LEVEL KNOWLEDGE OF FLOOD AND LANDSLIDE DISASTER MITIGATION FOR STUDENTS IN PUBLIC JUNIOR HIGH SCHOOLS

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Abstract

Floods and landslides are one of the many main problems faced in Indonesia, including in Southeast Sulawesi, which has a major impact on the lives of its people. In dealing with floods and landslides, mitigation knowledge is needed as an effort to recognize the risk of floods and landslides, as well as how to deal with them. This study aims to evaluate the level of knowledge of grade VIII students of SMPN 01 Wundulako, Kolaka Regency related to flood and landslide disaster mitigation. Through research using a quantitative approach to disaster education, students are equipped with an understanding of the causes, impacts, and mitigation actions of disasters. The results of the study show that the percentage of students' knowledge about flood disaster mitigation, which is 79.7%, is in the high category, and the percentage of students' knowledge level about landslide disaster mitigation, which is 89%, is in the very high category, so that the average of the overall data is 84.4%. Knowledge about disaster mitigation needs to be improved through learning programs that are structured, interactive, and in accordance with students' level of understanding. This step is expected to be able to create a generation that is more aware and ready to face potential disasters in the future.

Keywords: Flood, Landslide, Mitigation, Disaster.

A. Introduction

Floods and landslides are one of the many disasters that often hit Indonesia. Data shows that as many as 3,027 disasters occurred in Indonesia from January to October 29, 2022, there were 1,238 flood disasters, 931 extreme weather disasters, 562 terrain disasters, and 248 disasters. After that, there were 22 cases of tidal waves and abrasion, earthquakes, volcanic eruptions, and 4 cases of drought.(BNBP, 2023)

Landslides are the 2nd natural disaster after the floods that hit Indonesia most often (Puturuhu, 2017). Natural disasters are also defined as natural events resulting from natural and non-natural processes that have an impact on casualties, property losses, and loss of life (Setyowati, 2019). Disasters have a variety of impacts, so disaster mitigation is often needed to overcome them. Mitigation is a collection of actions that aim to reduce the likelihood of disasters, both by developing infrastructure and by increasing public awareness through counseling in dealing with disaster threats.

Floods and landslides are a phenomenon that often occurs in Southeast Sulawesi province and causes casualties and losses both material and non-material. Therefore, the importance of knowledge about landslides (Kesaulya, et al., 2016). One of the areas in Kolaka Regency affected by floods and landslides is Polinggona District, Samaturu District, Wundulako District and Pomala District. Heavy rain occurred upstream, causing high water discharge. Landslides also often occur in several areas in Kolaka Regency, one of which is the road at Kilometer 11 between Kolaka Regency and East Kolaka Regency which was cut off due to a landslide blocking the road. Floods and landslides destroyed many villages in the region, including the closure of access to the Trans-Sulawesi Road. So, disasters will have an impact on most of the community (Yunus, 2023). So it requires mitigation measures.

The purpose of mitigation is to reduce the physical risk of disasters and increase public awareness on how to handle disasters. Preparedness for natural disasters is very important, especially from an early age, and education about it must start from an early age, especially in primary schools. Effective education in reducing the risk of natural disasters is to include topics about disasters and disaster prevention in the learning program (Atmodjo, et al. 2015).

In addition, considering that children are a group that is prone to being affected by natural disasters, it is very important to improve their understanding of disaster prevention. Thus, children need to be given various information about natural disasters. This information must be complete and conveyed in a manner appropriate to the child's age (Pratama, et al. 2022). Inserting material about natural disasters into the 2013 curriculum will present a thematic and scientific approach to learning in elementary schools. Teachers and students have an important role in disaster prevention by providing accurate knowledge about disasters to the community. Teaching children about the importance of disaster preparedness from an early age will strengthen Indonesian society when facing natural disasters (Suarmika, 2017).

Using the flow of operations, the disaster mitigation learning model includes various preparations before disasters occur, disaster assessment, disaster management, such as rehabilitation & relocation, knowledge acquisition, and behavioral skills to prevent, detect, and anticipate disasters (Liesnoor, 2019). Disaster education is an efficient, effective, and cost-effective risk management tool. A trained person can protect himself as well as others. A

comprehensive education program is also needed in dealing with disasters that occur (Madj & Sheikhi, 2019).

The uniqueness of this research is to understand students' knowledge about flood and landslide mitigation. This is done by providing a questionnaire or questionnaire related to flood and landslide mitigation to assess the level of knowledge of students regarding flood and landslide mitigation efforts. Through this research, students are expected to be able to find out general knowledge about the causes, impacts, and ways to reduce the risk of flood and landslide impacts. Knowledge about flood and landslide mitigation is unique in each region. Seeing this, the researcher took the title of the research on the Level of Knowledge of Flood and Landslide Disaster Mitigation at SMPN 1 Wundulako, Kolaka Regency. So the purpose of this study is to find out the level of knowledge of grade VIII students of SMPN 1 Wundulako about mitigation related to flood and landslide disasters.

B. Methodology
1. Research Design

The research period starts from November to December 2024. The location of the research is at SMPN 01 Wundulako, Jl. Poros Kolaka-Pomalaa, Wundulako District, Kolaka Regency, Southeast Sulawesi. Its location is located at 4º06'59.5'' S and 121º40'35.2'' E.
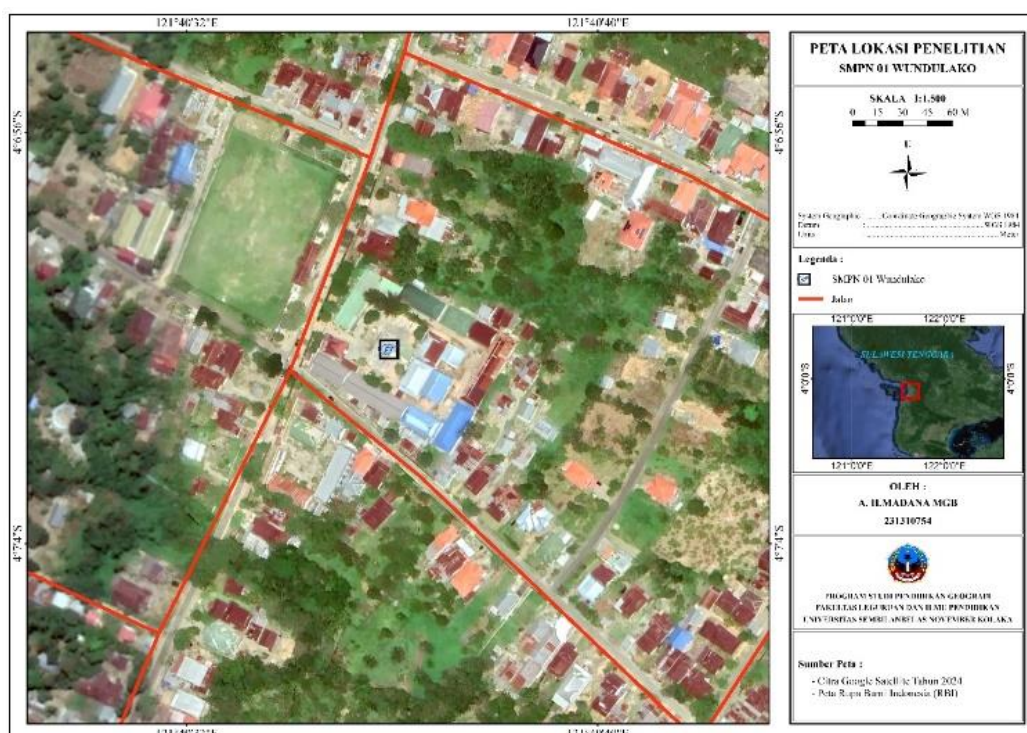

Figure 1. Research Location of SMPN 01 Wundulako

The type of approach used in this study is a quantitative descriptive approach. Descriptive research is a type of research that observes an object and describes symptoms, facts, events, and others in an orderly and precise manner according to its original circumstances (Sugiyono, 2016). The purpose of this study is to identify students' knowledge about flood and landslide disaster mitigation. The target group in this study is grade VIII students of SMPN 01 Wundulako. This research was carried out by the researcher with direct involvement at the location. The results of the data were in the form of responses from students, then analyzed descriptively.

The number of samples involved in this study is only grade VIII students of SMPN 01 Wundulako, which is 280 students/i. A sample is a representative of the members of a population that is taken using a specific procedure. The Slovin formula was used for sampling in this study because representative numbers are needed at the time of sampling so that the findings can be generalized. Slovin's formula for determining samples, namely:

$$n = N / (1 + N.(e)^2)$$

Information:
N = Sample size/number of respondents
n = Population size
e = 0.1

In the Slovin equation, the following conditions apply: The value of e = 0.1 (10%) of the number of research samples. The number of students in this study is 210 students, so the percentage to be used is 10% with the results of the calculation rounded to achieve a match. The calculation to find respondents in this study can be formulated as follows:

$$n = N / (1 + N.(e)^2)$$
$$= 210 / (1 + 210 (0,1)^2)$$
$$= 210 / (1 + 210 (0.01)$$
$$= 210 / (1 + 2,1)$$
$$= 68 \text{ students}$$

Based on the calculations that have been carried out, the number of samples that will be respondents in this study is arranged to be 9-10 students from 7 classes, from a total of all students in grade VIII of SMPN 01 Wundulako. This is applied to facilitate the data processing process so that the results come out more perfectly.

2. *Instruments*
a) Questionnaire

In quantitative research, the data collection technique that is often used is questionnaires or questionnaires. Questionnaires or questionnaires are often used to collect data through a series of questions that have been created and designed with the aim of measuring research variables (Sekaran & Bougie, 2016). In addition, structured observation is also used in quantitative descriptive research approaches. Researchers make observations according to criteria that have been influenced previously (Creswell, 2014).

Data collection in this study uses a questionnaire. The analysis used in this study to determine the level of knowledge of grade VIII students at State Junior High School 01 Wundulako, is a quantitative descriptive in the form of a questionnaire distributed to a sample of students, namely 68 students who contain questions about the definition, causative factors, impacts, mitigation efforts, & government policies on flood and landslide disasters.

The data obtained from the questionnaire, then processed into quantitative data, then evaluated by conducting a percentage calculation to assess the level of knowledge of grade VIII students of SMPN 01 Wundulako about flood disaster mitigation and landslide disasters at SMP Negeri 01 Wundulako. The instrument applied to this study uses a likert scale developed in a checklist or multiple-choice format. Below is a grid of questions from the research instrument attached to the questionnaire distributed to grade VIII students of SMPN 01 Wundulako.

Table 1. Research Instrument Grid

No.	Variable	Indicator
1.	General Knowledge About Flood Mitigation	1. Students know the meaning of flood disasters. 2. Students know the main causes of flooding. 3. Students know the impact of floods on the environment. 4. Students are aware of structural and non-structural efforts for flood mitigation. 5. Students are aware of government policies related to flood mitigation.
2.	General Knowledge About Landslide Mitigation	1. Students know the meaning of landslide disasters 2. Students know the main cause of landslides. 3. Students know the impact of landslides on the environment 4. Students know structural and non-structural efforts for landslide mitigation 5. Students know government policies related to landslide mitigation

b) Documentation
Documentation is a way to collect data and information by searching and finding evidence. Therefore, the use of cameras and other devices must be done carefully so that the data is not subjective or doubtful.

This study uses primary data obtained from giving questionnaires to respondents, namely students of SMPN 01 Wundulako. This questionnaire was distributed directly to the respondents. After all the data has been accumulated, the next step is to process the data by applying quantitative descriptive analysis to get a clear and comprehensive picture of the research results.

3. *Technique of Data Analysis*
The data analysis technique used in this study is descriptive analysis. Descriptive analysis is a data analysis that aims to collect and compile the collected data, then process it through scientific explanations and summaries (Nursalam, 2016). The data analyzed descriptively in this study is students' knowledge about flood and landslide disaster mitigation. The purpose of using descriptive data analysis is to describe the level of knowledge of flood and landslide disaster mitigation among 68 students of SMPN 01 Wundulako who were respondents. Data was collected using a multiple-choice questionnaire/checklist designed to measure students' understanding of the understanding, causative factors, impacts, and mitigation actions that can be taken against flood and landslide disasters.

In this study, descriptive data analysis was carried out to describe the level of knowledge of SMPN 01 Wundulako students regarding flood and landslide disaster mitigation. The study involved 68 students in grade VIII who responded to the questionnaire. This questionnaire is designed to measure students' understanding of various aspects of disaster mitigation, such as preventive measures, evacuation, the use of early warning systems, and knowledge of the factors that cause floods and landslides.

The data from the questionnaire measuring the level of knowledge about flood and landslide disaster mitigation are displayed in the form of frequency distribution tables and narratives. The results of knowledge measurement through questionnaires are converted into a score. For correct answers get a score (1) and wrong answers get a score (0). The calculation used to determine the percentage of total score acquisition can be formulated as follows:

$$\text{Presentase} = \frac{NS}{NS\ max} \times 100$$

Information:
NS   : the total score of the data collection results
S max   : maximum number of scores Maximum score = n x best score (5)
N   : number of respondents

After being obtained, then match into the guideline criteria based on the assessment guideline table as follows, which are as follows:

Table 2. *Criteria for the student's level of knowledge*

No.	Value	Category
1.	0% - 20%	Very Low
2.	21% - 40%	Low
3.	41% - 60%	Keep
4.	61% - 80%	Tall
5.	81% - 100%	Very High

Source: (Kartini and Putra, 2020)

C. Findings and Discussion

1. Research Results

The stages applied during the research implementation process are as follows:

a) 1st and 2nd Meetings

The activity began with an introduction, purpose, and provision of knowledge about flood and landslide disaster mitigation to students in grades VIII 1, VIII 2, VIII 3, and VIII 4, as many as 34 people, then directed to fill out a questionnaire. The second meeting, the activity began with an introduction, objectives, and provision of knowledge about flood and landslide disaster mitigation to 34 students in grades VIII 5, VIII 6, and VIII 7, then directed to fill out a questionnaire.

Figure 2. *First Meeting & Second Meeting*

a. Flood Disaster Mitigation

Calculating the percentage of total score earned per item can be formulated as follows:

$$\text{Presented} = \frac{NS}{NS\ max} \times 100$$

$$\textbf{Presented} = \frac{\textbf{271}}{\textbf{340}}\ \textbf{x 100}$$

$$= 79.7\ \%$$

Information:

NS   : the total score of the data collection results

S max: maximum number of scores Maximum score = n x best score (5)

n   : number of respondents

So, the percentage of students' knowledge about flood disaster mitigation is 79.7%.

b. Landslide Disaster Mitigation

Calculating the percentage of total score earned per item can be formulated as follows:

$$\text{Presented} = \frac{NS}{NS\ max} \times 100$$

$$\text{Presented} = \frac{\textbf{302}}{\textbf{340}} \times 100$$

$$= 89\ \%$$

Information:

NS   : the total score of the data collection results

S max   : maximum number of scores Maximum score = n x best score (5)

n   : number of respondents

So, the percentage of students' knowledge about landslide disaster mitigation is 89%.

c. Overall Data

Data from the results of the student knowledge level questionnaire, are shown in the following diagram:
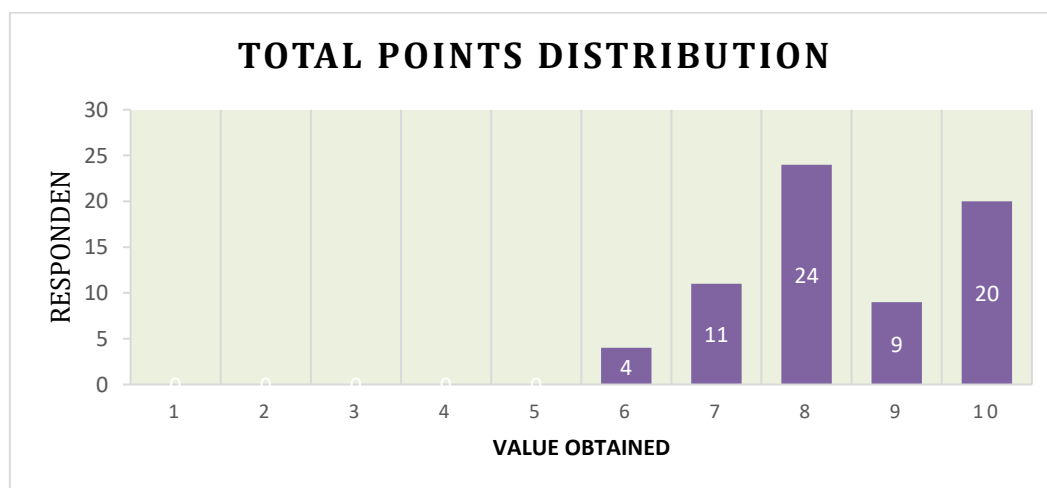
Figure 4*. Overall Data*

2. Discussion

The number of research samples reached 68 students which included 43 male students and 25 female students. Questions related to floods and landslides were presented in a questionnaire with five questions each from the entire sample. 4 students scored 6, 11 students scored 7, 24 students scored 8, 9 students scored 9, and 20 students scored 10 (all correct), so the average score was 8.44/10 points. The higher a person's education level, the easier it is for him to obtain information and experience, especially in this case information about natural disaster mitigation. A person's cognition is also influenced by the experiences he or she gets (Carter 2011).

After calculating the percentage of knowledge level of grade VIII students of SMPN 01 Wundulako regarding flood disaster mitigation, they received the percentage of students' knowledge level about flood mitigation, which was 79.7% (high category). Students have a good understanding of flood disasters. In the assessment indicators, flood disasters are caused by natural factors and also by human factors. Students also revealed that floods can occur due to human actions themselves. This indicates that students know that the cause of the flood is not only due to natural factors, but human actions also contribute to the occurrence of floods (Hildayanto, 2020). Through an understanding of the causes of floods, students are aware of the importance of protecting the environment to reduce the risk of flooding (Ariningtyas, 2020). Disaster prevention education can greatly help spread knowledge about disasters, especially floods, and increase student preparedness for flood disasters in their areas. Flood disaster prevention, especially in schools in flood-prone areas, can be done wisely by implementing disaster education.

Furthermore, landslide disaster mitigation which has a higher percentage of knowledge is 89%, which is a very high number. Based on the survey results, most students have a very high level of category knowledge. This is because most of the students of SMPN 01 Wundulako have participated in disaster prevention counseling by the Regional Disaster Management Agency (BPBD). Although students' knowledge is at a very high level, generally they feel afraid and panic when it rains with very heavy intensity. Panic in students who are faced with a disaster situation is something that needs to be watched out. The government and the community have a great responsibility in providing counseling and education on disaster mitigation if it occurs at any time.

In the overall results above, the percentage of grade VIII students of SMPN 01 Wundulako is 84.4%, so the level of knowledge of SMPN 01 Wundulako students about flood disaster mitigation is classified as High category, and landslide disaster mitigation is classified as Very High as according to the guideline criteria based on the existing assessment guideline table. This contextual learning encourages students to think more deeply about the appropriate mitigation measures in dealing with real-life scenarios such as floods and landslides. By applying the knowledge that has been learned in a relevant context, students can better understand how disaster mitigation theory can be applied in everyday life. (Putri, et.al, 2024). It can be concluded that disaster mitigation is an effort that aims to minimize the impact and risk of a hazard by taking appropriate anticipatory actions. Understanding disaster preparedness is also important to deal with flood disasters and landslide disasters (Rahmat et al., 2020).

D. Conclusion

This study revealed that students of grade VIII of SMPN 01 Wundulako had a high level of knowledge in flood disaster mitigation (79.7%) and very high for landslide disaster mitigation (89%), with an overall average of 84.4%. This knowledge reflects the importance of structured disaster education to increase the preparedness and awareness of students in dealing with disasters. Disaster education in schools is considered effective in building collective awareness and reducing the risk of disaster impacts, and is expected to strengthen the role of students as agents of change in society. This step needs to be supported by an interactive and relevant learning program to local needs. The students of SMPN 01 Wundulako have a very good level of knowledge in flood and landslide disaster mitigation, systematic disaster mitigation education is also needed to improve student preparedness in dealing with disasters. The implementation of mitigation programs in schools not only reduces the risk of disaster impacts but also builds collective awareness and responsibility in the community.

E.   References

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