JOURNAL OF GEO JAMBURA EDUCATION
P-ISSN: 2721-7000 | E-ISSN: 2721-7019
Volume 6 Number 1, March 2025, 59-73
Journal Homepage: http://ejurnal.ung.ac.id/index.php/jgej

The Relationship Between Disaster Self-Awareness and Junior High School Students' Disaster Preparedness for Mount Merapi Eruption

Anggik Sapuntala[1], Siti Azizah Susilawati[1], Siti Hadiyati Nur Hafida[1], Mohd Hairy Ibrahim[2]

[1]*Geography Education, Universitas Muhammadiyah Surakarta, Jl. A. Yani, Sukoharjo, Indonesia*
[2]*Fakulti Sains Kemanusiaan, Universiti Pendidikan Sultan Idris, Malaysia*

ARTICLE INFORMATION

Article History:
Received: 2024-12-28
Accepted: 2025-03-26
Published: 2025-03-30

Keywords:
Disaster Self Awareness; Disaster Preparedness; Volcanic Eruption

Correspondence author:
Anggik Sapuntala
E-mail: anggiksap@gmail.com
DOI: 10.34312/jgej.v6i1.29388

ABSTRACT

Indonesia's geography poses a threat to society due to its volcanic activity. Disaster self-awareness and disaster preparedness are considered to influence students' actions in dealing with eruptions, both before, during, and after a disaster occurs. Disaster self-awareness enables individuals to take appropriate actions when faced with a disaster, while preparedness involves a series of activities to anticipate disasters. By choosing SMP Negeri 2 Kemalang as the research site, which is close to Mount Merapi, it is hoped that this study can provide a better understanding of how disaster self-awareness can influence students' preparedness in dealing with eruptions. The purpose of the study was to determine the level of disaster self-awareness and preparedness of students at SMP Negeri 2 Kemalang in dealing with the eruption of Mount Merapi, and to determine the relationship between the two variables. The method used in this study is quantitative descriptive with a contingency coefficient correlation design. The results showed that the level of disaster self-awareness of students was 67.50% in the preparedness category. The preparedness variable obtained a percentage score of 77.06%, which is included in the high category. The relationship between the two variables is included in the weak correlation category with a value of 0.298. In an effort to improve students' preparedness for volcanic eruption disasters, schools need to integrate disaster education into the curriculum in a comprehensive and sustainable manner. Further research is needed to evaluate the effectiveness of disaster education programs and to identify other factors that influence optimal student preparedness.

How to cite: Sapuntala, A., Susilawati, S. A., Hafida, S. H. N., & Ibrahim, M. H. (2025). The Relationship Between Disaster Self-Awareness and Junior High School Students' Disaster Preparedness for Mount Merapi Eruption. *Jambura Geo Education Journal*, 6(1), 59–73. https://doi.org/10.34312/jgej.v6i1.29388

1. Introduction

Indonesia is geographically, geologically, hydrologically, and demographically prone to disasters. This is because Indonesia is located on two young mountain ranges in the world: the Pacific Rim and Mediterranean Rim. Indonesia is also a country whose territory is located at the meeting of large plates, namely, in the northwest there is the Eurasian plate, in the south there is the Indo-Australian ocean plate, and in the northeast there is the Pacific Ocean Plate, which is always active (Jonathan et al., 2021). The position of the active plate meeting causes Indonesia to have a diverse topographic spectrum and high earthquake and volcanic activity (Azizah et al., 2021). This makes Indonesia vulnerable to natural disasters, such as landslides, volcanic eruptions, tsunamis, and earthquakes. Volcanic eruptions are among the most frequent disasters in Indonesia.

A disaster is an event or a series of events that threaten and disrupt the lives and livelihoods of people caused by natural and/or non-natural factors and human factors, resulting in human casualties, environmental damage, property losses, and psychological impacts (Otani et al., 2018). Research on disasters is important because it can increase public awareness of the risks and dangers that may occur, thus encouraging them to take preparedness measures, such as evacuation and first aid. Research on disasters has been widely conducted both in Indonesia and around the world, with a focus on increasing preparedness, the role of education, factors that influence preparedness, and the use of technology in disaster mitigation (Zen, 2019). Knowledge about disasters should ideally be instilled early in order to introduce the concept of disasters to help children understand the risks and dangers of natural disasters, develop preparedness, build safe habits, and form a resilient generation that can face future challenges (Wardyaningrum, 2014).

Volcanoes pose a threat to volcanic eruption disasters. Generally, volcanoes are active (eruption) with a long eruption period; however, there are also volcanoes that have a fairly close eruption period. Mount Merapi is one of the most frequently erupting volcanoes and has the highest eruption rate in the world. The short eruption cycle between 2 two five years makes Mount Merapi receive special attention from the government and community (Sitompul, 2018). Mount Merapi reaches 2986 m above sea level and is a strato volcano

(stratovocano). Mount Merapi is a permanent threat to disasters. In the last 100 years, Mount Merapi experienced its largest eruption in 2010, releasing sediment during the peak season and causing cold lava from October 2010 to February 2011, with a total of 280 cold lava ejections. The 2010 eruption of Mount Merapi resulted in 227 fatalities, 186 injuries, 159,977 displacements, 2,346 units of damage, 15 health facilities, and 366 educational facilities (Suherningtyas et al., 2022). Mount Merapi is located on the border between Central Java Province and DI Yogyakarta Province, making it a threat of exposure to the dangers of eruptions for residents living in the Mount Merapi area. Mount Merapi is located in three districts: Klaten Regency, Boyolali Regency, and Magelang Regency. Based on the GEMA BNPB in 2011, Klaten Regency had the highest number of disaster victims.

School Intermediate First (junior high school) is level education that is important in forming character and knowledge in students, including awareness and preparedness for disaster. In junior high school age, students start developing critical and independent abilities, so that they can more easily understand drafts about disasters and their importance preparedness (Nurjanah et al., 2024). This study aims to understand the connection between Self Awareness and preparedness students at State Middle School 2 Kemalang in the face of the disaster eruption of Mt. Merapi. State Junior High School 2 Kemalang was chosen for the location study because it is located in an area vulnerable to the eruption of Mt. Merapi. This research is important because it can provide information about the level Self Awareness and preparedness for junior high school students facing disasters. It is hoped that this research will be the basis for developing educational programs and training for more effective disasters.

Kemalang District is an agricultural, livestock, and educational area located on the slopes of Mount Merapi with a radius of 5 km. Villages with a radius of 5 km to 15 km, which are affected by hot clouds, dust rain, and cold lava, are Tegal Mulyo, Kendalsari, Sidorejo, Bawukan, Balerante, Bumiharjo, Dompol, Kepurun, and Keputran Kemalang District are included in the KRB III area, where the area is located closest to the source of the eruption and is often affected by volcanic bombs, ash rain, and other stone throwing (Lestari et al., 2016). The eruption of Mount Merapi in 2010 not only destroyed settlements in the Kemalang District area but also schools in the Kemalang District area and its surroundings. Damage to schools is an important concern because schools are where children gain knowledge. Kemalang District has schools from kindergarten to junior high. For the Junior High School level in Kemalang District, the school closest to the source of the Mount Merapi eruption is SMP Negeri 2 Kemalang with a distance of 10.7 km from the source of the eruption (Widodo et al., 2018).

The disaster-prone conditions of the Mount Merapi eruption require every individual to have self-awareness of disasters, from adulthood to early childhood. Self-awareness is part of intelligence that is formed by the encouragement of certain situations or events that result in a person being able to make decisions (Setyowati et al., 2016). Self-awareness is an insight or understanding of the reasons for one's behavior or understanding of oneself. Self-awareness of disasters is important for someone to think and act quickly and accurately (Mustofa et al., 2022). Each individual has their own self-awareness, but at different levels between individuals. An individual's self-awareness is influenced by the stimuli received in their environment. Self-awareness of disasters can be increased through appropriate education for an individual. Individuals or community groups living in disaster-prone areas (KRB) need to have better self-awareness to reduce the risk of disasters. Self-awareness of disasters is an attitude needed to build and make individuals resilient and sensitive to disasters (Elita et al., 2019).

Preparedness is a series of activities carried out to anticipate disasters through organization and appropriate and effective steps (Law of the Republic of Indonesia No. 24 of 2007). Preparedness in facing disasters plays a fairly important role because it influences the actions taken in facing disasters. Preparedness consists of activities that aim to increase response activities, mobilizing all efforts to achieve the desired goals, thinking strategically, not being too long in failure so that it is easy to get back up, being able to overcome and control stress, and minimizing the occurrence of casualties due to disasters. Preparedness is not a way to reject or withstand the threat of a volcanic eruption of Merapi, but an effort to prevent, anticipate, and understand it so that it can reduce the risk of disasters (Hafida, 2019).

This study had several gaps. This study only focused on the relationship between disaster self-awareness and student preparedness, so further research can consider other factors that may influence preparedness, such as family support, social environment, and personal experience of disasters (Ulamatullah et al., 2022). This study does not discuss the possibility of differences in the level of self-awareness and preparedness between students based on gender, age, or level of education in depth, so further research can examine this further. This study did not evaluate the effectiveness of a particular intervention or program in improving student self-awareness and preparedness; therefore, further research can design and test a comprehensive intervention program to improve student preparedness and evaluate its effectiveness. This study used a cross-sectional

design to avoid tracking changes in the level of student self-awareness and preparedness over time; therefore, further research can use a longitudinal design to track these changes and identify the factors that influence them. This study was conducted at one of the schools, SMP Negeri 2 Kemalang, so the generalization of the research results is still limited. Further research can involve more schools with different characteristics to increase the generalizability of the research results.

This study aims to determine the relationship between self-awareness of disasters and the preparedness of students of SMP Negeri 2 Kemalang in facing the eruption of Mount Merapi. This study tested two variables: self-awareness of disasters and preparedness for disasters. Self-awareness and preparedness are important to study because both influence students' actions in facing the eruption of Mount Merapi before the disaster occurs, during the disaster, and after the disaster occurs.

2. Method

The type of research used in this study is quantitative descriptive research, namely, research that uses numbers starting from data collection to data analysis and obtaining results. This study uses a correlational approach with contingency coefficient analysis to connect the two variables to obtain a conclusion. This research was conducted at SMP N 2 Kemalang located in Bumiharjo Village, Kemalang District, Klaten Regency, Central Java Province. This study was conducted over six months. A research location map is shown in Figure 1.

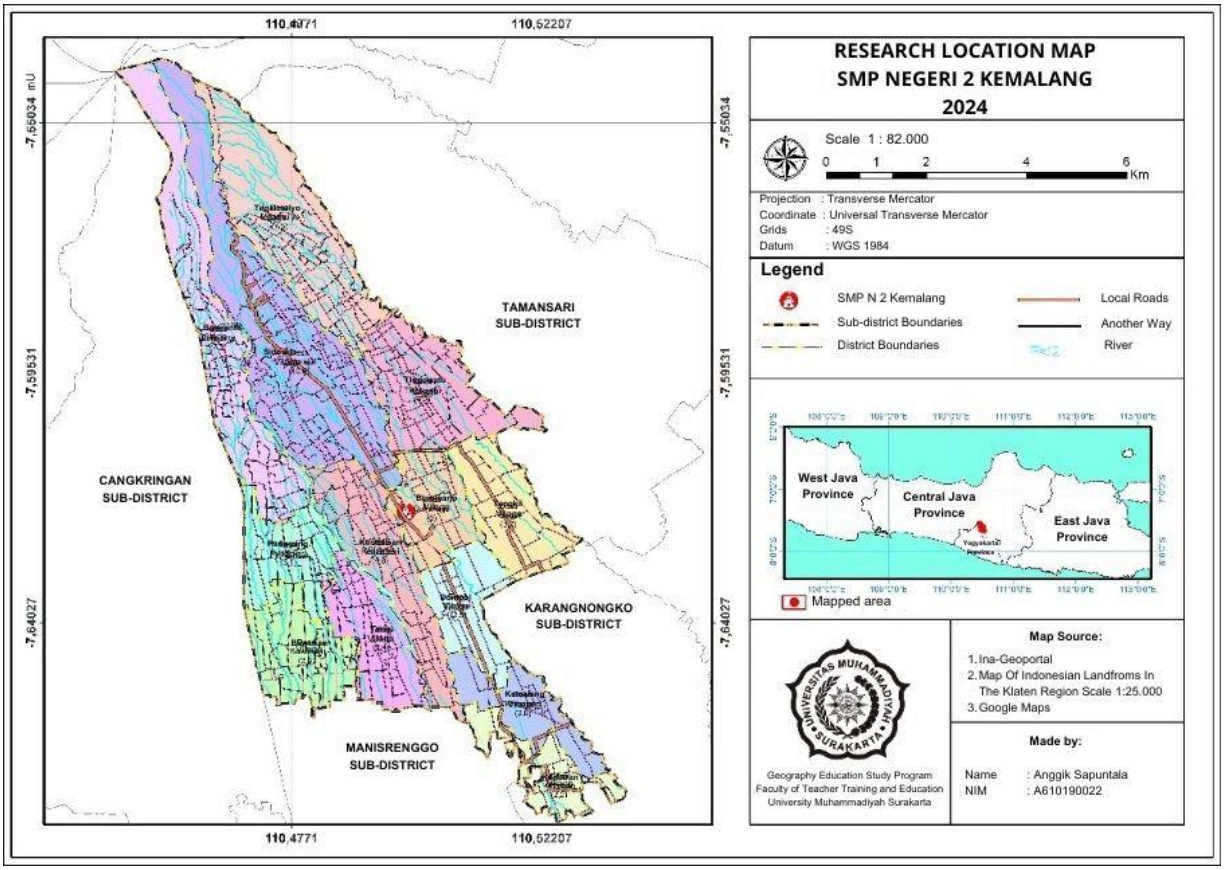

Figure 1. Map of Research Location of SMP N 2 Kemalang
Source: Researcher, 2024

2.1 Determination of Population, Sample and Sampling

This study included the population of all students of SMP Negeri 2 Kemalang, totaling 600 students. In this study, the Slovin formula was used to calculate the number of samples. The margin of error was set to 5%. The number of samples taken was determined using the Slovin formula, as follows:

$$n = \text{Indonesian} \frac{N}{N.(e)^2+1}$$

Information:
n = number of samples
N = population size
e2 = desired accuracy limit

$$n=\text{Indonesian}\frac{600}{600.(0.05)^2+1}$$

2.2 Data Collection Techniques and Instruments

This study used data collection techniques through observation, questionnaire distribution, and documentation.

2.2.1 Observation

Observation is a method of collecting data by going directly to the research location to verify the conditions and prove the truth of the research design. The things observed in this study were the activities of school residents, the school environment, and the environment around the school.

2.2.2 A list of questions

A questionnaire is a data-collection technique that provides a series of written questions or statements to respondents that require answers. To measure students' self-awareness in facing the Mount Merapi eruption disaster, the researcher used a Likert scale, as shown in Table 1.

Table 1. Self Awareness Indicator

No.	Variables	Component	Indicator	Number of Questions
1.	Self-awareness	Emotional Self Awareness	Emotions that arise as a result of experiencing a disaster	3
			Feelings when facing a disaster	3
			Attention in receiving materials	3
		Accurate Self Awareness	Knowledge about disasters	5
			Knowing the strengths and advantages in facing disasters	3
		Confidence	Awareness in action	3
			Introspective behavior	3
			Solving problems creatively	3

Source: (Lesmana & Purborini, 2019)

To be calculated in quantitative form, a Likert score was given to each answer with the following provisions:

Always = value 4
Often = value 3
Rare = value 2
Never = value 1

Meanwhile, the Guttman scale is useful for measuring students' preparedness in facing the Mount Merapi eruption. The preparedness questionnaire indicators are presented in Table 2.

Table 2. Readiness Indicators

No	Variables	Indicator	Number of Questions
1 .	Preparedness	Knowledge and attitudes towards disasters	4
		Policy or guidelines	3
		Emergency response plan	6
		Disaster warning system	3
		Resource mobilization	3

Source: LIPI (2006)

The criteria for the Guttman scale are as follows:

Yes = Agree (value 1)
No = Disagree (value 0)

2.2.3 Documentation

Documentation is in the form of writing, pictures, and graphs. Documentation in this study was related to the activities of school residents, the condition of the school environment, and the condition of the environment around the school.

2.3 Data Analysis Techniques

Analysis of the level of self-awareness and disaster preparedness of students of SMP Negeri 2 Kemalang facing volcanic eruption disasters using descriptive statistical methods. Before the analysis, a trial of the questionnaire to be distributed was conducted, which included validity and reality tests. Furthermore, the researcher conducted a prerequisite test to determine whether the results of the data analysis could continue during the hypothesis test. The prerequisite tests for this study were normality and homogeneity tests. The sample normality test was carried out using SPSS calculations based on the Kolmogorov-Smirnov test, while the homogeneity test of the data from the sample was performed using the One-Way Anova analysis testing technique.

Bivariate analysis in this study was conducted to determine whether there is a relationship between students' self-awareness of disasters and their preparedness in facing the eruption of Mount Merapi. This study used Pearson Product Moment Correlation analysis with a significance level of 5% and a significance level of 95% to determine the closeness of the relationship using the Contingency Coefficient (C) statistical test. The basis for making the Pearson product-moment correlation decisions is as follows:

If the significance value < 0.05 then there is a correlation.
If the significance value > 0.05 then there is no correlation.
The guidelines for the level of relationship of the Contingency Coefficient (C) test are as follows.
Correlation value 0.00 to 0.20 = no correlation
Correlation value 0.21 to 0.40 = weak correlation
Correlation value 0.41 to 0.60 = moderate correlation
Correlation value 0.61 to 0.80 = strong correlation
Correlation value 0.81 to 1.00 = perfect correlation

3. Results and Discussion

This study involved 240 students of SMP Negeri 2 Kemalang, consisting of grades VII, VIII, and IX, with equal proportions of male and female students. The class was composed of 100 students in grade VII (age 13 years), 90 students in grade VIII (age 14 years), and 50 students in grade IX (age 15 years). This school is located in an area very close to Mount Merapi, only 10.7 km from the eruption center, so it is included in the Disaster-Prone Area (KRB) III with a high-risk status according to the Central Java BPBD in 2023. This study aimed to understand the knowledge, preparedness, and psychological impacts that may be experienced by students living in areas prone to volcanic eruptions. The results of this study are expected to provide important information for the development of education and training programs aimed at improving student preparedness when facing potential disasters in the future.

3.1 Results of Students' Disaster Self-Awareness of SMP Negeri 2 Kemalang in Facing the Eruption of Mount Merapi

To measure the variable of students' disaster self-awareness when facing the eruption of Mount Merapi, the researcher used a Likert scale. Disaster self-awareness comprises three main components: Emotional Self-Awareness, Accurate Self-Awareness, Self-Confidence. Each component has detailed indicators in the data collection instrument, with the emotional self-awareness component measuring emotions that arise as a result of disaster experiences, feelings in facing disasters, and attention in receiving disaster material itself. The final index value is 66.24%, which is shown in the index value table in the ready category. Components Awareness Self-Accurate are components that measure knowledge of disasters and know the advantages and strengths of a face disaster. The value index Awareness Self Accurate showed a mark index of 62.78%, which is almost ready. Components assessed final: Trust Self on This component assesses awareness self in act moment disaster, behave introspective, and solve problems in a way creative; the value index on this component is 73.47%, which shows the index Ready.

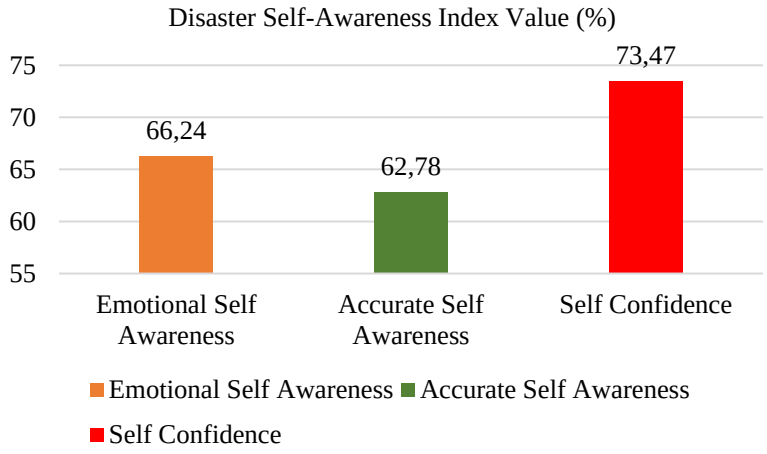

Figure 2. Value Index Disaster Awareness (%)
Source: Researcher, 2024

The results of the analysis of the disaster self-awareness of students at SMP Negeri 2 Kemalang in dealing with the Mount Merapi eruption disaster as a whole showed that the index value of 67.50% indicates that the self-awareness of disasters of students at SMP Negeri 2 Kemalang is in the category of being ready to face the Mount Merapi disaster (Figure 2).

3.2 Results of the Readiness of Students of SMP Negeri 2 Kemalang in Facing the Eruption of Mount Merapi

The Guttman scale is useful for measuring students' preparedness in facing the Mount Merapi eruption disaster. Learning outcomes about preparedness student can known from the answer Respondent on every indicator questions. Readiness indicators were divided into five categories: knowledge, policy, plan responsive emergency, early warning, and mobilization.

3.2.1 Knowledge and attitude against disaster

Regarding the knowledge indicator and attitude to disaster mark index, students were categorized into three categories: high, medium, and low, as shown in Figure 3. The presentation index knowledge mark shows that as many as 86.25% of students or 207 students own knowledge about disasters, as many as 10.83% of students or 26 students own knowledge about disasters, and as many as 2.91% or 7 students own knowledge about disasters.

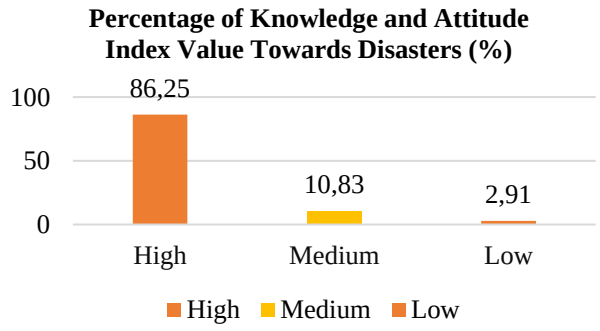

Figure 3. Percentage Mark Index Knowledge and Attitude To Disaster (%)
Source: Researcher, 2024

3.2.2 Policy or Guidelines

Policy indicators or guides in face of disasters were categorized into three categories: high, medium, and low. The classification is shown in Figure 4. The percentage value of the policy index or guidelines for dealing with disasters in the high category is 65%, or if converted to the number of students who know the policies or

guidelines for handling disasters is 156 students; for the medium category, the percentage is 9.58% or 23 students, while in the low category it is 25.41% or 61 students.

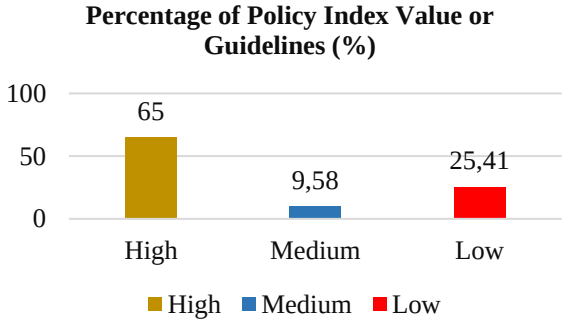

Figure 4. Presentation Mark Index Policy or Guide (%)
Source: Researcher, 2024

3.2.3 Plan responsive emergency

Plan indicator emergency response was divided into three categories: high, medium, and low. A general description of this is shown in Figure 5. The high category on index mark presentation plan responsive emergency mark itself 68.33% or a total of 164 students, medium category mark itself 31.66% or 76 students, while the low category marks alone (0%).

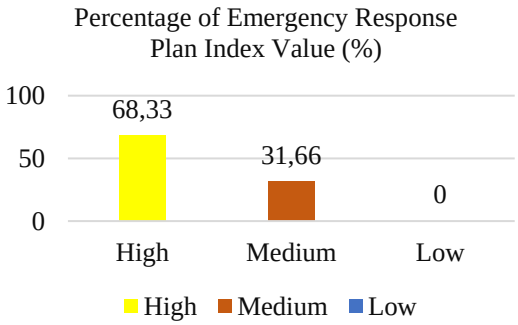

Figure 5. Presentation Plan Sign Index Responsive Emergency (%)
Source: Researcher, 2024

3.2.4 Warning early

The early warning indicator has three classification categories: high, medium, and low, as depicted in Figure 6.

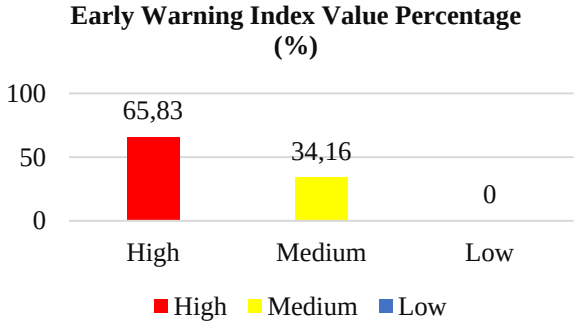

Figure 6. Percentage of Early Warning Index Value (%)
Source: Researcher, 2024

The index mark presentation warning early is in the high category, namely 65.83% or as many as 158 students understand about warning early, medium category there is percentage 34.16%, or 82 students, and is in the low category 0%.

3.2.5 Mobilization Resources

Mobilization indicator source power in the high category owns 31.66% of students or a total of 76 students, while in the medium category, there are 64.58% of students or 155 students and categories low there are 3.75% or 9 students (Figure 7).

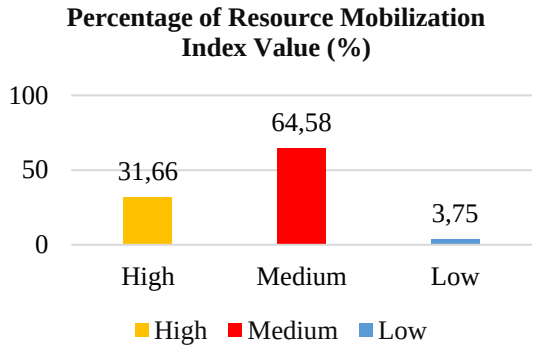

Figure 7. Percentage of Resource Mobilization Index Value (%)
Source: Researcher, 2024

3.3 Connection Awareness Self To Disaster with Preparedness Students of State Middle School 2 Kemalang In Face Eruption Fire Mountain Mount Merapi

The connection between two variables was tested with normality and homogeneity tests to ensure that the data met the necessary assumptions. Parametric statistical tests were also performed. If this assumption is not fulfilled, then the results of parametric statistical tests can become invalid, and the conclusions drawn can become wrong.

3.3.1 Test Data Normality

The normality test was used to determine whether the data were normally distributed. Because normality is an analysis of the main things to fill in parametric analysis with normally distributed data, the data can be considered representative of population research, and the normality of the results is shown in Table 3.

Table 3. Data Normality Test

			Self Disaster Awareness
N			240
Normal Parameters a,b	Means		71.07
	Standard Deviation		14,096 people
The Most Extreme Difference	Absolute		0.614
	Positive		0.503 years
	Negative		-0.614
Test Statistics			0.614
Asymptomatic Sig. (2-tailed) [c]			0.029
Monte Carlo Sig. (2-tailed) [d]	Signature.		0.242
	99% Confidence Interval	Lower Limit	0.202
		Upper Limit	0.282

Source : Researcher , 2024

The results test normality displayed in Table 3 shows the significance of the instrument data study of 0.242, which means above 0.05, then the data are normally distributed.

3.3.2 Data Homogeneity Test

Homogeneity testing was performed using Levene's Test of Homogeneity of Variance. The results of the homogeneity tests are presented in Table 4.

Table 4. Homogeneity Test

Disaster Awareness	Levene Statistics	df1	df2	Signature.
	Based on Average	246.984 million	1	478	0.273
	Based on Median	244,132 people	1	478	0.359
	Based on Median and with customized df	244,132 people	1	253,539 million	0.36
	Based on trimmed average	247.116 million	1	478	0.284

Source: Researcher, 2024

Based on the results calculation with IBM SPSS version 27, a mark significance greater than 0.05 indicates that the data used is homogeneous so that the data can be used as a research sample.

Univariate and bivariate analyses were used to determine the relationships between variables . Univariate and bivariate analyses are the two basic approaches in data analysis. According to his name, univariate analysis focuses on a single variable. The goal is to understand the characteristics of variables, such as how the data are distributed (e.g., mean, median, mode, range, trend), the center (general or typical), and its spread (how far data spreads from the center value). Univariate analysis is very useful for understanding the variables in detail, identifying extreme values (outliers), and preparing more analyses . Meanwhile, bivariate analysis involves two variables and aims to understand the connection between them. This analysis seeks to determine whether there is a connection between both variables and, if there is, how strong connections exist. Some common methods used in analysis bivariate is correlation (measures) how much strong connection linear between two variables), regression (predicting mark a variable based on other variable values), and the Chi- square test (testing whether There is connection between two categorical variables). Analysis of bivariate data is very useful for determining whether there is a connection between two variables and for predicting a variable based on another variable.

Analysis Univariate, analysis univariate aiming for knowledge level awareness self student to disaster and preparedness student in face disaster eruption mountain fiery Mount Merapi. Disaster Awareness Results SPSS frequency data analysis shows 7 students who did not Ready (2.9%), 34 students did not have enough Ready (14.2%), 160 students were almost Ready (66.7%), and 39 students were very Ready (16.3%). The results awareness variable analysis self to disaster are shown in Table 5.

Table 5. Disaster Self- Awareness

		Frequency	Percent	Valid Percentage	Percentage Cumulative
Legitimate	Not ready	7	2.9	2.9	2.9
	Not ready	34	14.2	14.2	17.1
	Almost Ready	160	66.7	66.7	83.8
	Very Ready	39	16.3	16.3	100.0
	Total	240	100.0	100.0	

Source : Researcher , 2024

The average student is in the category of awareness self almost ready, which signifies that the awareness of self-students in face disaster is sufficient, as shown in Table 5.

Preparedness analysis univariate on the preparedness variable student in face disaster obtained by 50 students enter in the medium category (20.8%) and 190 students enter the high category (79.2%).

Table 6. Preparedness

		Frequency	Percent	Valid Percentage	Percentage Cumulative
Legitimate	At the moment	50	20.8	20.8	20.8
	Tall	190	79.2	79.2	100.0
	Total	240	100.0	100.0	

Source: Researcher, 2024

The average preparedness student is in the category of tall so that it can be indicated that students have good preparedness in face of disasters, as shown in Table 6.

Bivariate, Analysis Bivariate analysis was conducted against two variables to determine the relationship between variables. The variables measured were awareness self to disaster (X) and preparedness (Y).

Table 7. Pearson Product Moment Correlation

Correlation			
		Self-awareness	Preparedness
Self-awareness	Pearson Correlation	1	.543 **
	Sig. (2-Tails)		.000
	N	240	240
Preparedness	Pearson Correlation	.543 **	1
	Sig. (2-Tails)	.000	
	N	240	240

Source: Researcher, 2024

In Table 7, the Pearson Product Moment correlation test to find out connection between variable X with variable Y. In this study, variable X is Self -Awareness in Facing Disasters and the Y variable is readiness. From the data in Table 4.11, the value significance correlation Pearson Product Moment is 0.000, which means < 0.05; thus, it can be concluded that there is a connection between variable X and variable Y, or that there is a significant relationship between awareness self face disaster and preparedness students at State Middle School 2 Kemalang in the face eruption fire Mount Merapi.

Based on Table 4.11 °connection between the variables of awareness self and preparedness disaster, the significance between both variables shows a significant relationship. Because value 0.000 < 0.05. Mark degrees the relationship of 0.543, which shows that variables are on-level, ongoing relationships .

3.4 Disaster Self-Awareness of Students of SMP Negeri 2 Kemalang in Facing the Eruption of Mount Merapi

Research on disaster self-awareness shows the complexity of individual preparedness when facing such unexpected events. The three main components evaluated, namely, emotional self-awareness, accurate self-awareness, and self-confidence, provide a comprehensive picture of how individuals prepare themselves mentally, knowledgeably, and psychologically. A fairly high level of emotional self-awareness (66.24%) indicated that many individuals were able to recognize and manage complex emotions when facing the threat of a disaster. This ability is important because uncontrolled emotions, such as panic or excessive fear, can hinder rational and effective actions. Individuals with good emotional self-awareness tend to be calmer in crisis situations, able to make the right decisions, and provide emotional support to others in need. For example, they can calmly follow evacuation instructions, calm frightened children, or help injured people (Makrifah & Sudarmilah, 2019).

High self-confidence (73.47%) has been shown to be a valuable asset in the face of disasters. Individuals who believe in their abilities to survive, adapt, and help others tend to be more proactive and resilient. They may volunteer, organize rescue efforts, or provide first aid to victims. This self-confidence not only helps individuals overcome personal challenges but also inspires and motivates others around them (Permana., S.A & Hartanto, 2019).

However, the results of this study also showed a significant gap in terms of accurate self-awareness (62.78%). Many individuals lack an adequate understanding of the types of disasters that may occur in their

area, risk factors that increase vulnerability, and effective mitigation measures. This lack of knowledge can be fatal during emergencies. For example, individuals who are unaware of the early signs of a tsunami may not evacuate immediately or individuals who do not have a family evacuation plan may be separated from their loved ones during a disaster (Suri, 2016).

To raise awareness of disasters comprehensively, a multifaceted approach is required. First, comprehensive public education on various types of disasters, risks, and mitigation measures must be improved. This information can be delivered through various channels such as schools, mass media, social media, and community training. In addition, it is important to raise awareness about risk factors specific to a particular region, such as vulnerability to earthquakes, floods, or landslides (Pratiwi et al., 2021). Individuals must be encouraged to engage in regular self-reflection. By understanding their strengths and weaknesses when dealing with emergency situations, individuals can take proactive steps to improve their preparedness. For example, individuals who recognize that they tend to panic can undergo stress-management training or learn relaxation techniques. Disaster simulation exercises are effective tools for improving preparedness. Through simulations, individuals can practice evacuation skills, use fire extinguishers, first aid, and other emergency actions in a safe and controlled environment. Simulations can also help individuals identify weaknesses in their preparedness plans and make necessary improvements (Suherningtyas et al., 2022).

Additionally, sharing experiences with disaster survivors can provide valuable insights and strengthen social solidarity. Hearing stories about how others have overcome the challenges and trauma of disasters can be inspiring and provide hope. Discussion forums, support groups, and social media platforms can facilitate the exchange of information and experience. Raising disaster awareness is a long-term investment that provides significant benefits to individuals, families, and communities. By increasing our understanding, skills, and confidence, we can build more resilient communities that are prepared to face the challenges of future disasters. This study is in line with research from (Agustin et al., 2022) which stated that individual self-awareness can be seen from how individuals have a sense of worry if a volcanic eruption occurs, know the signs that an eruption will occur, know the dangers of a volcanic eruption primarily, know the personal protective equipment used during a volcanic eruption, use a mask correctly during a volcanic eruption, are interested and pay attention when given material about volcanic eruption disasters, feel sad when told the signs of a volcanic eruption, are able to mention the early warning system in the surrounding environment when a volcanic eruption occurs, know other objects that can be used as a nose cover when ash rain falls, know the evacuation route to save yourself during a volcanic eruption, and gather at a place that has been agreed upon as a safe point during a volcanic eruption, which makes individuals have a good level of self-awareness (Gaol & Sembiring, 2017).

3.5 Preparedness of Students of SMP Negeri 2 Kemalang to Face the Eruption of Mount Merapi

The results of the study on students' preparedness to face disasters provide a positive picture. The majority of students (86.25%) showed a good understanding of various types of disasters, including earthquakes, tsunamis, floods, and fires. They not only know the definition and causes of disasters but are also able to identify early signs, such as ground vibrations before an earthquake or rising water levels before a flood (Oktarina et al., 2024).

This understanding is reflected in their attitudes towards disasters. Most students (65%) were aware of the importance of preparedness and willing to learn and share information about disasters with friends and family. They actively seek information about disasters through various sources, such as books, the Internet, and socialization at school. As many as 68.33% of the students also had a good understanding of emergency response plans. This high level of understanding is also observed in the context of emergency response plans (Nurhadi et al., 2018). As many as 68.33% of students knew the evacuation procedures that must be followed in the event of a disaster, including evacuation routes, gathering points, and actions to take during the evacuation process. They also understand the importance of having a disaster preparedness bag containing essential supplies, such as drinking water, food, medicine, and a change in clothes. Some students even made family evacuation plans and practiced disaster simulations at home (Lestari et al., 2016).

In addition, students' awareness of the early warning system was also quite high at 65.83%. They can recognize early warning signs, such as the sound of a siren, announcements over a loudspeaker, or short messages on a mobile phone (Atmojo et al., 2018). They also understand the importance of responding to early warnings quickly and calmly and following instructions from authorities. However, the results of this study reveal several aspects that need to be improved. Although 64.58% of students had a sufficient understanding of resource mobilization in disaster situations, 3.75% did not fully understand this concept. They may not know how to access assistance from the government or humanitarian agencies or how to participate in post-disaster recovery efforts.

In addition, although most students (65%) were aware of disaster-related policies or guidelines in their schools or neighborhoods, some students (25.41%) did not fully understand or comply with these policies. This can be caused by a lack of socialization or a lack of awareness of the importance of complying with rules in emergency situations. To improve student preparedness, ongoing efforts are needed by various parties, including schools, the government, and the community. Schools need to integrate disaster education into their curriculum, hold regular disaster simulation exercises, and socialize disaster-related policies or guidelines to students and parents. The government needs to improve early warning systems, provide easily accessible information about disasters, and involve the community in planning and implementing disaster-mitigation efforts. The community also needs to play an active role in increasing awareness and participation in disaster preparedness. Increasing disaster preparedness is influenced by learning media factors that provide significant differences in disaster preparedness knowledge before and after audio-visual learning is given to students. It can be seen that the median level of knowledge of respondents before being given information about disaster preparedness using audio-visual media obtained a score of 24.73 then after being given information about disaster preparedness using audio-visual media experienced an increase in value to 76.21.

3.6 The Relationship between Self-Awareness of Disasters and the Preparedness of Students of SMP Negeri 2 Kemalang in Facing the Eruption of Mount Merapi

The Kolmogorov-Smirnov normality test shows that the disaster self-awareness (DSA) data are normally distributed with a significant value of 0.273, which is greater than 0.05. Thus, the data can be considered representative of the research population. A homogeneity test using Levene's test also confirmed that the data variance was homogeneous, with a significance value greater than 0.05. These results ensure that the data meet the basic assumptions for parametric analysis, so that the conclusions drawn from the analysis can be considered valid and generalized to a wider population.

Univariate analysis provides a detailed picture of the distribution of DSA levels and student preparedness. The results of the analysis show that 66.7% of the students had a level of Disaster Self-Awareness of "almost ready." This indicates that students have a fairly good awareness of emotions, knowledge, and self-confidence in facing disasters. However, there is still room to increase the level of Disaster Self-Awareness to the "very ready" category. This improvement can be achieved through more intensive education, training, and disaster simulations (Suryaningsih & Fatmawati, 2018).

In addition, univariate analysis showed that 79.2% of students had a "high" level of preparedness in facing the Mount Merapi eruption disaster. This is a positive result, indicating that students had a good understanding of disaster risks, evacuation plans, and actions to take in the event of an eruption. However, there are still 20.8% of students who have a "moderate" level of preparedness. This group needs special attention to improve preparation and reduce risk in the event of a disaster.

Bivariate analysis with Pearson Product Moment correlation showed a significant relationship between DSA and student preparedness (significance value: $0.000 < 0.05$). This means that the higher the level of student DSA, the higher the level of preparedness for facing disasters. This finding supports the importance of increasing DSA as a strategy to improve overall student preparedness.

The level of the relationship between the two variables was classified as moderate (0.543). This implies that increasing Self-Awareness of Disasters is directly proportional to a significant increase in preparedness. Other factors such as family support, social environment, and personal experience with disasters can also affect the level of student preparedness (Johan et al., 2021). Therefore, a comprehensive intervention is needed, not only focusing on increasing Self-Awareness of Disasters but also considering other relevant factors to optimally improve student preparedness.

The results of this study have important implications for the development of disaster education and training programmes. By understanding the relationship between Disaster Self-Awareness and preparedness, schools and related institutions can design more effective programs to improve student preparedness. Such programs can include training in emotional management, increasing knowledge about disasters, and developing practical skills to deal with emergency situations (Tao et al., 2020). In addition, it is important to involve parents and the community in efforts to improve student preparedness because social support and a conducive environment can strengthen the effectiveness of the program. Overall, this study makes an important contribution to our understanding of student preparedness during disasters. The results of this study can be the basis for the development of more effective strategies and interventions to improve student preparedness so that they can be more prepared and resilient when facing emergency situations.

Research conducted on disaster self-awareness and preparedness has a close relationship; therefore, this study connects the two variables to make it easier for readers to analyze disaster self-awareness and preparedness (Roy, 2021).

4. Conclusion

Globally, the topic of disasters and education is highly relevant, given the high risk of natural and non-natural disasters in various parts of the world. Education plays a crucial role in shaping community awareness, preparedness, and resilience to disaster. This includes an understanding of disaster types, causes, impacts, mitigation, and adaptation measures.

This study shows that students of SMP N 2 Kemalang have good levels of emotional awareness, self-confidence, and understanding of disasters, including emergency response plans and early warnings. However, there are deficiencies in accurate self-awareness, resource mobilization, and compliance with disaster-related policies. The majority of students had a level of Disaster Self-Awareness (DSA) of "almost ready" (66.7%) and a level of "high" (79.2%) prepared for the eruption of Mount Merapi. A significant moderate relationship (0.543) was found between DSA and preparedness, indicating that increasing DSA can improve overall preparedness.

This study has limitations because it only focused on the relationship between self-awareness and preparedness of students in one school, without considering other factors or differences in student characteristics. Nevertheless, this study contributes by revealing the level of self-awareness and preparedness of students in disaster-prone areas, and showing the relationship between the two, which is useful for developing disaster education programs. Future research can develop this by considering other factors, differences in student characteristics, the effectiveness of intervention programs, changes over time, and the involvement of more schools.

5. Acknowledgments

The researcher would like to thank the Universitas Muhammadiyah Surakarta (UMS) for providing the opportunity for the researcher to develop useful knowledge. We thank SMP N 2 Kemalang for being willingness to cooperate as a respondent in completing this research. We thank all the parties involved in this research, including the family, lecturers, and colleagues.

References

Agustin, M. I., Muktiarni, M., & Mupita, J. (2022). Implementation of the Reading Write Literacy Program to Elementary School Students About the Impact of the Natural Disaster of Mount Merapi. *Indonesian Journal of Teaching in Science*, *2*(2), 99–106. https://doi.org/10.17509/ijotis.v2i2.38710

Atmojo, S. E., Rusilowati, A., Dwiningrum, S. I. A., & Skotnicka, M. (2018). The Reconstruction of Disaster Knowledge through Thematic Learning of Science, Environment, Technology, and Society Integrated with Local Wisdom. *Jurnal Pendidikan IPA Indonesia*, *7*(2), 204–213. https://doi.org/10.15294/jpii.v7i2.14273

Azizah, M., Apriadi, R. K., Januarti, R. T., Winugroho, T., Yulianto, S., Kurniawan, W., & Widana, I. D. K. K. (2021). Kajian Risiko Bencana Berdasarkan Jumlah Kejadian dan Dampak Bencana di Indonesia Periode Tahun 2010 – 2020. *Pendipa*, *6*(1), 35–40. https://doi.org/10.33369/pendipa.6.1.35-40

Elita, Y., Sinthia, R., & Ardina, M. (2019). Pelatihan Kesiapsiagaan Bencana Pada Siswa Sd Melalui Permainan Edukatif "Aksana." *Dharma Raflesia*, *17*(1). https://doi.org/10.33369/dr.v17i1.7568

Gaol, S. B. L., & Sembiring, P. (2017). Meningkatkan Kemampuan Berpikir Positif Pada Remaja Korban Erupsi Gunung Sinabung Melalui Pemberian Layanan Konseling Kelompok Di Posko Pengungsian Kurusus Wanita Kristen (KWK) Berastagi Kab, Karo. *Jurnal Diversita*, *1*(2). https://doi.org/10.31289/diversita.v1i2.496

Hafida, S. H. N. (2019). Perubahan Kesiapan Masyarakat dalam Menghadapi Bencana Erupsi Gunung Berapi. *JUPIIS (Jurnal Pendidikan Ilmu-Ilmu Sosial)*, *11*(2), 396–407. https://doi.org/10.24114/jupiis.v11i2.13955

Johan, H., Mayub, A., & Wardana, R. W. (2021). Integrasi Pendidikan Mitigasi Dalam Konten Pembelajaran Sains Sebagai Upaya Membangun Kesadaran Mitigasi Dari Jenjang Sekolah. *Dharma Raflesia*, *19*(1), 186–196. https://doi.org/10.33369/dr.v19i1.13790

Jonathan, S., Sukarasa, I. K., & Wirata, I. W. (2021). Analysis Distribution of the Volcanic Ash Eruption of Mount Agung 2018 and Its Influence on the Surface Temperature of the Land Area of Bali by Using

the Split Windows Method. *Buletin Fisika*, *22*(2), 112–118. https://doi.org/10.24843/BF.2021.v22.i02.p16

Lesmana, C., & Purborini, N. (2019). Kesiapsiagaan Komunitas Sekolah dalam Menghadapi Bencana di Kabupaten Magelang. *Jurnal Teknik Sipil*, *11*(1), 15–28. https://doi.org/10.28932/jts.v11i1.1396

Lestari, P., Kusumayudha, S. B., Paripurno, E. T., & Ramadhaniyanto, B. (2016). Komunikasi Lingkungan untuk Mitigasi Bencana Erupsi Gunung Sinabung. *Jurnal Aspikom*, *3*(1), 56–64. https://doi.org/10.24329/aspikom.v3i1.98

Makrifah, F. N., & Sudarmilah, E. (2019). Game Edukasi Mitigasi Bencana Gunung Meletus "Petualangan Guntur." *Protek: Jurnal Ilmiah Teknik Elektro*, *6*(1), 36–41. https://doi.org/10.33387/protk.v6i1.1034

Mustofa, M., Suwitri, S., Larasati, E., & Yuniningsih, T. (2022). Collaboration In Disaster Risk Reduction Of Mount Merapi In Sleman. *STED Journal*, *4*(1), 83–96. https://doi.org/10.7251/STED2201083M

Nurhadi, N., Suparmini, S., & Ashari, A. (2018). Strategi Penghidupan Masyarakat Pasca Erupsi 2010 Kaitannya Dengan Kesiapsiagaan Menghadapi Bencana Berikutnya. *Majalah Geografi Indonesia*, *32*(1), 59–67. https://doi.org/10.22146/mgi.29129

Nurjanah, A., Prawoto, N., Apriliani, R., & Nabilazka, C. R. (2024). Disaster Communication in Sleman Regency: Evaluating the SIMANTAB Application's Implementation and Impact. *Nyimak: Journal of Communication*, *8*(2), 121–136. https://doi.org/10.31000/nyimak.v8i2.10701

Oktarina, E., Fiziola, F., & Mailani, F. (2024). Gambaran Kesiapsiagaan Perawat dalam Manajemen Bencana di Puskesmas Kota Padang. *NERS Jurnal Keperawatan*, *20*(1), 44–55. https://doi.org/10.25077/njk.20.1.43-54.2024

Otani, K., Legono, D., Darsono, S., & Suharyanto, S. (2018). Effects of Disaster Management Programs on Individuals' Preparedness in Mount Merapi. *Journal of the Civil Engineering Forum*, *4*(1), 69–80. https://doi.org/10.22146/jcef.29580

Pratiwi, S. S., Rozakiyah, D. S., Apriadi, D. W., & Anzari, P. P. (2021). Upaya Peningkatan Kesadaran terhadap Bencana Letusan Gunung Kelud di Desa Batuaji, Kabupaten Kediri. *E-Dimas*, *12*(2), 285–290. https://doi.org/10.26877/e-dimas.v12i2.6399

Permana, S. A., & Hartanto, S. (2019). Mitologi Sebagai Pendidikan Kebencanaan Dalam Memahami Erupsi Gunung Merapi. *Refleksi Edukatika*, *9*(2). https://doi.org/10.24176/re.v9i2.3277

Roy, T. K. (2021). Assessment of Urban Resiliency Concerning Disaster Risk: A Review on Multi-Dimensional Approaches. *Journal of Engineering Science*. https://www.banglajol.info/index.php/JES/article/view/57484

Setyowati, S., Hadi, B. S., & Ashari, A. (2016). Pengembangan Sistem Informasi Bahaya Erupsi untuk Pengelolaan Kebencanaan di Lereng Selatan Gunungapi Merapi. *Majalah Geografi Indonesia*, *26*(2), 138–148. https://doi.org/10.22146/mgi.13427

Sitompul, P. B. R. (2018). Budaya Kerentanan dan Kapasitas Masyarakat Kepulauan Mentawai Menghadapi Bencana Gempa Bumi dan Tsunami. *Jurnal Vokasi Indonesia*, *6*(2), 25–32. https://doi.org/10.7454/jvi.v6i2.128

Suherningtyas, I. A., Permatasari, A. L., & Febriarta, E. (2022). Pemetaan partisipatif dalam mitigasi kebencanaan banjir dan longsor di Kelurahan Pringgokusuman Kota Yogyakarta. *Jurnal Pendidikan Geografi*, *27*(1), 26–37. https://doi.org/10.17977/um017v27i12022p26-37

Suri, N. K. (2016). Analisis Kinerja Badan Penanggulangan Bencana Daerah Kabupaten Karo Dalam Upaya Penanggulangan Bencana Erupsi Gunung Sinabung Di Kabupaten Karo. *Perspektif: Jurnal Ilmu-Ilmu Sosial*, *5*(1). https://doi.org/10.31289/perspektif.v5i1.172

Suryaningsih, E., & Fatmawati, L. (2018). Pengembangan Buku Cerita Bergambar Tentang Mitigasi Bencana Erupsi Gunung Api Untuk Siswa SD/MI Kelas IV Di Daerah Rawan Bencana. *Profesi Pendidikan Dasar*, *1*(2), 110–125. https://doi.org/10.23917/ppd.v1i2.5310

Tao, Z., Shu, Y., Yang, X., Peng, Y., Chen, Q., & Zhang, H. (2020). Physical model test study on shear strength characteristics of slope sliding surface in Nanfen open-pit mine. *International Journal of Mining Science and Technology*, *30*(3), 421–429.

Ulamatullah, T. S., Sarmini, & Nasution. (2022). Masalah Sosial Ekonomi Bencana Alam Erupsi Gunung Semeru di Kabupaten Lumajang Sebagai Sumber Belajar IPS. *Edukasia*, *3*(3). http://jurnaledukasia.org/index.php/edukasia/article/view/203

Wardyaningrum, D. (2014). Perubahan Komunikasi Masyarakat Dalam Inovasi Mitigasi Bencana di Wilayah Rawan Bencana Gunung Merapi. *Jurnal Aspikom*, *2*(3), 179–197. https://doi.org/10.24329/aspikom.v2i3.69

Widodo, D. R., Nugroho, S. P., & Asteria, D. (2018). Analisis Penyebab Masyarakat Tetap Tinggal di Kawasan Rawan Bencana Gunung Merapi (Studi di Lereng Gunung Merapi Kecamatan Cangkringan,

Kabupaten Sleman Daerah Istimewa Yogyakarta). *Jurnal Ilmu Lingkungan*, *15*(2), 135–142. https://doi.org/10.14710/jil.15.2.135-142

Zen, M. T. (2019). The Origin of Several Pyroclastic Plateaux in the Padang Highlands (Central Sumatra) (Preliminary Paper). *Journal of Mathematical and Fundamental Sciences*, *6*(3). https://journals.itb.ac.id/index.php/jmfs/article/view/9725