

Local Wisdom as A Foundation for Earthquake Disaster Mitigation Education to Create Disaster Resilient Generations: A Case Study in Lombok Island

Kosim*, Gunawan, Joni Rokhmat, Ni Nyoman Sri Putu Verawati, & Ahmad Busyairi

Physics Education Study Program, University of Mataram, Indonesia

*Corresponding Author: kosim@unram.ac.id

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Abstract - Lombok Island is a region prone to earthquake disasters. To create a disaster-resilient generation, disaster mitigation education needs to be integrated with local wisdom. This study aims to explore the local wisdom in Lombok Island that can serve as a foundation for earthquake disaster mitigation education. The research employs a qualitative approach using case studies conducted in several locations on Lombok Island. Data were collected through literature reviews, field observations, and questionnaires distributed to students. The findings indicate that there is a variety of local wisdom in Lombok Island relevant to earthquake disaster mitigation, categorized into six areas: 1) local wisdom in construction and disaster mitigation, 2) local wisdom in communication and social interaction, 3) local wisdom in leadership and community management, 4) local wisdom in shared values of unity and solidarity, 5) local wisdom in social and religious values, and 6) local wisdom in traditions and customary rituals. This local wisdom can be integrated into disaster mitigation education programs in schools and communities. Through education based on local wisdom, it is expected that a generation with awareness, knowledge, and skills in addressing earthquake disasters can be developed, thereby reducing disaster risks and impacts.

Keywords: Local Wisdom of the Sasak Tribe; Earthquake Disaster Mitigation Education; Disaster-Resilient Generation

INTRODUCTION

Indonesia, located in the Pacific Ring of Fire, is highly susceptible to various natural disasters, including earthquakes. Lombok Island, with its long history of seismic activity, is one of the regions that requires special attention in disaster mitigation efforts. The devastating earthquake that struck Lombok in 2018, causing extensive infrastructure damage and significant loss of life, highlights the urgent need to enhance existing disaster mitigation measures.

This incident underscores the importance of effective disaster mitigation education. Such education plays a crucial role in increasing public awareness, knowledge, and skills to deal with disasters, thus minimizing associated risks and impacts (Suprpto et al., 2021). With the right education, communities can be better

prepared and responsive in emergency situations, enabling them to take appropriate actions to protect themselves and their surroundings.

In this context, local wisdom has significant potential to be integrated into disaster mitigation education. Local wisdom, as the knowledge, skills, and practices developed by local communities to adapt to their environment, often contains values and practices relevant to disaster mitigation (Lestari & Suyanto, 2024). On Lombok Island, traditional knowledge such as indigenous early warning systems, earthquake-resistant building constructions, and self-preservation practices have been passed down through generations.

This study focuses on exploring how local wisdom in Lombok can serve as a foundation for earthquake disaster mitigation education, aiming to create a

more resilient and disaster-ready generation. Tohri et al. (2022) emphasize the urgency of character education based on the Sasak tribe's local wisdom in East Lombok, aligning with efforts to strengthen community resilience through local knowledge and values.

However, integrating local wisdom into formal education presents several challenges. Pornpimon et al. (2014) highlight some of these obstacles, including differences in perception between traditional and modern knowledge systems, as well as the lack of integration of local wisdom into the curriculum. Consequently, this research will also identify challenges and formulate strategies to address obstacles in incorporating local wisdom into disaster mitigation education.

This research is expected to contribute significantly to the development of more effective, sustainable disaster mitigation education strategies rooted in local wisdom in Indonesia, particularly on Lombok Island. By leveraging local traditions and knowledge, the study aims to strengthen disaster preparedness and resilience at both the community and institutional levels.

RESEARCH METHODS

This study adopts a mixed-methods approach with an explanatory sequential design (Creswell & Plano Clark, 2018), combining quantitative and qualitative methods to examine local wisdom as a foundation for earthquake disaster mitigation education on Lombok Island. The research begins with quantitative data collection through questionnaires distributed to selected respondents using purposive sampling techniques (Etikan, Musa, & Alkassim, 2016). This phase analyzes the community's knowledge, attitudes, and behaviors regarding disaster mitigation and their perceptions of local wisdom.

Subsequently, qualitative data are gathered through observations (Spradley, 1980), document analysis (Bowen, 2009), literature review, and in-depth interviews (Kvale & Brinkmann, 2009) with community leaders, traditional elders, and teachers. These methods are employed to further explore their knowledge, experiences, and perceptions regarding local wisdom and disaster mitigation.

The study focuses on areas within Lombok Island that possess local wisdom relevant to earthquake disaster mitigation. Quantitative data are analyzed using descriptive and inferential statistics, while qualitative data are processed using techniques such as data reduction, data display, and conclusion drawing (Miles & Huberman, 1994). Data triangulation is conducted to enhance the validity and reliability of the research by comparing data from multiple sources (Denzin, 1978).

The research stages include preparation, data collection and analysis (quantitative and qualitative), data triangulation, and report writing. This mixed-methods approach aims to provide a holistic and in-depth understanding of the potential of local wisdom in improving community preparedness for earthquake disasters on Lombok Island.

RESULTS AND DISCUSSION

1. Local Wisdom in Lombok Island for Earthquake Disaster Mitigation

Lombok Island, with its long history of facing earthquakes, has developed various forms of local wisdom that play a crucial role in disaster mitigation. This local wisdom represents the community's adaptation to its environment and geographical conditions prone to disasters. Lestari & Suyanto (2024) describe local wisdom as the knowledge, skills, and practices developed by local communities to adapt to their surroundings.

Based on surveys, questionnaires, and literature reviews, six categories of local wisdom indicators of the Sasak community integrated into disaster mitigation were identified. These six indicators are: (1) Local wisdom in construction and disaster mitigation; (2) Local wisdom in

communication and social interaction; (3) Local wisdom in leadership and community management; (4) Local wisdom in shared values of unity and solidarity; (5) Local wisdom in social and religious values; (6) Local wisdom in traditions and customary rituals. The results are presented in Figure 1.

Percentage of Respondents that Agree with Each Indicator Integrated into Disaster Mitigation

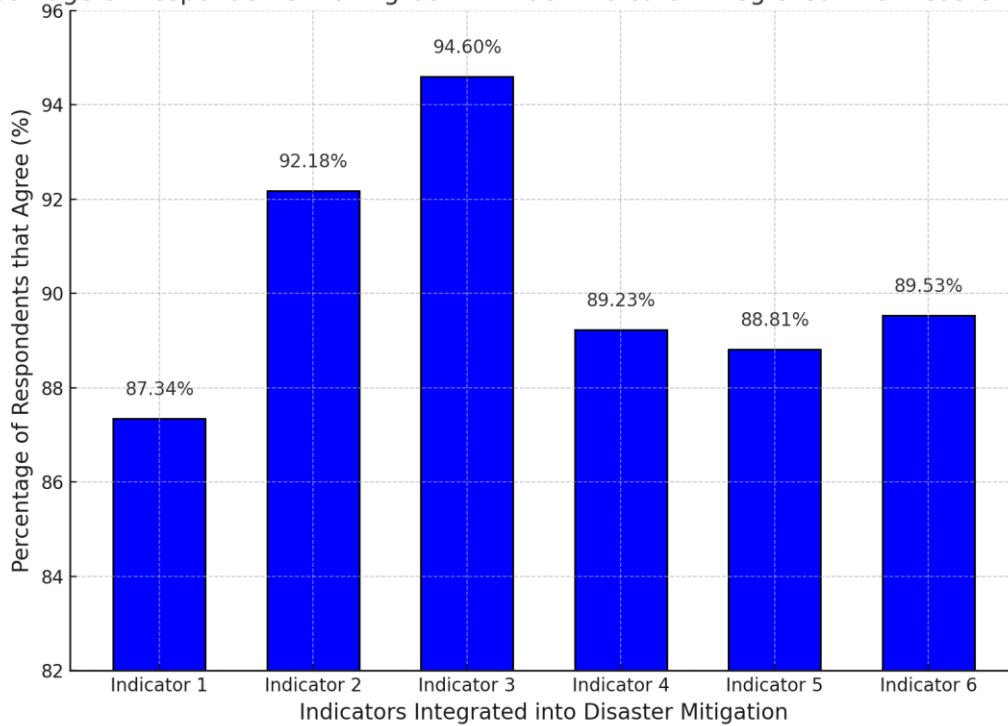


Figure 1. Graph of the Percentage of Respondents Selecting Each Local Wisdom Indicator Integrated into Disaster Mitigation

The people of Lombok, particularly the Sasak tribe, possess unique ways of observing natural signs, such as animal behavior and other environmental phenomena, to predict the likelihood of earthquakes. For instance, the myth of Telaga Lindur in North Lombok emphasizes the importance of maintaining ecological balance and living harmoniously with the environment to avoid disasters.

In addition, local wisdom is also reflected in the construction of earthquake-resistant buildings. Traditional Lombok houses, such as the *bale tani* house, feature structures designed to minimize damage during earthquakes. Tohri et al. (2022) highlight the importance of preserving and

utilizing local wisdom in building construction on Lombok. Knowledge about material selection, binding techniques, and the proportions of traditional buildings can be studied and adapted in modern construction.

Beyond physical aspects, local wisdom also encompasses self-preservation practices and social values that support disaster mitigation. The people of Lombok follow specific customs and taboos during earthquakes to protect themselves and their families. Values of togetherness and shared values of unity are highly esteemed, as the community supports and helps one another in facing and recovering from disasters.

2. Integration of Local Wisdom in Disaster Mitigation Education

Local wisdom holds great potential to be integrated into disaster mitigation education, both in schools and within communities. This integration is vital for preserving traditional knowledge, enhancing the relevance of education, and strengthening community preparedness in facing earthquake disasters.

Suprpto et al. (2021) argue that local wisdom can be incorporated into Indonesia's educational curriculum. In the context of disaster mitigation, local wisdom can serve as a resource and inspiration for developing learning materials. For example, folklore or local legends that convey messages about disaster mitigation can be incorporated into subjects such as Indonesian language, science, social studies, and even religious education.

Moreover, the application of contextual and engaging teaching methods is necessary to improve the effectiveness of disaster mitigation education. Disaster simulations, traditional games, and field visits to locations demonstrating the application of local wisdom in disaster mitigation can serve as alternative learning methods that are both engaging and easy to understand.

The development of local wisdom-based educational media is also essential. Learning materials such as videos, posters, and storybooks that use language and visuals familiar to the local culture can enhance the effectiveness of disaster mitigation education. Such media can help students and the community better understand the concepts of disaster mitigation and apply them in daily life.

The integration of local wisdom into disaster mitigation education is expected to foster a generation that not only possesses knowledge and skills to address disasters but

also values and preserves local culture as part of disaster mitigation efforts.

3. Challenges and Strategies in Implementing Local Wisdom

Despite its significant potential, the implementation of local wisdom in disaster mitigation education faces various challenges. Pornpimon et al. (2014) highlight several of these challenges, including differences in perception between traditional and modern knowledge. Some communities may hesitate to adopt local wisdom, viewing it as outdated or inconsistent with scientific knowledge.

Another challenge is the lack of policy support from the government. Although the government has introduced several disaster mitigation policies, they are not sufficiently accommodative of integrating local wisdom into education. This limitation has resulted in the underutilization and suboptimal implementation of local wisdom.

Resource constraints, both human and financial, also pose obstacles to implementing local wisdom. Teachers and facilitators with the competency to integrate local wisdom into disaster mitigation education remain scarce. Additionally, the availability of educational media and other facilities to support local wisdom-based learning is still minimal.

To address these challenges, comprehensive strategies are required:

a. **Bridging the gap between traditional and modern knowledge**

Efforts should be made to facilitate inclusive dialogue and discussion among stakeholders to reconcile differing perceptions. This approach will help foster mutual understanding and recognition of the value of local wisdom alongside modern science.

b. **Advocacy for supportive policies**

Advocacy and lobbying efforts are necessary to encourage the government to establish policies that support the integration of local wisdom into the education system. Such policies can provide a formal framework for promoting and implementing local wisdom in disaster mitigation education.

c. **Building partnerships for resource mobilization**

Collaboration with various stakeholders, such as NGOs, universities, and the private sector, is crucial to secure resources. These partnerships can help provide the necessary human expertise, financial support, and educational materials to facilitate the integration of local wisdom.

Through these strategies, the integration of local wisdom into disaster mitigation education can be enhanced, creating a resilient and well-prepared community while preserving valuable cultural heritage.

4. Impact of Local Wisdom-Based Disaster Mitigation Education

Local wisdom-based disaster mitigation education in Lombok Island is expected to yield positive impacts in enhancing community preparedness and resilience against earthquakes. These impacts can be observed across several dimensions: Firstly, Increased knowledge and awareness. Education programs contribute to a better understanding of earthquake characteristics, risk factors, and strategies to mitigate their impacts. This includes recognizing natural signs as early warning systems, understanding the principles of earthquake-resistant buildings,

and applying self-preservation practices. Secondly, Behavioral and attitudinal changes. Communities demonstrate improved readiness and responsiveness to disasters, as evidenced by greater environmental awareness, efforts to reduce vulnerabilities, and active participation in disaster mitigation initiatives. Thirdly, Enhanced community resilience Through the internalization of values such as shared values of unity, solidarity, and care for others, communities are better equipped to support one another during and after disasters. These values strengthen collective resilience and recovery capabilities. Fourthly, Preservation and transmission of local wisdom. Integrating local wisdom into education ensures the sustainability of time-tested disaster mitigation practices by passing them on to younger generations. This cultural continuity fosters long-term resilience.

These impacts should be comprehensively evaluated through systematic research to measure changes in knowledge, attitudes, behaviors, and resilience within the community. Such evaluations can guide further improvement and scalability of local wisdom-based disaster mitigation education.

CONCLUSION

This study concludes that the local wisdom of Lombok Island, encompassing traditional early warning systems, earthquake-resistant construction methods, self-preservation practices, and values of unity and solidarity, holds significant potential as a foundation for earthquake disaster mitigation education. The integration of local wisdom into education can be achieved through the development of learning materials, the application of contextual teaching methods, and the

utilization of local wisdom-based educational media.

Despite challenges such as differing perceptions, lack of policy support, and resource limitations, local wisdom-based disaster mitigation education offers positive impacts. It enhances community knowledge, awareness, attitudes, and behaviors in addressing disasters, strengthens community resilience, and preserves the local wisdom itself.

Based on the research findings, several recommendations are proposed. Local governments should develop policies supporting the integration of local wisdom into disaster mitigation education, allocate sufficient resources, and conduct outreach programs to raise public awareness. Educational institutions need to incorporate local wisdom into curricula and learning activities, develop innovative teaching methods and media, and establish collaborations with various stakeholders. Communities should preserve and practice local wisdom, actively participate in disaster mitigation education programs, and foster greater awareness and solidarity. Active collaboration and participation from all parties are essential to optimizing the utilization of local wisdom as a foundation for earthquake disaster mitigation education on Lombok Island, thereby fostering a resilient generation capable of facing disasters effectively.

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