



## Disaster Mitigation Through Education: A Holistic Approach for Rural Communities

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### Abstract

*This research discusses the importance of a holistic approach to disaster mitigation through education for rural communities. Rural communities are vulnerable to natural disasters due to limited resources, inadequate infrastructure, and dependence on the agriculture and fisheries sectors. A holistic approach through training, simulation and active community participation can improve preparedness, reduce risk and recover from disaster impacts effectively and sustainably. This research uses a descriptive qualitative approach with a literature study to analyze the importance of disaster mitigation through education for rural communities. The results show that collaboration between the government, community and private sector in disaster mitigation programs is essential. The implication of this research is the need for an increased holistic approach in disaster mitigation education to improve rural communities' awareness and resilience to natural disasters.*

### Abstrak

Penelitian ini membahas pentingnya pendekatan holistik dalam mitigasi bencana melalui pendidikan untuk masyarakat pedesaan. Masyarakat pedesaan rentan terhadap bencana alam karena keterbatasan sumber daya, infrastruktur yang kurang memadai, dan ketergantungan pada sektor pertanian dan perikanan. Pendekatan holistik melalui pelatihan, simulasi, dan partisipasi aktif masyarakat dapat meningkatkan kesiapsiagaan, mengurangi risiko, dan memulihkan diri dari dampak bencana secara efektif dan berkelanjutan. Penelitian ini menggunakan pendekatan kualitatif deskriptif dengan studi literatur untuk menganalisis pentingnya mitigasi bencana melalui pendidikan bagi masyarakat pedesaan. Hasilnya menunjukkan bahwa kolaborasi antara pemerintah, masyarakat, dan sektor swasta dalam program mitigasi bencana sangat penting. Implikasi dari penelitian ini adalah perlunya peningkatan pendekatan holistik dalam pendidikan mitigasi bencana untuk meningkatkan kesadaran dan ketahanan masyarakat pedesaan terhadap bencana alam.

**Kata Kunci** : Kesiapsiagaan Bencana , Mitigasi Bencana, Pendidikan Holistik, Masyarakat Pedesaan

### INTRODUCTION

Natural disasters are one of the biggest challenges faced by societies around the world ([Heinrich Rakuasa 2023](#)). Various types of disasters, such as earthquakes, floods, landslides and forest fires, have caused countless infrastructure damage, economic losses and loss of life (BNPB 2023). Rural communities, which generally have limited resources, are often the most vulnerable to the impacts of disasters ([Rakuasa 2023](#)). Rural communities generally have limited access to information, resources and adequate infrastructure to deal with disasters ([Pakniany et al., 2022](#)). Therefore, disaster mitigation education is important to provide rural communities with the knowledge and skills to reduce their risk and vulnerability to natural disasters ([Suarmika and Utama 2017](#)).

Global climate change has led to an increase in the frequency and intensity of natural disasters in many parts of the world (Venäläinen et al. 2020). Extreme weather phenomena, such as erratic rainfall, prolonged droughts and increasingly strong storms, have worsened the situation in rural areas (Intergovernmental Panel on Climate Change 2023). Communities dependent on the agriculture and fisheries sectors are finding it increasingly difficult to sustain their livelihoods. In addition, the lack of adequate infrastructure, such as early warning systems, evacuation routes and shelter facilities, further exacerbates the vulnerability of rural communities to disasters. Limited access to information, technology and resources is also a major challenge for rural communities in dealing with emergency situations (Hayudityas 2020).

The disaster mitigation efforts carried out so far tend to focus on a top-down approach, where policies and programs are made by the central government without involving the active participation of local communities (Sari et al., 2020). This often results in solutions that do not fit the specific needs and conditions of rural communities. In addition, disaster education provided to rural communities is often limited to emergency response and evacuation training (Rana et al. 2021). While important, this approach is insufficient to equip communities with the necessary capabilities to prepare for, reduce risks of, and recover from the impacts of disasters.

The rural community's lack of understanding of disaster risks and ways to mitigate them is also one of the factors that hinder disaster risk reduction efforts. Communities are often unaware of the potential threats that exist in their environment and do not have sufficient knowledge to take preventive measures (Kurniawati 2020). In addition, limited financial and institutional resources at the local level are also a challenge in implementing effective disaster mitigation programs (Rakuasa and Pakniany 2023). Local governments and civil society organizations often lack funds, equipment and experts to manage these programs.

In this context, a holistic approach involving various stakeholders, including the government, communities and the private sector, is crucial. This approach should consider the needs, capacities and local culture of rural communities to ensure the success of disaster mitigation programs (Taylor 2016). A holistic approach in disaster mitigation education recognizes that disaster mitigation involves not only technical aspects, but also social, cultural and economic aspects (Pakniany et al., 2023). In the context of rural communities, this holistic approach can involve various stakeholders, such as local governments, educational institutions, local communities and non-governmental organizations, to work together to improve community preparedness and resilience (Righi et al. 2021).

Disaster mitigation education in a holistic approach can cover various aspects, such as knowledge about the types of natural disasters, how to identify disaster risks, survival skills, and mitigation actions that can be taken by the community (Palliyaguru et al., 2014). In addition, education can also help change people's attitudes and behaviors in dealing with disasters, such as increasing awareness of the importance of disaster mitigation and active participation in mitigation efforts (Rakuasa and Mehdila 2023). In a holistic

approach, disaster mitigation education can also involve a participatory approach, where rural communities are actively involved in the planning, implementation and evaluation of disaster mitigation programs (Shaw, Takeuchi, and Rouhban 2009). This community participation is important to ensure that disaster mitigation programs are in line with the needs and conditions of the local community.

Disaster education that is comprehensive and integrated with the daily lives of rural communities is key in increasing community awareness, knowledge and skills in dealing with disasters (Ramadhan, Sukma, and Indriyani 2019). This approach should include not only emergency response training, but also an understanding of the causes, impacts and mitigation strategies of disasters (Gustavo and Rakuasa 2023). Thus, disaster mitigation through holistic education in rural communities is crucial to reduce vulnerability and increase community resilience to natural disasters. This approach is expected to help rural communities prepare for, reduce risks of, and recover from the impacts of disasters more effectively and sustainably. Based on the description above, this research aims to find out disaster mitigation through education: a holistic approach for rural communities.

## **METHODOLOGY**

This research uses a descriptive qualitative approach. Qualitative research is a research procedure with descriptive data results in the form of written or spoken words (Hamilton and Finley 2019). Qualitative research aims to analyze the quality of a study. The type of research used is a literature study which is research that has been done before by collecting journal books, magazines, and scientific papers that are interrelated with the problems and research objectives. Literature study is a data collection technique carried out by conducting a study of books or literature related to the problem being solved (Roller 2019). The literature study used is by searching for journal articles on Google Scholar, Scopus, and Google Book related to the title of this research.

## **RESULT AND DISCUSSION**

### **The Importance of Disaster Mitigation for Rural Communities**

Rural communities are the most vulnerable to the impacts of natural disasters. This is due to various factors, such as limited resources, inadequate infrastructure, and high dependence on the agriculture and fisheries sectors. Natural disasters, such as earthquakes, floods, landslides and forest fires, can cause severe damage to homes, roads and public facilities in rural areas (Heinrich et al., 2023). In addition, the economic losses caused by disasters can threaten people's livelihoods and food security. Global climate change has led to an increase in the frequency and intensity of natural disasters in different parts of the world (Venäläinen et al. 2020). Extreme weather phenomena, such as erratic rainfall, prolonged droughts and increasingly strong storms, have exacerbated the situation in rural areas (Rakuasa 2022). Communities dependent on the agriculture and fisheries sectors are finding it increasingly difficult to sustain their livelihoods. This may pose a threat to food security and the well-being of rural communities (Manakane et al., 2023).

In addition, the lack of adequate infrastructure, such as early warning systems, evacuation routes and shelter facilities, further exacerbates the vulnerability of rural communities to disasters. Limited access to information, technology and resources is also a major challenge for rural communities in dealing with emergency situations. Without adequate infrastructure and resources, rural communities will find it difficult to carry out preventive measures, evacuation and post-disaster recovery. In this context, disaster mitigation becomes very important for rural communities. Efforts to reduce disaster risks and impacts, such as awareness raising, emergency response skills development and institutional capacity strengthening, can help rural communities become more resilient and able to face the challenges of natural disasters (Pakniany et al., 2023). A holistic approach involving various stakeholders, including the government, communities and the private sector, is key in ensuring the success of disaster mitigation programs in rural areas.

### **Limitations of Current Disaster Mitigation Approaches**

Current disaster mitigation efforts tend to focus on a top-down approach, where policies and programs are made by the central government without involving the active participation of local communities. This often results in solutions that do not fit the specific needs and conditions of rural communities. Although the government has good intentions to protect the community, without input and involvement from the community itself, disaster mitigation programs are often ineffective and unsustainable. In addition, disaster education provided to rural communities is often limited to emergency response and evacuation training (Thene 2016). While important, this approach is insufficient to equip communities with the necessary capabilities to prepare for, reduce risks of, and recover from the impacts of disasters. Disaster education that focuses only on emergency response tends to neglect other important aspects, such as understanding the causes of disasters, mitigation strategies and risk reduction efforts.

The rural community's lack of understanding of disaster risks and ways to mitigate them is also one of the factors that hinder disaster risk reduction efforts (Putri 2022). Communities are often unaware of the potential threats that exist in their environment and do not have sufficient knowledge to take preventive measures. This can cause communities to be underprepared for disasters and tend to only react when disasters occur, without proactive efforts to reduce risk (Suhardjo 2015). In addition, limited financial and institutional resources at the local level are also a challenge in implementing effective disaster mitigation programs. Local governments and civil society organizations often lack the funds, equipment and expertise to manage such programs. This can hamper efforts to increase community capacity, build adequate infrastructure and develop effective early warning systems in rural areas.

### **Holistic Approach to Disaster Mitigation through Education**

In this context, a holistic approach involving various stakeholders, including the government, communities and the private sector, is crucial. This approach should consider the needs, capacity and local culture of rural communities to ensure the success

of disaster mitigation programs. By involving various parties, disaster mitigation programs can be designed and implemented more comprehensively, so as to meet the specific needs of the community. Disaster education that is comprehensive and integrated with the daily lives of rural communities is key in increasing community awareness, knowledge and skills in dealing with disasters (Pi, Nath, and Behzadan 2020). This approach should include not only emergency response training, but also an understanding of the causes, impacts and mitigation strategies of disasters. By equipping communities with broader knowledge, they can take proactive measures to reduce risks and prepare for disasters (Masten 2021).

In addition, holistic disaster education should be integrated with the daily activities of rural communities. For example, educational programs can be incorporated into farming, fishing or other social activities. In this way, people can understand and apply disaster mitigation concepts more naturally and sustainably, without feeling that disaster education is something separate from their lives. A holistic approach to disaster mitigation through education should also consider cultural aspects and local wisdom of rural communities (Wijkman and Timberlake 2021). Each region has traditions, values and practices that can be integrated with disaster mitigation efforts. By understanding and respecting local wisdom, disaster education programs can be better accepted and adopted by communities, thereby increasing the effectiveness and sustainability of disaster risk reduction efforts (Sopacua & Salakay 2020).

### **Benefits of a Holistic Approach to Disaster Mitigation through Education**

A holistic approach to disaster mitigation through education has many benefits for the community. This approach can improve community preparedness in the face of disasters. Through training and simulations, communities are equipped with the knowledge and skills to recognize danger signs, evacuate, and provide first aid (Afrian 2020). This allows the community to act quickly and appropriately when a disaster occurs. A holistic approach can encourage active community participation in disaster mitigation efforts. Communities are involved in the process of planning and implementing mitigation, such as disaster-resistant infrastructure development and environmental management (Permen 2006). Thus, the community has a sense of ownership and responsibility for these efforts, thus increasing their effectiveness and sustainability.

A holistic approach can help communities in the post-disaster recovery process. Communities are educated on ways to restore their physical, psychological and socio-economic condition after a disaster. This can help communities to bounce back and build a better life. A holistic approach can increase community awareness about disaster risk reduction. Communities are provided with an understanding of the concept of disaster risk reduction and are involved in developing disaster risk reduction action plans at the local level. Thus, communities can have an active role in efforts to reduce their vulnerability and increase their capacity to deal with disasters.

## **Challenges and Strategy Implementation**

In implementing a holistic approach to disaster mitigation through education, there are several challenges that must be faced. Building public awareness and participation is a considerable challenge. People often do not understand the importance of disaster preparedness and mitigation, so intensive efforts are needed to change their mindset and behavior. Coordination and collaboration between stakeholders is also a challenge. Disaster mitigation efforts involve various parties, such as the government, the private sector and the community. Unifying the vision, mission and action plan among them requires good communication and synergy. Limited resources, both financial and technical, can hinder the implementation of a comprehensive disaster mitigation strategy. Strong commitment and support from the government, private sector and communities are needed to provide adequate budget, infrastructure and technology.

Program sustainability is also a challenge that must be considered. Often, disaster mitigation programs only run temporarily and are not sustainable. Therefore, efforts are needed to ensure that these programs can continue to run and be adapted according to community needs. To overcome these challenges, a comprehensive and well-planned implementation strategy is needed. This includes raising public awareness, strengthening coordination among stakeholders, mobilizing adequate resources, and developing sustainable programs. Thus, a holistic approach to disaster mitigation through education can run effectively and provide optimal benefits for the community.

## **Implications and Recommendations**

The implementation of a holistic approach to disaster mitigation through education in rural communities has significant implications. First, this approach can improve the preparedness of rural communities in facing disasters. Through training and simulations, communities are equipped with the knowledge and skills to recognize danger signs, evacuate and provide first aid. This can help rural communities to act quickly and appropriately when disasters occur. A holistic approach can encourage active participation of rural communities in disaster mitigation efforts. Communities are involved in the process of planning and implementing mitigation, such as disaster-resistant infrastructure development and environmental management. Thus, rural communities have a sense of ownership and responsibility for these efforts, thereby increasing their effectiveness and sustainability.

A holistic approach can assist rural communities in the post-disaster recovery process. Communities are educated on ways to restore their physical, psychological and socio-economic condition after a disaster. This can help rural communities to bounce back and build a better life. A holistic approach can increase rural communities' awareness about disaster risk reduction. Communities are provided with an understanding of the concept of disaster risk reduction and are involved in developing disaster risk reduction action plans at the local level. Thus, rural communities can have an active role in efforts to reduce their vulnerability and increase their capacity to deal with disasters.

Based on these implications, some recommendations that can be applied to strengthen disaster mitigation through education with a holistic approach in rural communities include:

- 1) Increase collaboration between the government, private sector, and rural communities in planning and implementing disaster mitigation programs.
- 2) Provide adequate budget and resources to support training programs, simulations, and disaster-resistant infrastructure development in rural communities.
- 3) Develop curricula and learning materials that suit the needs and characteristics of rural communities.
- 4) Ensure the sustainability of disaster mitigation programs through continuous monitoring, evaluation and adaptation.

By implementing these recommendations, it is expected that a holistic approach to disaster mitigation through education can provide optimal benefits for rural communities in facing disasters.

## **CONCLUSIONS**

This research highlights the importance of a holistic approach to disaster mitigation through education in rural communities. Based on the findings and analysis conducted, several conclusions can be drawn:

- 1) Rural communities are the most vulnerable to the impacts of natural disasters due to limited resources, inadequate infrastructure, and dependence on the agriculture and fisheries sectors. Therefore, disaster mitigation education is very important to improve community preparedness and resilience.
- 2) A holistic approach in disaster mitigation education includes technical, social, cultural and economic aspects. This ensures that disaster mitigation programs do not only focus on technical aspects, but also pay attention to the social and cultural context of rural communities.
- 3) Active participation of rural communities in the planning, implementation and evaluation of disaster mitigation programs is key to the success of the program. Involving the community directly can ensure the programs are relevant and effective.
- 4) Strong collaboration between the government, private sector and rural communities is needed to support disaster mitigation programs. Adequate resources and support from various parties will increase the effectiveness of disaster mitigation programs.
- 5) Disaster mitigation education that is comprehensive and integrated with the daily lives of rural communities can increase community awareness, knowledge and skills in dealing with disasters.

With the implementation of disaster mitigation programs through holistic education and the implementation of recommendations resulting from this research, it is expected that rural communities can become more resilient in the face of disasters and improve their overall resilience.

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