

Development of a Booklet for Volcanic Eruption Evacuation as an Educational Media for Disaster Mitigation: A Preliminary Study

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ABSTRACT

This study aims to develop a booklet for volcanic eruption evacuation as an educational media for disaster mitigation in elementary schools. This research is a development research. The subjects of this study were elementary school students in the volcanic eruption area, namely Mount Merapi. Data collection techniques were carried out by questionnaires, observations, interviews and documentation. The data analysis techniques were carried out by analyzing quantitative and qualitative data from the results of observations, interviews and documentation, then the results were concluded descriptively. The results showed that 98% of respondents stated that booklets are very necessary to be developed as an educational media for volcanic disaster mitigation which aims to provide knowledge related to self-evacuation in the event of a volcanic eruption for elementary school students. This booklet is useful in providing basic knowledge for students about evacuation procedures in the event of a volcanic eruption. This booklet is fully developed using the Canva app.

Keywords: Booklet for volcanic eruption evacuation; disaster mitigation; elementary school

1. INTRODUCTION

Science is one of the subjects that can instill the character of students to care about the environment (Nisa & Prasetyo, 2020). Natural Sciences is knowledge that is systematic and organized regularly, generally accepted (universal), and in the form of data collection from observations and experiments (Nastiti & Hinduan, 2012). Awareness to care for the environment should be instilled from an early age, especially at elementary school age (Oktarina & Nisa, 2021). According to Listyawati (2012), the science learning process that combines various concepts of physics, chemistry, biology and earth and space has more potential to develop students' experience and competence in understanding the natural surroundings.

The awareness of nature can be adapted to the geography of school. Schools in coastal areas can invite students to understand the sea, ocean and the ecosystems in it, while schools in rural areas can invite students to understand ecosystems in fields or forests, schools on mountain slopes can invite students to understand the ecosystem on mountain slopes. Due to coexistence with nature, students should be invited to learn about natural cycles, that natural cycles can benefit humans but can also harm humans if humans cannot understand the natural cycles. One of the natural cycles that occur naturally is a volcanic eruption. There are many schools located on the slopes and valleys of active volcanoes, therefore teachers should invite students to learn about the cycle of volcanoes which in time will release lava from the bowels of the earth. What humans can do is evacuate themselves and valuables to a place that is considered safe from volcanic eruptions. Therefore, students need to be invited to learn about volcanic eruption disaster mitigation.

Mitigation is a series of efforts to reduce disaster risk, both through physical development and awareness and capacity building in dealing with disaster threats. Mitigation activities can be carried out through; a) implementation of spatial planning, b) regulation of development, infrastructure development, building management, and c) implementation of education, counseling, and training both conventionally and modernly (Law Number 24 of 2007 Article 47 paragraph 2 concerning Disaster Management). Mitigation includes

activities and protective measures that can be started from preparation before the disaster takes place, assessing disaster hazards, disaster management in the form of rescue, rehabilitation, and relocation. Knowledge, understanding, and behavioral skills in preventing, detecting, anticipating disasters can effectively be transformed and disseminated (Tanaka & Jinadasa, 2011). So, mitigation is an effort to reduce the risk of the negative impact of natural disasters.

Mitigation knowledge is very important to be learned by students, and can be included in the learning process. To make it more interesting, learning can use learning media. Learning media are everything both physical and technical in the learning process that can help teachers to make it easier to convey subject matter to students so as to facilitate the achievement of learning objectives that have been formulated (Adam & Syastra, 2015: 79; Sunardiyah, Wibawa & Nisa, 2022). Meanwhile, according to Nurrita (2018: 3) the word media comes from the Latin "medius" which literally means "middle", "intermediary" or "introduction". In Arabic "wasaa'ila" or an introductory message from the sender to the recipient of the message. So, the media is a tool that can convey or deliver teaching messages. Media is a message-carrying technology that can be used for learning purposes. Some media are used by teachers (by utilization) in learning activities, meaning that the media is made by certain parties (media producers) and teachers just use them directly in learning activities. In addition, we can also design and create our own media (by design) according to the abilities and needs of students.

However, based on the results of distributing questionnaires related to disaster mitigation knowledge to elementary school students in the Mount Merapi area, it showed that 80% of students did not have knowledge related to self-rescue when a volcano erupts. The results of the interviews also showed that students still did not know what to do in the event of a volcanic eruption. Based on these data, it is necessary to develop a booklet for volcanic disaster mitigation for elementary school students in volcanic eruption areas.

The printed media developed is in the form of booklets. Booklet media is one of the printed media in the form of a small book that functions to convey messages or information in the form of interesting summaries and pictures (Fauziyah, 2017: 4). According to Rahmatih (2017: 16) Booklet can be interpreted as a relatively small book that contains information and practical knowledge about a particular subject or field of science. Meanwhile, according to Yani (2018: 2) Booklet is one type of learning resource by design. Booklets can be used as learning media as long as the presentation is derived from basic competencies (KD) that must be mastered by students, so that not too much content is designed. So, a booklet is a simple and interesting small book, in which there is information presented in printed form. Print media is a medium whose final product is in the form of prints, for example textbooks, journals, magazines, brochures, bulletins, etc. (Setyono et al, 2013).

Media functions according to Jalinus (2016: 6) are: a) Clarify the presentation of messages so that they are not too visual; (b) Overcome the limitations of space, time, and sensory power, for example objects that are too large can be replaced with pictures, slides, and so on. (c) Increase enthusiasm for learning, enabling students to learn on their own based on their interests and abilities, and overcoming students' passive attitudes; (d) Provide the same stimulus, can equate students' experiences and perceptions of the lesson content.

2. METHOD

This research is a development research. The subjects of this study were elementary school students in the area of volcanic eruptions, namely Mount Merapi. The stages of this research refer to the stages of Borg & Gall's research, namely potential and problem stages, data collection, product design, product validation, design revision, product testing, product revision and mass product manufacture. This research is limited to the third stage. Data collection techniques were carried out by interviews, questionnaire sheets and question sheets. Data analysis techniques in this study are quantitative statistics and qualitative descriptive.

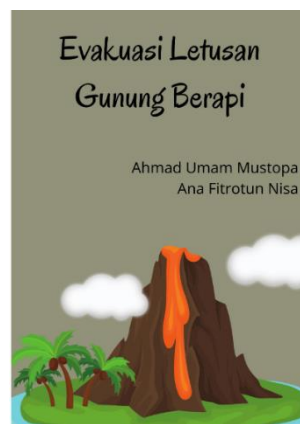
3. RESULTS AND DISCUSSIONS

Volcanic eruptions may occur at any time, so every citizen around the volcano must be prepared for the eruption. Community member must be educated regarding disaster mitigation, so that when a volcanic eruption occurs, they can evacuate and save themselves. However, based on observations and interviews, not all residents on the slopes of the volcano, especially at Mount Merapi, have an understanding of mitigating volcanic

eruptions. The results of the questionnaire distributed to 10 elementary school students on the slopes of Mount Merapi regarding disaster mitigation knowledge show that 80% of students do not have knowledge related to self-evacuation when a volcano erupts. The results of the interviews also showed that students still did not know what to do in the event of a volcano. Based on the results of the needs analysis, data obtained that as many as 98% of respondents said that a booklet related to volcanic eruption mitigation was needed.

The development of this booklet is also based on data of elementary schools located in the radius of the eruption of Mount Merapi in Yogyakarta, this is also a reinforcement that it is necessary to develop a booklet related to volcanic eruption evacuation as an educational media for disaster mitigation. This booklet was developed entirely using the Canva application. The Canva application can be accessed by anyone using a cellphone or laptop. In this application, there are also paid features, the advantage of this paid account is that the user has the right to use any design contained in the application. The booklet is designed to be as attractive as possible for elementary school students and the information contained is concise and easy to understand.

The developed booklet has full color and attractive characteristics. It can be seen in the following image visualization.



Picture 1. Booklet Cover

This booklet provides education that, if a volcanic eruption occurs wherever you are, then hurry home. When you get home, secure and take your valuables with you. Items that must be brought include t-shirts, jackets, gloves, glasses, textbooks, stationery, pants, masks, waterproof coats, shoes and sandals. This booklet also contains education that when an eruption occurs, follow parental directions and avoid dangerous areas such as valleys, slopes and lava flows. Other education provided in this booklet is related to the benefits of volcanoes, including cooling the earth's atmosphere, fertilizing the soil and being able to become mines.



Picture 2. Sample of developed booklet

This developed booklet can be used as an educational media on disaster mitigation so that elementary school students in volcanic slope areas have an understanding and are prepared when an eruption occurs. This booklet was developed with Canva technology as an adjustment to technological developments in the current era, as well as being used as a reading literacy habit for elementary school students (Arafik, et.al, 2021). This booklet can also be used as media to develop a school culture that familiarizes with good literacy, thus making children love science (Ratmini, Nisa & Khosiyono, 2022).

4. CONCLUSION

The results showed that based on the results of the needs analysis, it was necessary to develop a booklet as a disaster mitigation education for elementary school students on the slopes of a volcano. The development of this booklet is very much needed as an educational medium for volcanic disaster mitigation which aims to provide elementary school students with knowledge regarding self-evacuation in the event of a volcanic eruption. The benefit of this booklet is that it provides basic knowledge for students about evacuation procedures in the event of a volcanic eruption. This booklet is fully developed using the Canva application.

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