Pandansari has increasing about disaster knowledge. In the other hand efforts to understanding and reducing disaster impact still not shown on school curriculum. Disaster education especially preparedness should be a pair of curriculum on elementary school. Recognizing the environmental condition should be understanding well by student. It has consequences school community: principal, teachers, students, student parent’s, and people around school understand well about hazard and disaster on their environment.

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