

## **IMPLEMENTATION OF EARTHQUAKE MITIGATION BOOKLET MEDIA IN GEOGRAPHY SUBJECT IN GRADE XI IPS AT SMA WALISONGO KARANGMALANG IN 2021**

**David Rizaldy**

Postgraduate Universitas Negeri Semarang, Indonesia

rizaldy david534@gmail.com

### **ABSTRACT**

Indonesia is a country that is prone to volcanic and tectonic earthquakes. The strategy in facing Indonesia's geological conditions is to stimulate disaster mitigation. Disaster mitigation materials can be implemented in Geography subject in grade XI IPS. The basic competencies that taught are disaster mitigation and adaptation materials. The method used was mixed methods with quantitative to measure the result of students' scores and qualitative to describe the media booklet. Research design used was qualitative descriptive. The research was conducted in grade XI of Social Science program 2 at SMA Walisongo Karangmalang. The total sample used was 24 students in one class. The research was conducted with booklet media to assist students in carrying out earthquake disaster mitigation simulation activities. The minimum completeness criteria (KKM) score set by the teacher was 70. The pretest result showed a score of 62.5 and the posttest result showed a score of 81. These results indicated that the booklet learning media influenced students' understanding Geography learning material. The content of the booklet media focuses on delivering earthquake disaster mitigation carried out in school. Through the booklet media, it is expected that students are able to apply natural disaster mitigation and adaptation materials in real life.

**Keywords: Booklet, Geography, Media, Mitigation**

### **INTRODUCTION**

Geologically, Indonesia is a country that the area is traversed by active volcanic routes in the world (ring of fire) so that there are many active volcanoes on several islands. The territory of Indonesia is traversed by three active plates in the world, namely the Pacific, Eurasia, and Indo-Australian plates. Indonesia's geological location causes its area prone to natural disasters. Natural disasters that hit Indonesia related to the geological location is earthquake. Based on the Regulation of the Head of National Agency for Disaster Management (BNPB) Number 4 of 2012, earthquake is the shaking of the earth caused of the collisions of earth plates, volcanic activity or rock debris. The strength of the earthquake due to volcanoes and rock debris is relatively small so that in

this case is more about earthquake due to plate collisions and active faults.

Earthquakes in Indonesia are caused by tectonic plate movement and volcanic activity.

According to the Law of the Republic Indonesia Number 24 Year 2007 in Article 1, Paragraph 9, mitigation means a series of efforts to reduce disaster risk, through physical development as well as awareness and improved capability to face disaster threat. Mitigation is a strategy that can be carried out in the education sector to be taught to students in schools. Mitigation is a step taken before a disaster occurs, so that knowledge about disaster migration can be used when a disaster occurs.

Mitigation of earthquakes disaster can be implemented into Geography subjects in natural disaster mitigation and

adaptation materials. Disaster mitigation and adaptation materials can be taught to students through various kinds of learning media. One of the learning media that can be used is the earthquake mitigation booklet. Booklet is an effective medium since they it can be understood and taught to students from various backgrounds. The booklet used is a medium in which there are illustrated images and information on how to mitigate earthquake disasters.

Booklet contains important information, booklet must have clear, firm, and easy to understand content and would be more interesting if it is accompanied by pictures (Wulandari, 2016:66). Booklets are practical learning media that are widely used to deliver material in schools. The booklet used in the earthquake disaster mitigation of simulation has a reference source from National Agency for Disaster Management (BNPB) so that every delivery of knowledge is in accordance with the procedure.

Earthquake is disaster that often hit parts of Indonesia. Earthquakes are the original vibrations from within the earth, originating in the earth which then propagate to the earth's surface due to the fracture of the earth breaking and shifting violently (Nur, 2010: 67). Earthquake is disaster that cannot be predicted when it will occur. Earthquake is caused by tectonic movements and volcanic activity from within the earth. Most cases of tectonic earthquakes have a wider damage effect than volcanic earthquakes.

The data of National Search and Rescue Agency (Basarnas) stated that earthquakes that hit West Sulawesi especially in Mamuju Regency and Majene Regency, there were 105 death pole on January 27, 2021. The high number of casualties was caused by several factors and the most basic was earthquake disaster mitigation. Based on these data, a proper earthquake disaster mitigation is needed with students as the main target to prepare

knowledge from the beginning. The research was conducted in SMA Walisongo Karangmalang with the focus on providing knowledge to the students of the importance of natural disaster mitigation and adaption. The choice of booklet media was because SMA Walisongo is a school based on integrated curriculum with Islamic boarding school. Islamic boarding school (pesantren) curriculum implemented at school as well as schedule at Islamic boarding school make students have limited time to learn Geography subjects especially for mitigation and adaption of natural disaster. Through the problems experienced by students, the teacher should have a strategy in learning so that the delivery of knowledge can be conveyed properly. Booklet media chosen to be researched at SMA Walisongo to determine its effect on students' knowledge of natural disaster mitigation and adaptation materials.

Based on the background of these problems, the problem statement in the research is how to implement the earthquake mitigation booklet media, and the second is how it affects the knowledge of earthquake disaster mitigation students in grade XI at SMA Walisongo. The first research objective is to able to analyze learning media for earthquake mitigation booklets and the second is to analyze the effect of booklet media on students' knowledge. The significance of the study is to find out the effect of earthquake mitigation booklet media in Geography subject of grade XI IPS.

## **RESEARCH METHOD**

The research method used is a mixed method that uses student test result data and analyzes the influence of the media used. Mixed methods are research methods by combining two research methods at once, qualitative and quantitative in a research activity, so that more comprehensive, valid, reliable and objective data will be obtained (Sugiyono, 2011: 18). The study was conducted in grade XI IPS 2 at SMA

Walisongo Karangmalang. The location is located in Kampung Sungkul, RT.12/RW.4, Plumbungan, Karang Malang, Sungkul, Plumbungan, Karangmalang District, Sragen Regency, Central Java 57222. SMA SMA Walisongo is a school based on *pesantren* curriculum. The research sample used was 24 students. The research was conducted in the period January-February 2021. The number of meetings required in the study was 3-4 meetings. Meetings 1 and 2 were used to carry out the test, while meetings 2 and 3 were used for learning using booklet media. Sources of data used include primary data which was taken directly at the research site, then secondary data were from several relevant journals as well as a source for making booklets from National Agency for Disaster Management (BNPB). The data collection method used test consisting of a pretest and posttests to find out the students' knowledge about earthquake mitigation. The data analysis technique used is descriptive qualitative.

## FINDING AND DISCUSSION

This part presents the findings and discussion of the research.

### RESULTS

The study was conducted by using data collection technique namely pretest and posttest. Based on the data collection, the students obtained score average as follows:

Table 1. Pretest Result of the Students' Knowledge.

No.	Grade Name	Cut Of Score (KKM)	Mean
1.	XI IPS 2	70	62,5

Based on the average score of pretest which was carried out in grade XI IPS 2, it was obtained that it was 62.5. The pretest

value shows that the average score of students' knowledge has not met the cut of score (KKM) that has been set according to the Geography subject of 70. The pretest results must be improved by using easy and effective learning media. The learning media used in this research was the earthquake mitigation booklet.

The next data collection technique used posttest to find out the results of student knowledge. The posttest is conducted after the students were given material on mitigation and adaption of natural disasters using an earthquake disaster mitigation booklets. The results of posttest students' knowledge are as follows:

Table 2. Posttest Result of the Students' Knowledge.

No.	Grade Name	Cut of Score (KKM)	Mean
1.	XI IPS 2	70	81

Based on the results of the posttest data collection which was carried out using the earthquake mitigation booklet media to find out the knowledge of the students, the average score of the students was above the cut of score. The average posttest score of students was 81, so that the students' knowledge increased after using the earthquake mitigation booklet media. The increase in the results of students' knowledge about natural disaster mitigation and adaption materials from the pretests and posttest was 18.5.

### Discussion

The analysis used in this study was qualitative descriptive to describe the data collection results. The study was conducted in SMA Walisongo Karangmalang. Research sample used was 24 students of grade XI IPS 2 to test the booklet used in learning. The results of data collection using the pretest and posttest, there is an analysis of the results of student knowledge

using the earthquake mitigation booklet media in the subject of Geography. The following is an analysis of the implementation of research using tests.

### **Analysis of the Students' Pretest Research Implementation**

The implementation of pretest had not used booklet media to convey the material to the students. In this stage, material of mitigation and adaptation to natural disasters did not use media, the delivery of material used lectures. The number of meetings used pretest stage was twice to deliver the material and once to carry out the test. Hence, there were 3 meetings. The learning material presented was more detailed in mitigating earthquake disasters, so that during 2 meetings students were given material with lectures without special media.

Meeting 3 was used to test the students' knowledge. Testing was done by giving 50 test questions in the form of multiple choice. 24 students worked on the test questions for 80 minutes. The test questions given were focused on earthquake disaster mitigation material. The test was carried out directly face to face. The result of the students' pretest was 62.5, so the average did not meet the cut of score (KKM) of 70. The average pretest results of students who did not fulfill the cut of score were caused by various factors. These factors are as follows:

- a. Students had not mastered the learning material.

The students had not been able to master natural disaster mitigation and adaptation materials due to a lack of motivation to read. The lack of motivation to read will cause students' knowledge to be limited. Moreover, the ability of students in mastering material was also caused by the students still considering Geography as a less interesting lesson.

- b. The absence of interesting learning media

Geography learning contains abstract material that must be conveyed to students in the form of concrete examples. Geography learning that is abstract will make students get confused because it is only based on the assumptions of each student. The strategy for making abstract learning material into concrete is by using effective media. Pretest activity had not used effective learning media so that the students' scores did not meet the cut of score (KKM).

- c. Natural disaster mitigation and adaptation materials are no considered important.

The material for natural disaster mitigation and adaptation is not considered important by the students since it is taught when condition is safe. Students did not yet understand the importance of mitigating natural disasters before they occur to reduce the impact. Learning material that was considered not important caused the pretest results to not fulfill the cut of score (KKM).

The test results that still did not meet the cut of score (KKM) showed that the students' absorption of material was low. The lack of students' absorption had an impact on students' knowledge in understanding earthquake disaster mitigation. Absorption of students had an impact on students' knowledge in understanding earthquake disaster mitigation.

### **Analysis of Students' Posttest Research Implementation**

Based on the results of the posttest that had been conducted using the earthquake mitigation booklet media, the results of the posttest showed that the students' average score had increased after the booklet media was used to convey

earthquake mitigation material to the students. The increase in test results indicated the students had more motivation to learn and the material presented was easier to understand by the students using booklets.

The booklet media has content in it in the form of earthquake disaster mitigation simulations. Earthquake disaster mitigation booklet has procedures for performing structural simulations. Earthquake mitigation consists of 3 parts, namely pre-disaster, during disaster, and post-disaster. The booklet media used are a reference for the 2015-2019 National Disaster Management Plan published by BNPB. Booklets were printed for use by students as a guide and understanding of earthquake disaster mitigation. The content contained in the booklet contains information and illustrations in carrying out simulation of earthquake disaster mitigation. The content of the booklet focuses on handling earthquake disaster mitigation in the classroom.

The content of the booklet has several sections that can be easily understood by the students. The booklet has content which contains general information and simulation illustrations. The initial part of the booklet contains general information about natural disasters that have occurred in Indonesia. General information on natural disasters such as earthquakes, tsunamis, volcanic eruptions, landslides and floods, accompanied by illustrations of disaster events. The initial part of the booklet provides information on the origin of the disaster, its causes, and the locations of incidents that are prone to disasters. The initial part of the booklet also explains the geological factors of Indonesia as a country that is prone to natural disasters. The booklet content in the next section focuses on the earthquake that hit Indonesia. The content focuses on the types of earthquakes, the factors causing it, areas that are prone to earthquakes, as well as some illustrations of

areas that have been affected by earthquakes. The content in this section focuses on students' understanding of earthquake disasters in theory so that students can fully understand them before moving on to the next content..

The content on the last page focuses on how to simulate earthquake disaster mitigation. Students can look at the booklet to find out the steps to take when an earthquake occurs. The content in the last section is the focus point for natural disaster mitigation and adaptation materials with the theme of earthquakes.

### **CONCEPT BASED PAPER ON RELEVANT RESEARCH**

This study used several journal references related to learning using booklet media. Relevant research such as the one studied by Fajar Wulandari entitled "*Analisis Kesiapsiagaan Siswa dalam Menghadapi Bencana Kekeringan Melalui Media Booklet*" in 2019. The next study was conducted by Yuliana, et al, entitled "*Studi Komparasi Media Pembelajaran Booklet Berbasis Sikap Konservasi dan Media Gambar terhadap Hasil Belajar pada Materi Keanekaragaman Hayati di SMA/MA Kecamatan Rasau Jaya*". Overall, the results of those studies indicated that the use of booklets can improve the ability of respondents in accordance with the research objectives.

### **CONCLUSION**

Both empirically and conceptually based paper should include Conclusion which highlights important points from the whole paper and recommendation.

Based on the study that has been conducted entitled "Implementation of Earthquake Disaster Mitigation Booklet Media in Geography Subject in Grade XI IPS at SMA Walisongo Karangmalang in 2021", it can be concluded that learning media is an important factor in delivering material. Selection of the proper learning

media will affect the ability of students to absorb what is conveyed by the teacher. The learning media used in this research is a booklet since it is an effective medium in delivering material on natural disaster mitigation and adaptation. The booklet media was studied at SMA Walisongo Karangmalang with class XI IPS 2 as the research sample. The results showed that at the pretest the result was 62.5 so it did not meet the cut of score (KKM). The posttest result showed a score of 81 so that it met the cut of score (KKM) of 70. These results indicate that students have not been able to fully understand natural disaster mitigation and adaptation materials. The material is still abstract, so it is difficult to apply it in real life. Through the use of booklets, students can understand natural disaster mitigation material well so that they can apply mitigation in everyday life.

The suggestion in this research is that booklet learning media can be developed on other Geography learning materials. Learning media is an important factor because it determines the delivery of teachers to students. Through the media used by the teacher, Geography learning material which is abstract can be converted into concrete so that it is easier for students to understand. The next suggestion is that in research there are several obstacles such as incomplete booklets, so further improvements are needed.

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