

## EMPOWERING THE NEXT GENERATION: PRACTICAL DISASTER PREPAREDNESS TRAINING FOR ELEMENTARY STUDENTS

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### Abstract

Disaster response training serves as both a preventive measure and an investment in community safety and resilience. By equipping students with knowledge and skills in disaster preparedness, this training fosters a generation capable of protecting themselves and minimizing risks and losses. Indonesia's high vulnerability to disasters, particularly in Kediri City, which is prone to floods and earthquakes, underscores the importance of such training. The primary goal is to prepare students to handle emergencies effectively. Using the Participatory Action Research method, students actively participate in disaster evacuation simulations. The training was conducted on May 21, 2024, targeting all students in grades I-VI at SDN YBPK Semampir, Kediri City. Pre-tests and post-tests were used to assess the training's effectiveness, showing significant knowledge improvement, with post-test scores consistently higher. Statistical analysis confirms this with a significant difference ( $p < 0.001$ ). The training has proven successful at SD YBPK Semampir, enhancing students' disaster preparedness. To sustain this impact, it is recommended that the training be conducted regularly, involve parents, and develop more comprehensive modules. These steps can strengthen disaster awareness and preparedness in schools and the community. Further development of this initiative should include in-depth needs assessments and improved training modules.

## INTRODUCTION

Disaster response refers to a series of actions and efforts undertaken to reduce the impact of disasters and minimize resulting losses (Ayu, 2023; Rahman, 2023). This process involves various stakeholders, including governments, international organizations, non-governmental organizations, local communities, and individuals. In recent decades, the increasing intensity of natural disasters due to climate change and human activities has highlighted the need for a faster, more efficient, and well-coordinated disaster response system. Disasters, whether natural or man-made, can have significant effects on society, including loss of life, infrastructure damage, and disruptions to social and economic life. In response, governments worldwide have developed disaster management systems based on four key phases: mitigation, preparedness, emergency response, and recovery (Asiri, 2020).

Indonesia, located in the Pacific "Ring of Fire," is one of the most disaster-prone countries in the world. According to data from the National Disaster Management Agency (BNPB), over 3,000 disasters occur annually in Indonesia, with floods, earthquakes, landslides, and volcanic eruptions being the most frequent. In 2022 alone, BNPB recorded 3,544 disaster events, 98% of which were hydrometeorological disasters such as floods, landslides, and tornadoes (BPBD Kediri, 2023; BNPB, 2022). These disasters have caused thousands of fatalities, severe infrastructure damage, and significant

economic losses. For example, the flash flood that hit Kediri City in early 2023 displaced more than 5,000 residents and caused property damage worth billions of rupiah (BPBD Kediri, 2023).

To reduce the impact of disasters, the Indonesian government has implemented various disaster mitigation strategies. One such initiative is the Disaster-Resilient Village program, which aims to enhance community capacity in facing disasters. This program includes disaster preparedness training, the formation of disaster response teams, and the development of supporting infrastructure such as early warning systems and evacuation routes (Yunus, 2024). Additionally, technology plays a crucial role in disaster mitigation. The use of satellite data, weather monitoring, and advanced early warning systems helps accelerate disaster response efforts and reduce impacts. For instance, the tsunami early warning system installed along the southern coast of Java has successfully reduced casualties during earthquakes and tsunamis (Gundran, 2023).

Disaster response training is a vital component of the disaster management system, especially in disaster-prone areas like Indonesia. The primary goal of this training is to equip communities with the knowledge and skills needed to act before, during, and after a disaster. This includes understanding disaster risks, safe evacuation techniques, first aid, and the proper use of emergency equipment. Well-trained communities are better prepared to handle crisis situations, thereby reducing negative impacts, including casualties and material losses (Arinata, 2024).

The importance of disaster response training is also emphasized for students in schools. Students are a vulnerable group in disaster situations due to their age and limited knowledge and experience in handling emergencies. Schools located in high-risk areas require disaster response training programs to enhance students' preparedness and safety. Disaster education in schools provides young generations with the opportunity to understand disaster risks and develop a habit of preparedness from an early age (Fansuri, 2023; Yunas, 2024). Schools equipped with disaster simulation programs and evacuation training have a greater potential to save lives in the event of a disaster during school hours (Suleman, 2024; Suryadi, 2024).

Kediri City, located in East Java Province, has a relatively high level of disaster vulnerability. Disasters such as floods, landslides, tornadoes, and earthquakes are potential occurrences in this city. According to data from the Regional Disaster Management Agency (BPBD) of Kediri City, between 2019 and 2023, the city experienced more than 20 flood events, causing infrastructure damage and requiring the evacuation of local residents (BPBD Kediri, 2023). This figure highlights the importance of community preparedness, including students, to reduce casualties and expedite safe evacuation processes.

Disaster response training for students in Kediri City is essential to reduce the risks faced during disasters. Enhancing student preparedness not only reduces the potential negative impacts of disasters but also fosters the development of a disaster-ready culture from an early age. The awareness and knowledge possessed by these students are expected to spread to their families and the surrounding community, creating a more responsive and disaster-ready society in the future. Based on the above description, university students collaborating with the National Disaster Management Agency (BNPB) of Kediri City are conducting community service activities by providing disaster response training to teachers and students at SD YBPK Semampir in Kediri City.

## **IMPLEMENTATION METHOD**

The Disaster Response Training, scheduled for May 21, 2024, will be conducted in collaboration with the National Disaster Management Agency (BNPB) of Kediri City,

utilizing the Participatory Action Research (PAR) method. PAR is a research approach that actively involves participants as subjects of the research, aiming to empower and directly engage them in the process. This training targets all students from grades 1 to 6 at SD YBPK Semampir in Kediri City, totaling 70 students, and is designed to provide disaster response education in the event of natural disasters. The implementation of this training involves collaboration between lecturers from Institut Ilmu Kesehatan Bhakti Wiyata Kediri, the National Disaster Management Agency of Kediri City (BNPB Kediri), and students from the Kampus Mengajar Batch 7 program stationed at SD YBPK Semampir in Kediri City. The disaster response training will be conducted in four stages, as follows:



Figure 1 Stages of Disaster Response Training Implementation

In the initial stage, before the outreach activity begins, participants are given a pre-test to assess their baseline knowledge of disaster response. After the pre-test is completed, the training continues with disaster response education, with the main resource person being BNPB. Following the education session, a demonstration is conducted on disaster response efforts and handling disaster victims. The first aid demonstration for disaster victims is carried out by the training participants, accompanied by teachers, lecturers from IIK Bhakta, BNPB, and students from the Kampus Mengajar Batch 7 program. This third session lasts for 1 hour and is followed by the final session, which is the post-test. The post-test aims to determine whether the training activity was effective and had an impact on improving the knowledge of elementary school students at SD YBPK Semampir in Kediri City.

## RESULTS AND DISCUSSION

Disaster response training is one of the strategic efforts to increase awareness and preparedness in the community, including elementary school students, in facing emergency situations. SD YBPK Semampir Kediri City has conducted a disaster response training activity involving students, teachers, and relevant parties with the aim of equipping them with knowledge and practical skills in dealing with potential disasters. This activity is designed to provide a deep understanding of various types of disasters, such as earthquakes, floods, and fires, as well as the mitigation steps that need to be taken. In addition, this training also aims to build a culture of preparedness from an early age, so that students are not only able to protect themselves but also help others around them.

### 1. Profile and Characteristics of Disaster Response Training Participants.

The disaster response training held at SD YBPK Semampir Kediri City on May 21, 2024, was attended by students from grades 1 to 6, totaling 70 students, with the following details:

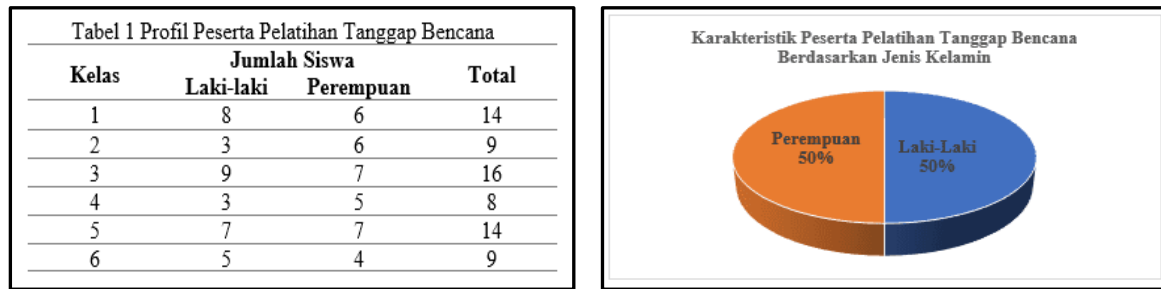


Figure 2 Profile and Characteristics of Disaster Response Training Participants

The disaster response training conducted at SD YBPK Semampir, Kediri City, on May 21, 2024, was attended by 70 students from grades 1 to 6. The participant data includes the distribution of age, gender, and grade levels. Based on Figure 2, the training participants consisted of students aged 6-12 years, with an even distribution between males and females. Additionally, participants came from various grade levels, indicating that the training was designed to cover all levels of primary education at the school. Elementary school students are a vulnerable group in disaster situations due to their limited knowledge and experience in handling emergencies. According to Tanaka and Yamamoto (2019), disaster education in elementary schools is crucial for building awareness and skills from an early age. Training that involves students from various grade levels, as conducted at SD YBPK Semampir, ensures that all students have a basic understanding of disaster preparedness (Tanaka, 2019).

The participation of students of various ages and genders demonstrates the inclusivity of the training program. According to Shaw and Takeuchi (2018), disaster response training that involves all community members, including children and women, can enhance the program's effectiveness and ensure that no group is left behind in disaster preparedness efforts (Shaw, 2018). Training that includes students from grades 1 to 6 ensures that all students, regardless of age, have a basic understanding of disaster response. According to Anderson and Lee (2022), training conducted regularly and involving all educational levels can create a sustainable culture of preparedness in schools (Anderson, 2022).

## 2. Disaster Response Outreach

Disaster response outreach and training can create a safe and disaster-responsive school environment. By involving students, teachers, and the school community, a culture of preparedness can be collectively established. This disaster response training in elementary schools not only aims to introduce the types of natural disasters that may occur in Kediri City, but also provides education and knowledge about strategic steps to build a generation of young people who are caring, responsive, and able to contribute to creating a society that is better prepared for future disasters.

The disaster response training at SD YBPK Semampir Kediri City provides students with understanding and practical skills on how to face emergency situations. Through this outreach and training, students are not only taught to protect themselves but also encouraged to understand the importance of cooperation in helping others. With an interactive approach tailored to their age, this training is designed to create a fun learning environment while also building preparedness.

In the second stage, the disaster response outreach activity was carried out. The training participants were very enthusiastic about attending the outreach session provided.



Figure 3 Outreach on disaster response and providing first aid to natural disaster victims.

In the second stage, the disaster response outreach activity was carried out with high enthusiasm from the training participants. This activity was designed to provide a deeper understanding of disaster preparedness through interactive and participatory approaches. The participants, consisting of students, teachers, and school community members, showed active involvement during the outreach session, reflecting their interest and seriousness in learning practical steps to face disasters. Outreach activities are a key component in increasing community awareness and preparedness for disasters. According to Shaw (2018), outreach that involves active participation from participants can enhance their understanding and skills in dealing with emergency situations (Shaw, 2018). The enthusiasm of participants in the outreach activity at SD YBPK Semampir indicates that this method is effective in attracting interest and increasing participant engagement. Interactive and participatory approaches, as used in this outreach activity, have proven effective in improving participants' retention of knowledge and skills. According to Anderson and Lee (2022), active learning methods can create a more engaging and effective learning environment (Anderson, 2022). This aligns with the enthusiasm of participants during the outreach session at SD YBPK Semampir.

The enthusiasm of participants is an important indicator of the success of a training or outreach program. According to Chen and Wang (2021), active participation and enthusiasm from participants indicate that the material presented is relevant and the delivery method is effective (Chen, 2021). This is evident from the positive response of participants during the outreach session at SD YBPK Semampir. Outreach activities not only provide knowledge but also help build a culture of preparedness in the school environment and the community. According to Tanaka (2019), outreach involving students and teachers can create a generation that is more aware and prepared to face disasters (Tanaka, 2019). This aligns with the goals of the outreach activity at SD YBPK Semampir.

In this second stage, after providing information about disaster response and giving first aid to natural disaster victims, a question-and-answer session followed. The participants appeared enthusiastic during this session.



Figure 4 Question and Answer Session and Discussion

In the second stage, after providing information about disaster response and first aid for natural disaster victims, a question-and-answer session was conducted. Participants appeared enthusiastic during this session, indicating their active involvement and interest in

understanding the material presented. This question-and-answer session provided participants with the opportunity to clarify information, share experiences, and deepen their understanding of practical steps in facing disasters. The question-and-answer session is an effective method for enhancing participants' understanding and knowledge retention. According to Anderson and Lee (2022), direct interaction between facilitators and participants through question-and-answer sessions can strengthen conceptual understanding and ensure that the material is well understood (Anderson, 2022). The enthusiasm of participants during the question-and-answer session at SD YBPK Semampir shows that this method successfully captured their interest and increased their engagement.

The enthusiasm of participants during the question-and-answer session is an important indicator of the success of the learning process. According to Chen and Wang (2021), active participation and enthusiasm from participants indicate that the material presented is relevant and the delivery method is effective (Chen, 2021). This is evident from the positive response of participants during the question-and-answer session at SD YBPK Semampir. Direct interaction in the question-and-answer session allows participants to ask questions and receive immediate answers from the facilitator. According to Tanaka (2019), interactive methods like this can enhance participants' understanding of complex topics, such as disaster response and first aid (Tanaka, 2019). The question-and-answer session also helps build participants' confidence in facing emergency situations. According to Shaw and Takeuchi (2018), interactive discussions can provide participants with the opportunity to confirm their knowledge and feel more prepared to apply practical steps when disasters occur (Shaw, 2018).

### 3. Disaster Response Training Demonstration

The disaster response training at SD YBPK Semampir, Kediri City, included practical demonstrations of the steps to be taken in emergency disaster situations. These demonstrations involved evacuation simulations, the use of safety equipment, and first aid techniques. Participants, consisting of students, teachers, and school community members, were encouraged to actively participate in these simulations. The demonstrations were designed to provide participants with hands-on experience on how to respond to disasters quickly and effectively. Practical demonstrations, such as those conducted in the training at SD YBPK Semampir, are an effective method for enhancing participants' skills and preparedness. According to Johnson (2020), simulations and direct demonstrations can help participants understand the practical steps needed in emergency situations, thereby improving their ability to respond to disasters quickly and appropriately (Johnson, 2020).



Figure 5 Demonstration of First Aid for Natural Disaster Victims

Direct simulations in disaster response training, such as evacuation and first aid, help participants internalize theoretical knowledge into practical skills. According to Anderson and Lee (2022), active participation in simulations can enhance knowledge retention and prepare participants to face real-life situations. Practical demonstrations not only improve skills but also build participants' confidence. According to Tanaka and Yamamoto (2019), hands-on experience in disaster simulations can reduce panic and increase participants' confidence in facing emergency situations. The active involvement of participants in practical demonstrations, as conducted at SD YBPK Semampir, is key to the success of the training.

According to Shaw (2018), active participation in simulations and demonstrations can enhance participants' understanding and readiness to face disasters.

#### 4. Pretest and Posttest Results

Based on the results of the pre-test and post-test in this community service activity, the average scores for the pre-test and post-test are as follows: 35.14 and 88.71, respectively. The significant increase in post-test scores compared to the pre-test indicates the effectiveness of the disaster response training in improving participants' knowledge. According to Johnson (2020), training that involves interactive and practical methods, such as simulations and demonstrations, can improve participants' understanding and knowledge retention. This is in line with the higher post-test results after participants attended the training at SD YBPK Semampir. Based on the pre-test and post-test scores of the disaster response training participants, a Normality Test was conducted to determine whether the data is normally distributed. The Normality Test is used as a basis for conducting further statistical tests. Below are the results of the Normality Test for the pre-test and post-test:

| Tests of Normality |                                 |    |      |              |    |      |
|--------------------|---------------------------------|----|------|--------------|----|------|
|                    | Kolmogorov-Smirnov <sup>a</sup> |    |      | Shapiro-Wilk |    |      |
|                    | Statistic                       | df | Sig. | Statistic    | df | Sig. |
| Pretes             | .180                            | 70 | .000 | .913         | 70 | .000 |
| Postes             | .228                            | 70 | .000 | .751         | 70 | .000 |

a. Lilliefors Significance Correction

Figure 6 Hasil Uji Normalitas

Based on the results of both the Kolmogorov-Smirnov and Shapiro-Wilk tests, it was found that the pre-test and post-test data are not normally distributed ( $p < 0.05$ ). This means that the normality assumption for this data is not met, so to determine the effect of the disaster response training on the improvement of participants' knowledge, non-parametric statistical analysis was used. The non-parametric statistical test used was the Wilcoxon Test. The reason for using the Wilcoxon Test, in addition to the data not being normally distributed, is that the data is paired and the goal is to measure significant changes between the pre-test and post-test. The Wilcoxon Test is an appropriate alternative test to analyze differences when the normality assumption is not met.

| Ranks           |                |                 |           |              |
|-----------------|----------------|-----------------|-----------|--------------|
|                 |                | N               | Mean Rank | Sum of Ranks |
| Postes - Pretes | Negative Ranks | 0 <sup>a</sup>  | .00       | .00          |
|                 | Positive Ranks | 70 <sup>b</sup> | 35.50     | 2485.00      |
|                 | Ties           | 0 <sup>c</sup>  |           |              |
|                 | Total          | 70              |           |              |

a. Postes < Pretes  
b. Postes > Pretes  
c. Postes = Pretes

| Test Statistics <sup>a</sup> |                     |
|------------------------------|---------------------|
|                              | Postes - Pretes     |
| Z                            | -7.298 <sup>b</sup> |
| Asymp. Sig. (2-tailed)       | .000                |

a. Wilcoxon Signed Ranks Test  
b. Based on negative ranks.

Figure 7 Wilcoxon Test Results

Based on the results of the Wilcoxon Test, it shows that the difference between the pre-test and post-test scores is statistically significant ( $p < 0.001$ ). This supports the conclusion that the post-test scores are consistently higher than the pre-test scores. The increase in post-test scores is influenced by the treatment or intervention in the form of outreach and demonstrations provided to the students of SD YBPK Semampir Kediri City. The increase in post-test scores was influenced by the training intervention, including outreach activities and practical demonstrations. According to Tanaka (2019), interactive and practical learning methods can improve participants' preparedness by providing hands-on experience and strengthening conceptual understanding. This training not only improves theoretical understanding but also builds participant's confidence in dealing with emergency situations.

**CONCLUSIONS**

The series of disaster response training sessions at SD YBPK Semampir, Kediri City, successfully enhanced the understanding and skills of students and teachers in facing disasters. Through simulations and participatory methods, participants showed significant improvement in knowledge and preparedness, with post-test results higher than pre-test results ( $p < 0.001$ ). The training equipped participants with practical skills such as evacuation, first aid, and the use of safety equipment. To ensure sustainability, it is recommended that the training be conducted regularly, involve parents and the community, and develop more comprehensive modules. Periodic evaluations and collaboration with related parties such as the Regional Disaster Management Agency (BPBD) are also necessary to monitor the retention of knowledge and skills. With these steps, it is hoped that a sustainable culture of disaster preparedness will be established in schools and the community.

To ensure sustainability, recommendations include regular training and evaluation of participants' knowledge and skill retention through follow-up post-tests, the development of a "Disaster-Safe School" program that includes routine simulations and the formation of disaster response teams, as well as the involvement of the community and parents in training programs. Such Disaster Response Training programs can enhance students' preparedness and reduce the risk of casualties. Additionally, the use of technology, such as early warning systems and virtual reality (VR) simulations, can improve the effectiveness of training. The utilization of technology can enhance the retention of participants' knowledge and skills. Strategies for evaluating the retention of knowledge and skills can include follow-up post-tests, ongoing monitoring and evaluation, as well as regular satisfaction and needs surveys to gather feedback and identify areas for improvement. With these steps, it is hoped that a lasting culture of disaster preparedness can be fostered, ensuring the sustained impact of these efforts.

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