Learning Model of Volcanic Eruption For Inculcating Attitude ff Response To Merapi Eruption In Elementary School Students In Boyolali district

Mukhlis Mustofa*, Dewi Liesnoor Setyowati, Juhadi Juhadi, Suwito Eko Pramono

Universitas Negeri Semarang, Indonesia
*Corresponding Author: mustofamukhlis@gmail.com

Abstract. Natural disasters in Indonesia have the potential to cause sustainable systemic impacts if they are not addressed proportionally. Boyolali Regency as one of the regencies in Central Java Province has the potential for volcanic eruptions to occur in the Merapi slope area. The stronger mythology of the people who inhabit Merapi Lerang, compared to the eruption pattern that occurred in the Merapi area, is an interesting phenomenon. The planting of disaster education based on the Merapi eruption is needed in planting awareness from an early age in the form of disaster education. The formulation of this research problem is identified in five research questions, namely: How is the relationship between the role of local wisdom in the Merapi eruption area as a disaster education landscape to the development of education? How is the learning model that can be developed in the Merapi disaster-prone area in Boyolali district? How is the educational learning model in the context of developing the Merapi eruption response area as part of Indonesia? How to fulfill the educative rights of students in social studies learning as the embodiment of good citizens? This study uses a phenomenological qualitative approach, has an actual setting, researchers are the key instruments, the data are descriptive, emphasizes the process, sustainable disaster education is very important considering the complexity of regions in Indonesia that have various disaster potentials.

Key words: disaster education; disaster learning model.

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INTRODUCTION

Disaster is a phenomenon that occurs because the components of triggers (triggers), threats (hazards), and vulnerabilities (vulnerability) work together systematically, causing risk to the community (BNPB, 2011). Natural disasters that come are unavoidable and can be predicted with certainty when they occur. However, the number of losses and casualties can be minimized if the community has knowledge and understanding of the importance of disaster mitigation. Based on the 2013 Indonesian Disaster Risk Index Book, it shows that Central Java Province has a high category of disaster risk class (BNPB, 2014: 40).

Natural disasters in Indonesia have the potential to cause sustainable systemic impacts if they are not addressed proportionally. Disaster education is education that integrates disaster materials in formal education so that students can play a role in building the knowledge, skills, and attitudes needed to prepare for and cope with disasters, as well as help students and the community to return to normal life after a disaster occurs (Kagawa & Selby , 2012). Based on data from the National Disaster Management Agency (BNPB) in 2018, disaster events that occurred in Indonesia experienced 3,397 incidents, with 3,874 people dead and missing. In the last ten years from 2009-2018, the impact of disasters varies greatly, ranging from damage, losses, to causing fatalities.

Disaster education requires basic studies of disaster management and systems that can increase community capacity in disaster management. Efforts that can be made to reduce the impact of volcanic eruptions and reduce the number of human victims and property losses are mitigation (Pawestriana, 2016). Mitigation that can be done as an effort to reduce the risk and impact of disasters is non-structural mitigation and structural mitigation. One form of non-structural mitigation that can be applied is in the form of education to provide knowledge about disaster risk and impact reduction.

Large-scale eruptions of Mount Merapi that have been recorded have occurred in 1822, 1872, and 1930. In the last 10 years, there have been 2 large-scale eruptions that occurred in 2006 and the peak occurred in 2010 (Marhaento, 2015). According to Suryaningsih (2017), the eruption of Mount Merapi which resulted in many victims occurred in 2010, with damage and losses estimated at 2.1 trillion rupiah and the death toll as many as 227 people.

Areas that were also affected by the eruption included Magelang Regency, Sleman Regency,

Boyolali Regency, and Klaten Regency. Schools or educational institutions play a role in supporting disaster mitigation programs. Schools are considered as effective institutions in changing people's mindsets and behavior, by providing education about disaster mitigation (Rahma, 2018).

Mitigation is a stage that aims to reduce the possible negative impact of disaster events on life or it can be interpreted that mitigation is taking actions to reduce the effects of a hazard before the hazard occurs (Rahmat in Nirmalawati, 2011: 2). Meanwhile, disaster itself is a condition that disrupts the socio-economic life of the community caused by natural phenomena or human actions. Disasters can occur through a long process or certain situations in a very fast time without any signs (Fidel in Nirmalawati, 2011: 2).

Mitigation is defined as an effort aimed at reducing the impact of disasters, whether natural disasters, man-made disasters or a combination of both within a country or society. (PP no. 21 2008). Understanding of disaster mitigation in basic education students is one solution that needs to be done in Indonesia, in order to reduce the occurrence of disasters that result in death and accidents in children under 15 years of age. The number of deaths of children who are very high and experience stress and trauma actually all of this will not happen, if from the beginning children are formed by having a positive self-concept in understanding disaster mitigation. Children who have knowledge about how to save themselves in the face of danger will become more capable and have positive self-confidence without feeling afraid and stressed (Nirmalawati, 2011: 2).

Disaster education is a learning process through the provision of information, knowledge, and awareness to students in order to form disaster preparedness at the individual and community levels. Through disaster education, students are encouraged to know disaster risk, gather information related to disaster mitigation, and apply it to disaster situations (Shiwaku et al., 2007). Schools play an important role in disaster management in accordance with the school's mission, especially in the development of social sciences (Baytiyeh , 2019) the main components needed to build school resilience to earthquakes and to demonstrate that the promotion of school seismic resistance is not only important for the safety of children and the continuity of their education but also for effective post-earthquake recovery.

Important questions for disaster include the pattern of disaster integration carried out. Readiness involves learning, therefore disaster risk reduction (DRR) should be discussed more in the field of education, especially the sub-discipline of public pedagogy. Disaster risk reduction education must have elements of publicity pedagogy, which is an experimental pedagogy in which citizens act together to develop their own preparedness. Preparedness pedagogy plays a role in this. The mesosystem serves as a meeting place between state and community-based DRR to truly integrate the system (Kitagawa, 2017)

Environmental and disaster awareness of teachers is very important for disaster education. Teaching of several natural disasters due to climate in the Environmental Problems course at the education faculty in Turkey is carried out using a Problem Based Learning (PBL) approach supported by Game Instructional Geocaching (IGG). IGG is an educational game played with small groups of students designed by a teacher. The findings in the use of ICG revealed that students' problem solving skills improved and they learned to use GPS technology; IGG contributes to the development of their environmental awareness and disaster awareness by increasing motivation. In addition, several strategies for game practice emerged. IGG facilitates the students' PBL process and is evaluated as a geography game by students. According to the results, the PBL-IGG approach is applicable in the subjects of Geography and Environmental Issues (Adanali & Alim, 2019)

Preparedness for natural disasters is an absolute and must be prepared proportionally. Children are the age most vulnerable to the risk of becoming victims in a disaster. When Mount Merapi erupted in 2010, the number of school-aged children who became victims was more at the elementary and junior high school levels. In addition, the number of schools at the basic education level is more than the upper education level. Therefore, preparing knowledge about disasters and their preparedness from an early age for disaster-prone communities is very important to avoid or minimize the risk of becoming victims. Disaster preparedness education needs to be developed starting at the basic education level to build a culture of safety and resilience that can instill cultural values. and knowledge to the younger generation is expected to provide an important role for disaster risk education.

The community becomes the main object when a disaster occurs, the community should have the ability to know the existing vulnerabilities, so that they can become the main actors (subjects) in disaster risk reduction efforts, so that losses can be minimized. This can only happen if the community has a plan to reduce disaster risk and has knowledge and understanding of what should be done when a disaster has not yet occurred (pre-disaster), during emergency response, and during post-disaster. The importance of increasing understanding and resilience to disasters must be instilled in the surrounding community, especially children at an early age who still do not understand what things they should do when an unexpected disaster occurs.

In fact, the disaster based on the Social Education Science contest can be studied from the sociological aspect as well as the learning element. The learning aspect in the Merapi eruption area has not yet been fully presented optimally. The research location in the Merapi eruption area requires an adequate learning model, especially at the basic education level. Research in the Merapi eruption area so far on the aspect of applying local wisdom of the Merapi eruption can be a meaningful input in the development of this learning model.

Based on the background of the problems that have been identified, this research will focus on the educative Interactive Learning Model for inculcating an attitude of responding to the Merapi eruption disaster in elementary school students in Boyolali district. The use of this educative interactive learning model is more related to the lack of an educative interactive learning model for inculcating an attitude of responding to the eruption of Merapi in elementary school students in Boyolali district. The scope of the research area in Boyolali district is related to the depth of the research material and the uniqueness of the area. This perception arises because the spatial analysis capability of the basic education area density in Boyolali Regency is administratively greater than other areas affected by the Merapi eruption.

In general, this study intends to obtain answers to the question: how is the educative Interactive Learning Model for inculcating an attitude of responding to the eruption of Merapi in elementary school students in Boyolali district? The Merapi eruption as a natural phenomenon is perceived as a volcanic natural disaster that affects the overall activities of the people who inhabit the area affected by the eruption. Administratively, the existence of Mount Merapi is located in 4 districts in Central Java Province and the Special Region of Yogyakarta with different characteristics of disaster attitudes. The commitment to state administration in education in the form of the intellectual life of the nation emphasizes an intelligent learning pattern for students.

The characteristics of the research area require a special characteristic learning pattern that emphasizes the attitude of local wisdom in the learning process considering that it cannot be equated with other regions in Indonesia. The variety of learning models requires a separate understanding of which learning programs can be implemented in areas prone to the Merapi eruption. Which interactive learning model can be implemented in an eruption-prone area without compromising the local wisdom that develops in the area.

To sharpen the analysis, the formulation of this research problem can be identified in the research questions, namely:

1. How is the learning model that can be developed in the Merapi disaster-prone area in Boyolali district?
2. How is the educative learning module in the context of developing the Merapi eruption response area as part of Indonesia?
3. How is the fulfillment of students' educational rights in social studies learning as the embodiment of good citizens?

METHODS

This study uses a phenomenological qualitative approach, because the qualitative approach has the following characteristics: has an actual setting, the researcher becomes the key instrument, the data is usually descriptive, emphasizes the process, the data analysis is inductive, and the meaning of each event is a essential attention. Phenomenological, because it is in accordance with the research objectives, namely describing social events to reveal real events in the field and can also reveal hidden values, being more sensitive to descriptive information and trying to maintain the integrity of the object under study. (Strauss and Corbin, 2009). This study uses a phenomenological qualitative approach, because the qualitative approach has an actual setting, the researcher is the key instrument, the data is usually descriptive, emphasizes the process, the data analysis is inductive, and the meaning of each event is an

essential concern. with the chronology of the Merapi eruption with its influence on the educational process, Analyzing the natural environment related to the potential for disasters in community patterns, Analyzing the patterns of disaster learning that have been carried out so far. Analyzing the disaster learning model and curriculum that has been carried out so far. Formulating a disaster-based learning model

2.2 Research Subject

1. This research was conducted in Boyolali Regency which consists of Boyolali Regency consisting of 19 sub-districts and 267 villages/kelurahan, which is one of 35 regencies/cities in Central Java. The areas directly affected by the Merapi eruption are in the Cepogo and Selo sub-districts.

2. 2.3 Data collection procedure

In qualitative research, the data collection process includes 3 (three) activities carried out. Lofland and Lofland (in Moleong, 2000) assert that in the context of data collection there are three activities, namely:

c.1. The process of entering the research location (getting-in), at this stage entering the research location of the kelurahan where learning activities are active to adapt and process activities with informants based on ethical and sympathetic relationships so as to reduce social distance between researchers and informants. The process of entering this research location starts from the Jrakah village area with an approach to the surrounding community as an area affected by the Merapi eruption

c.2. While at the research location (getting along), at this stage trying to establish a closer personal relationship with the research subject, seeking complete information needed and trying to capture the meaning of the information and observations obtained. Collecting information by interviewing the community around the Merapi eruption affected area

c.3. Collecting data (logging the data), at this stage using four kinds of data collection techniques, namely: Observation (observation). This technique is used to observe the ongoing learning activities as well as to observe the involvement of relevant government institutions in disaster education policies. Interview (interview). This technique is used to obtain information (empirical data) related to: the views and attitudes of teachers and students about disaster education. Documentation is used to collect various information and data taken from documents, in the form of decision letters, meeting results and other documents related to learning activities. Focus Group Discussion (FGD). FGDs were conducted with informants to establish openness, trust, and understand the perceptions, attitudes, and experiences of the informants, thus enabling researchers and informants to have intensive discussions in discussing very specific and constructive issues from participants with different backgrounds.

RESULTS AND DISCUSSION

The Boyolali Regency area which consists of Boyolali Regency consists of 19 sub-districts and 267 villages/kelurahan is one of 35 regencies/cities in Central Java. The sub-districts in Boyolali consist of Ampel, Andong, Banyudono, Boyolali, Cepogo, Juwangi, Karanggede, Kemusu, Klego, Mojosongo, Musuk, Ngemplak, Nogosari, Sambi, Sawit, Selo, Simo, Teras and Wonosegoro sub-districts. The areas directly affected by the Merapi eruption are in the Cepogo and Selo sub-districts.

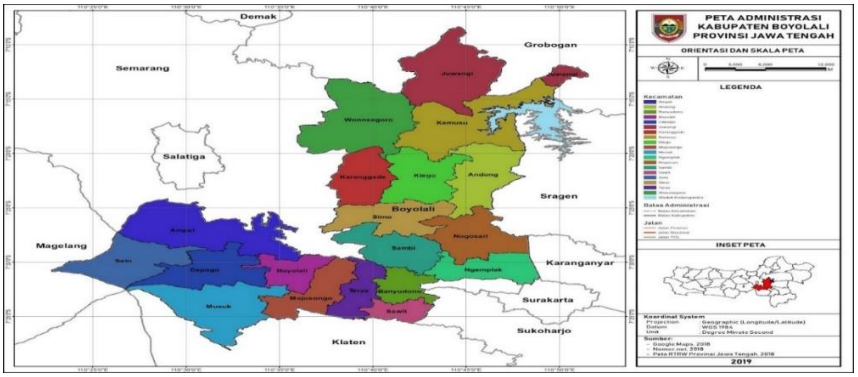

Figure 1. Boyolali Regency Administrative Map

The implementation of this research is classified into several main locations in collecting research data, namely for the location of the sub-district, the sub-district is selected with the

criteria for the location of the sub-district with an area directly affected by the eruption of Merapi, namely in Selo sub-district. Sub-districts that have a large population, namely: The suitability of schools with the focus and substance of the research, was determined purposively (deliberately) at SD Jrakah 1 and SDN Jrakah 3, Selo District.

This research process begins with reviewing previous research on disasters from international journals. The similarities and differences between disaster research so far and the research plan to be carried out are analyzed in starting this research process. The relevance of the research that has been carried out is juxtaposed with a theoretical study of disaster education with an interactive educative learning model that will be carried out. The analysis of this research using qualitative research methods is phenomenological. The hypothesis put forward in this study is that there is no interactive learning model used to support the planting of disaster awareness at the elementary school level in Selo sub-district, Boyolali district.

The acquisition of an educative interactive learning model as the output of this research is emphasized in this qualitative method research. The form of this research is as preliminary research and produces a learning model plan based on early disaster learning. The analysis of this research is expected to produce the output of an educative interactive learning model for the preparation of an early generation of disaster response.

Selecting informants who are truly relevant and competent to the research problem so that the data obtained can be used to build theory. Meanwhile, the informants were then asked to appoint other people who could provide information, and then these informants were also asked to appoint other people who could provide information, and so on until they showed the level of information saturation. That is, if by adding informants only the same information is obtained, it means that the number of informants is sufficient (as the last informant) because the information is already saturated (Muhajir, 1996). This method is commonly known as "snowball sampling", in which informants are selected in turns to show the level of information saturation. In this study, data collection was carried out in areas directly affected by the Merapi Eruption. Moleong, emphasized that according to the selected data, the types of data in qualitative research are divided into words and actions, writing, photos and statistics, which are used as necessary information. The types of data used as information in this research plan are the results of interviews from informants, regional regulations and learning curriculum. The supporting data for this research is the Merapi eruption disaster data and the news from the mass media about disaster data in the last 5 years.

This data analysis process is carried out continuously, along with data collection. In conducting data analysis, referring to the stages described by Miles and Huberman (1992) which consists of three stages, namely: data reduction (data reduction), data presentation (data display) and drawing conclusions or verification (conclusion drawing verification), as follows:

Teacher competency development, infrastructure, learning policies do not support spatial development. This spatial understanding is an absolute concern considering that disaster data shows the development of types of disasters that occur in Indonesia. Students as components in the Indonesian social system are affected by the presence of this natural disaster. Health problems, social disturbances and cultural disturbances are the implications of Indonesia's diverse natural conditions.

Disaster incident trends

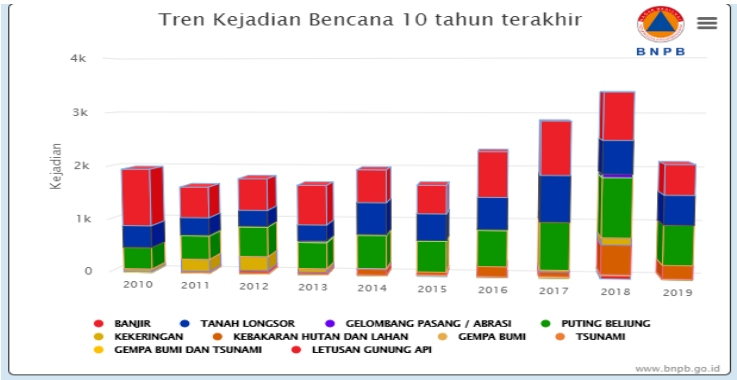

Figure 2. Disaster incident trends

The fall of victims of natural disasters due to wrong anticipation of disasters is a phenomenon that is often found in responding to disasters in Indonesia. The increasing potential for disasters in Indonesia is not anticipated by increasing anticipation for various impacts that have the potential to arise. The lack of anticipation of natural disasters based on learning in the form of alternative education has not been fully raised in perceiving the existence of natural disasters. The emergence of smog disasters, volcanic eruptions, floods and landslides will more or less affect students' teaching and learning activities

CONCLUSION

The development of disaster education requires the synergistic cooperation of all parties in it both preventive and curative to show the meaning of learning, especially in the cultivation of social science values. How to inculcate spatial intelligence to support the cultivation of national values is the main problem

Spatial Intelligence Planting to develop sustainable disaster education is very important considering the complexity of the region in Indonesia which has various disaster potentials. Spatial intelligence as an area of intelligence is important to be developed by optimizing learning materials and media that are easy for children to find in everyday life. Children as future generations must be prepared with proportional learning to face various challenges. The existence of natural disasters does not have to be treated with feelings of fear but must be addressed with full awareness to anticipate so as not to cause more casualties. The importance of disaster and the inculcation of students' awareness from an early age is a proportional growth and an adequate research material. The literature review in this research is the basis for the research plan to be developed. The results of this literature review serve as guidelines for conducting research on the growth of spatial intelligence in disaster development.

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