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The Contribution of Geography Learning Methods to Preparedness Students to Face the Eruption of Mount Sinabung, Karo Regency

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Abstract

The eruption of Mount Sinabung is a natural disaster that can occur suddenly which results in damage to property and victims as well as this causes students to feel uneasy being in an area prone to the eruption of Mount Sinabung, therefore it is necessary to be prepared to deal with potential natural disasters. So that with a disaster, students do not always feel afraid. By learning geography, especially mitigation material, it is hoped that it will be able to foster student preparedness so that they are able to act appropriately in dealing with the Mount Sinabung eruption disaster. The purpose of this study was to analyze the contribution of the geography learning method to the preparedness of students. This study uses a survey method. The sample consisted of 154 students from three schools, namely SMA Negeri 1 Tigan Derket, SMA Negeri 1 Munte and SMA Muhamadiyah Kabanjahe which were located in areas prone to the eruption of Mount Sinabung and areas still affected by the eruption of Mount Sinabung. The measuring instrument used is a statement questionnaire, the data analysis technique uses descriptive inferential statistical tests with simple linear regression and correlation tests. The results showed that the contribution of the geography learning method to the preparedness of students to face the eruption of Mount Sinabung, Karo Regency was included in the low criteria. P The measuring instrument used is a statement questionnaire, the data analysis technique uses descriptive inferential statistical tests with simple linear regression and correlation tests. The results showed that the contribution of the geography learning method to the preparedness of students to face the eruption of Mount Sinabung, Karo Regency was included in the low criteria. PThis research can provide an opportunity for teachers to consider the use of appropriate geography learning methods to grow students who have preparedness.

Keywords
Geography learning; disaster mitigation; preparedness.

I. Introduction

The natural disaster that recently occurred was volcanic eruptions in several areas in Indonesia, one of which was in North Sumatra, which is on a tectonic path. In North Sumatra, there are volcanoes, both active and inactive, one of which is Mount Sinabung in Karo district with an altitude of 2,460 meters above sea level with the status of a volcano that is still active today. The coordinates of Mount Sinabung are 30 10'12" N , 980 23' 31.2" E. Mount Sinabung is a type of starto volcano, which is a composite volcano, a high

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conical volcano formed by many layers of hardened lava, tephra, pumice and ash. volcanic. On August 29, 2010, Mount Sinabung released lava so that its status was raised to the highest level to alert, 12,000 residents in the vicinity were evacuated to 8 locations.Mount Sinabung is still at Level III Alert, last erupted in July 2021, and the ash column height is approximately 300m.

Based on the eruption incident and the impact caused by the eruption of Mount Sinabung, it caused a lot of losses due to property and material damage that caused losses and caused a feeling of restlessness, especially for students. Volcanic eruptions are one of the disasters that are feared by humans because the impact can cause very severe damage besides that it also poses a threat of fatalities (Nurhalimah: 2017). Based on the existence of schools that are included in disaster-prone areas and affected by the eruption of Mount Sinabung, students feel worried about the unpredictable hot clouds/eruption of Mount Sinabung, so that it can interfere with learning activities at school.

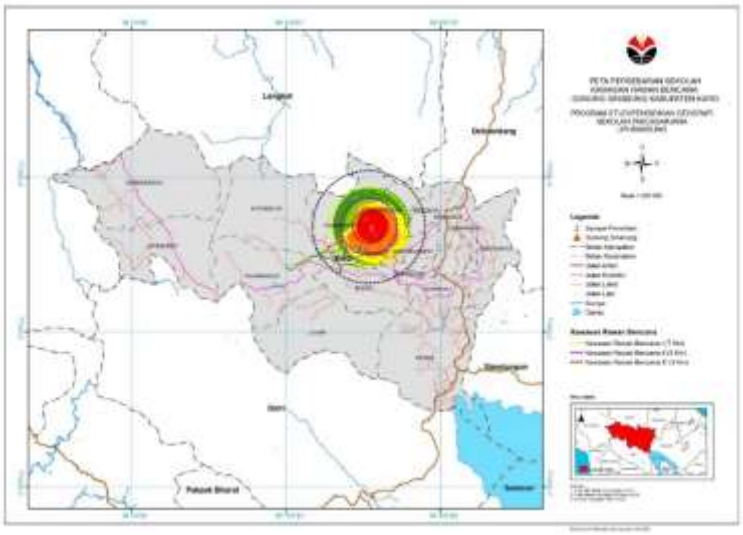

Figure 1. *Map of School Distribution in Mount Sinabung Disaster-Prone Areas, Karo Regency*

Based on the map of the Disaster-Prone Areas (KRB), there are three schools that are included in disaster-prone areas and areas affected by the eruption of Mount Sinabung, in KRB II there are SMA Negeri 1 Tiganderket and outside KRB I (areas affected by the eruption) there are SMA Negeri 1 Munte and SMA Muhammadiyah Kabanjahe.Based on schools that are close to the source of the disaster, students should understand and be able to cope with the dangers of volcanoes, an understanding of disaster and its mitigation can be obtained by students through schools. Schools are the most effective places in giving effect to the exchange of information, knowledge and skills to the community (Disaster Preparedness School: 2011).

The learning is aimed at reconstructing students who are looking for information and finding out knowledge that is able to solve problems, cooperate, and tolerate diversity. If the desire is successful in a satisfying way, it will increase students' self-confidence as well as a high sense of responsibility and civilized humans who can identify themselves with stable, independent personalities and have emotional stability with intellectual knowledge. (Pradana, D. et al. 2020)

Through geography learning, especially mitigation material, so that students have preparedness which is the ability to act appropriately in dealing with the eruption of Mount Sinabung. This is in line with (Bahtiar, 2013) socialization efforts for disaster mitigation will be very effective if implemented through schools. Mitigation learning in schools will raise students' awareness of the need for action in dealing with disasters and disaster risk reduction, through geography learning methods are expected to be able to contribute to preparedness for the eruption of Mount Sinabung. According to Sanjaya (2010) the method is a method used to implement plans that have been prepared in real activities so that the objectives that have been prepared are achieved optimally. Therefore, by using the learning method, the learning process and learning objectives will run according to the expected plan. The learning method is not only based on the learning process, but the use of learning methods is very broad in learning activities as stated by Andayani (2015) saying the method is procedural in the sense that the application of a method in learning is carried out in regular and gradual steps starting from the preparation lesson planning, presentation of learning materials, teaching and learning process, and assessment of learning outcomes. Therefore, the learning method must be adjusted to the material to be delivered. The types of learning methods include: lecture method, question and answer method, discussion method, learning task and recitation method, group work method, demonstration and experiment method, sociodrama method (role-playing), problem solving method,

Furthermore, through mitigation learning delivered using learning methods, it can raise students' awareness of the need for actions to deal with and reduce the risk of the Mount Sinabung eruption disaster. As stated by (Brown, 2014) states "education enhances individual resilience and ability to deal with disaster risks". With geography learning that teaches to be concerned about the environment and the phenomena that occur, and through mitigation materials it is hoped that it can make students have high preparedness for natural disasters that can arise at any time. Preparedness owned by students will feel safe because students are more able to act appropriately in dealing with volcanic eruptions that cannot be predicted to occur in the student's environment. Furthermore, by having preparedness students can convey to the closest people, especially family and to people who are in the environment where students live. However, the reality on the ground is that the preparedness of students isSMA Negeri 1 Tiganderket, SMA Negeri 1 Munte and SMA Muhammadiyah Kabanjahe were included in theDisaster-Prone Areas (KRB) and areas still affected by the eruption of Mount Sinabung still do not understand the meaning of preparedness in dealing with disasters, this is also seen by the many activities that students carry out in disaster-prone areas. Based onWith this problem, the research wants to see "The Contribution of Geography Learning to Students' Preparedness to Face the Eruption of Mount Sinabung, Karo Regency".

II. Research Method

The method of data collection in this study used a survey method. The use of the survey method allows researchers to generalize a particular social phenomenon or variable to social phenomena or social variables with a larger population, therefore the selection of a survey method is considered appropriate to see the contribution of geography learning to increase students' preparedness in the face of the eruption of Mount Sinabung, Karo Regency. Especially SMA in disaster-prone areas as a whole. Sampling in this study used purposive sampling based on high school schools in disaster-prone areas and areas affected by the eruption of Mount Sinabung as well as students who had received mitigation materials. So the sample of this study amounted to 154 students.

2.1. Research Location and Time

The place of this research is Karo Regency. The research was carried out in high schools located in Disaster-Prone Areas (KRB), namely in KRB II Tiganderket District, namely SMA Negeri 1 Tiganderket and outside KRB I or areas affected by the eruption of Mount Sinabung, namely Kabanjahe District, namely SMA Negeri 1 Munte and Munte District, namely Muhammadiyah Kabanjahe High School. Research time in November 2020.

2.2. Research Flow

Before conducting the research, it begins by identifying the problem of student preparedness in dealing with the eruption of Mount Sinabung, Karo Regency. By conducting an initial survey in the form of interviews with students, the result that can be obtained is that students still do not understand about the mitigation of the Mount Sinabung eruption disaster in the area where students live so that students feel uneasy about the disaster that lurks in the student's environment. Therefore, the next step is to determine the theoretical basis that supports the theory of learning geography and preparedness and determine the formulation of the problem.

The next stage is to collect theories that will be used as a basis in research, then determine the research hypothesis. The next step is to determine the research methodology and determine the sample based on the needs of researchers based on disaster-prone areas and to students who have / are taking mitigation subjects. Next determine the research variables in order to avoid errors in interpretation in research. The research instrument was arranged based on the research variables, before the instrument was distributed, the next step was to test the instrument to 30 respondents outside the sample who were still in the Karo Regency area. The results obtained were validated and valid questions were taken as instruments to be used in the study. The next step is research in the form of data collection by distributing questionnaires to the research sample. The results obtained were processed and analyzed using simple linear regression and correlation test. The next step after conducting the analysis is the presentation of research results in the form of conclusions from the research.

2.3. Data Analysis Technique

In this study, the data collection technique used was in the form of a questionnaire. BBased on the survey conducted, the data analysis technique used is inferential statistics. Sugiono (2003) used inferential statistics to test hypotheses and make generalizations. While the analysis used is simple linear regression and correlation test. After analyzing the research data, categorization and description of the results of the data analysis is carried out.

III. Result and Discussion

To see the magnitude of the contribution of the independent variables to the dependent variable in this study using a simple regression test. Based on the results of the study in the form of scores from students' answers, the contribution of the geography learning method to the preparedness of students to face the eruption of Mount Sinabung can be seen in the following table:

Table 1. Method Regression Test Against Preparedness

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.350a	.123	.117	6,935

Source: Data Processing Results, 2022

Based on the analysis table, the correlation value (R) of the independent variable, namely the geography learning method on the dependent variable in the form of preparedness, is 0.350. While the value of R square is0.123 or equal to 12.3%. So it can be concluded that the contribution of geography learning to the preparedness of students to face the eruption of Mount Sinabung Karo Regency is 12.3% and the remaining 87.7% is influenced by factors outside the independent variables. In KD mitigation taught to students should be able to contribute greatly in improving the preparedness of students.Maryani (2010) argues that disaster characteristics, various indicators of disaster occurrence, disaster-prone areas in Indonesia and disaster mitigation are very important materials to be taught. Therefore, the opinion of the mitigation material should be conveyed properly through appropriate learning methods. Because according to Siti (2013) said that the learning method is a medium of transformation in learning, so that the competencies expected in learning are achieved. However, based on the results of the research, the contribution of the geography learning method to the preparedness of students still has not shown significant results.

The limited use of methods during online learning resulted in the use of methods in the delivery of disaster mitigation materials that did not vary.Maryani (2010) said that cooperative learning and problem solving are the most appropriate methods in social studies learning, through discussions, simulations and demonstrations. However, the reality is during the covid pandemic, the learning process is only by conveying material through wa groups so that the various methods cannot be used other than the short discussion method. This condition is also exacerbated by unstable network conditions and the unpreparedness of students so that they do not understand and ultimately do not respond to the learning delivered by the teacher through the wa group. Furthermore, other factors that influence the contribution of the method to the preparedness of students are also the readiness of teachers to determine learning methods in various learning situations including in networks, This is supported by Herdiana's research (2020) which states that various factors that influence teacher readiness in carrying out online learning are institutional support factors in organizing online learning training for teachers, teacher confidence to do online learning and self-directed learning owned by teachers. teacher. Furthermore, to see whether the geography learning method contributes to the preparedness of students in facing the eruption of Mount Sinabung using the F test which can be seen in the following table: teachers' self-confidence to conduct online learning and self-directed learning owned by teachers. Furthermore, to see whether the geography learning method contributes to the preparedness of students in facing the eruption of Mount Sinabung using the F test which can be seen in the following table: teachers' self-confidence to conduct online learning and self-directed learning owned by teachers. Furthermore, to see whether the geography learning method contributes to the preparedness of students in facing the eruption of Mount Sinabung using the F test which can be seen in the following table:

Table 2. Anova Methods against Preparedness

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1022.173	1	1022.173	21.255	.000b
	Residual	7309.983	152	48,092		
	Total	8332,156	153			

a. Dependent Variable: Preparedness
b. Predictors: (Constant), Method
Source: Data Processing Results, 2022

Based on the table, the calculation results show that F Count > from F table. F count 21.255 and F table 3.90(df. N1.154) it can be concluded that the contribution ofmethod aspect significant to preparedness. Based on the results of the F test, the accepted hypothesis is H1 there is a contribution of aspects of the geography learning method to the preparedness of students to face the eruption of Mount Sinabung, Karo Regency. To see the linear regression equation between the independent variable and the dependent variable, it can be seen from the following table:

Table 3. Method Coefficient of Disaster Preparedness

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	56,209	3,643		15,430	.000
	Method	.854	.185	.350	4.610	.000

Source: Data Processing Results, 2021

From the table above, the resulting linear regression equation is Y= 56.209 + 0.854X. Based on the regression equation, it can be concluded that the learning method of geography has a positive correlation with the preparedness of students to face the eruption of Mount Sinabung. So it can be concluded that if there is an increase in the use of learning methods, there is a possibility that the preparedness of students will also increase. Furthermore, to determine the level of closeness of the relationship between aspects of the method of preparedness, the correlation coefficient test is used as follows:

Table 4. Correlation of Methods to Disaster Preparedness

		METHOD	PREPAREDNESS
METHOD	Pearson Correlation	1	.350**
	Sig. (2-tailed)		.000
	N	154	154
PREPAREDNESS	Pearson Correlation	.350**	1
	Sig. (2-tailed)	.000	
	N	154	154

**. Correlation is significant at the 0.01 level (2-tailed).
Source: Data Processing Results, 2022

Based on the table above, the contribution of the independent variable to the dependent variable is 0.350. Next uTo identify the high and low value of the correlation coefficient between the two variables in this study, the researcher is guided by the interpretation table of the contribution coefficient according to Riduwan and Kuncoro.

Table 5. Correlation coefficient

Coefficient Interval	Correlation Rate
0.00 – 0.199	Very low
0.20 - 0.399	Low
0.40 - 0.599	Currently
0.60 - 0.799	Strong
0.80 – 1,000	Very strong

Source: Riduwan and Kuncoro, 2014

The contribution of the geography learning method to the preparedness of students to face the eruption of Mount Sinabung of 0.350 is in the category0.20 - 0.399 means that the contribution of the geography learning method to the preparedness of students is included in the low criteria. The low contribution of geography learning methods to student preparedness needs to be considered by educators, so that the learning process can be achieved properly, the selection of methods in mitigation material so that through geography learning students have proper preparedness in dealing with disasters. This is supported by the opinion of Pupuh (2010) in his book which says "the more precise the method used by the teacher in teaching, it is hoped that the more effective the achievement of learning objectives will be".

IV. Conclusion

The geography learning method contributed significantly to the preparedness of students to face the eruption of Mount Sinabung, Karo Regency in the low category. This means that there is a link if the geography learning method increases, there is a possibility that student preparedness will increase. Furthermore, the low contribution of geography learning methods to preparednesscaused by the limitations of teachers in managing and determining online learning methods that occurred due to the covid pandemic, so online learning is boring and causes students to tend to be passive.

Recommendation

Educators to pay more attention to the methods used in the delivery of mitigation materials. Because mitigation material really needs to be taught at all levels of education because by learning mitigation, the preparedness of students will grow from an early age. So that in dealing with the possibility of a disaster, it can be faced and its impact can be minimized in life.

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