



Integration of Flash Flood Mitigation Education within the Sustainable Development Framework at State Elementary School 6 Meureudu

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Received: 22 May 2026;

Revised: 11 June 2026;

Accepted :18 June 2026;

Published : 30 June 2026

Abstract

Indonesia is highly vulnerable to various hydrometeorological disasters, particularly flash floods, which frequently result in significant human, environmental, and economic losses. Pidie Jaya Regency, Aceh Province, is among the regions exposed to recurrent flooding, underscoring the urgent need to strengthen disaster risk reduction through early educational interventions. This community engagement program aimed to provide flash-flood mitigation education within the framework of sustainable development to sixth-grade students at State Elementary School 6 Meureudu. The program involved 25 students and adopted a participatory educational approach comprising interactive lectures, group discussions, audiovisual learning materials, disaster simulations, question-and-answer sessions, and reflective feedback activities. The educational materials covered the basic concepts of flash floods, their causal factors, early warning signs, appropriate mitigation measures before, during, and after disaster events, and the importance of environmental stewardship as an integral component of sustainable development. The implementation results indicated substantial improvements in students' understanding of flash flood characteristics, their ability to recognize early warning signs, and their knowledge of appropriate self-protection measures during emergencies. Moreover, participants demonstrated greater environmental awareness and actively engaged throughout the learning process. The findings suggest that participatory disaster education provides an effective contextual learning strategy for primary school students and has considerable potential to foster a culture of disaster preparedness from an early age. Furthermore, strengthening students' disaster preparedness capacities may contribute to broader community resilience by transferring knowledge to families and surrounding communities, thereby supporting the achievement of sustainable development goals.

Keywords: Community Engagement, Disaster Education, Elementary School Students, Flash Flood Mitigation, Sustainable Development



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1. INTRODUCTION

Geographically, Indonesia is situated at the convergence of three major tectonic plates—the Indo-Australian, Eurasian, and Pacific plates—making it one of the world's most disaster-prone countries (Herliansyah et al., 2025). Consequently, the country is exposed to a wide range of geological and hydrometeorological hazards. Disaster vulnerability is determined not only by natural conditions but also by social, economic, and environmental factors that shape communities' capacity to anticipate and respond to hazards (Wisner dkk, 2004). These vulnerabilities have been further intensified by climate change, environmental degradation, and development practices that have not fully incorporated disaster risk reduction principles, resulting in increasing disaster



frequency and severity across many regions of Indonesia (Pahleviannur, 2019). Natural disasters pose a real threat, consistently causing human and material losses across Indonesia, particularly in topographically vulnerable areas. Among the various types of disasters, flash floods are among the most destructive, as they move rapidly and carry debris such as mud, rocks, and wood.

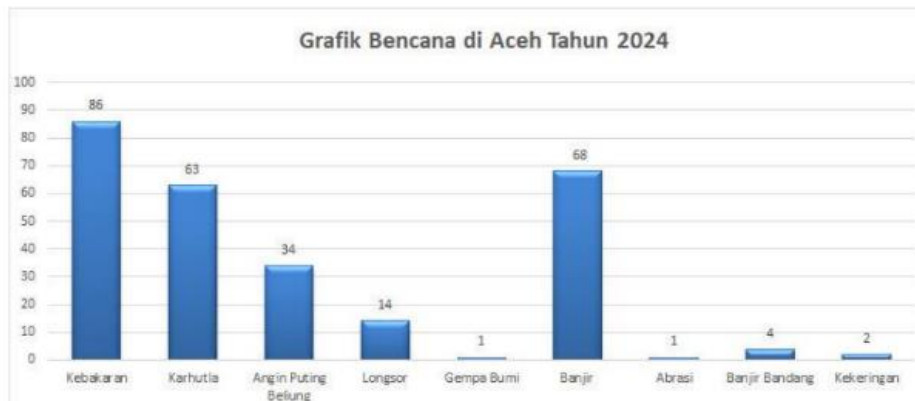


Figure 1. Graph of Disasters in Aceh in 2024, Source: DIBI BNPB (2024).

According to the 2024 Disaster Graph for Aceh Province, floods are among the most frequent disasters, with 68 incidents. This figure places floods as the second most common type of disaster after residential fires. The high frequency of flood events indicates that this disaster remains a serious threat to the people of Aceh. The impact is not only in the form of damage to houses and infrastructure, but also disruption of social and economic activities and the teaching and learning process in schools. This condition underscores the importance of flood disaster mitigation efforts by increasing community knowledge and preparedness, including elementary school students. This vulnerable group needs disaster education from an early age (Fathani dkk, 2016).

The Pidie Jaya Regency Disaster Risk Study, prepared by BPBD Pidie Jaya Regency, Meureudu District, includes areas with potential flooding threats due to topographic conditions, river basins, and high rainfall during the rainy season. Therefore, this region requires efforts to reduce disaster risk through increasing community preparedness, including through disaster education in schools.

The lack of community preparedness to address flooding is an important concern, especially among school-age children. A previous study (Rafliana et al., 2016) found that early childhood disaster education is highly beneficial for building communities capable of responding appropriately to disasters. Children are not only a vulnerable group when disasters occur, but can also act as agents of change by disseminating disaster information to their families and surrounding communities. Similarly, (Yulaelawati & Usman, 2008) emphasized that early childhood disaster education is crucial for fostering a culture of disaster awareness and increasing community preparedness on an ongoing



basis. Therefore, investing in local educational institutions for children in disaster-prone areas has a significant multiplier effect on community resilience.

According to UNDRR (2015), the disaster education paradigm in the modern era has shifted from a reactive to a proactive approach grounded in disaster risk reduction (DRR). The Sendai Framework for Disaster Risk Reduction 2015-2030 (Sendai Framework), adopted by 187 countries, including Indonesia, emphasizes that increasing public awareness and education about disaster risk reduction is a key component of disaster risk reduction strategies. It is said that one strategic recommendation is to include disaster education in the school curriculum.

The impact of flash floods in Pidie Jaya Regency, including in Meureudu District, has repeatedly resulted in fatalities, infrastructure damage, and disruptions to school teaching and learning. This situation underscores the urgent need for disaster mitigation education in school environments. More broadly, such educational efforts align with the United Nations Sustainable Development Goals (SDGs). This community service activity directly contributes to at least three SDGs. SDG 4 (Quality Education) emphasizes the importance of inclusive and equitable education, including education on sustainable lifestyles and sustainable development. SDG 11 (Sustainable Cities and Human Settlements) focuses on protecting vulnerable communities to reduce damage caused by disasters, including water-related disasters. SDG 13 (Tackling Climate Change) recommends that communities and organizations be better able to help reduce and adapt to climate change, including through increasing education and public awareness. The 2030 Sustainable Development Agenda also emphasizes the importance of inclusive and resilient development in the face of various global threats, including natural disasters and climate change (Nations, 2015). Apart from environmental and social aspects, disaster risk reduction also involves economic preparedness and community protection against losses from disasters (OECD, 2020).

Disaster mitigation education at the elementary school level plays a strategic role in fostering a culture of disaster awareness from an early age. However, implementing disaster education across schools in Indonesia still faces several obstacles, including limited teaching materials, minimal disaster training for teachers, and the lack of integration of disaster risk reduction into contextual and sustainable learning. Most disaster education programs are incidental, implemented only when a disaster occurs or at specific times, thereby failing to foster sustainable preparedness behaviors in students. The concept of disaster-safe schools also emphasizes the importance of integrating disaster education into school activities on an ongoing basis (Suharwoto, 2020). Previous research has shown that disaster awareness training for elementary school students can improve students' preparedness and understanding of disaster risks in their environment (Mulyasari et al., 2011). This condition results in students having



limited basic knowledge regarding mitigation measures, evacuation procedures, and the importance of protecting the environment as part of disaster prevention efforts.

From a Disaster Risk Reduction (DRR) perspective, disaster education is a crucial component of a DRR strategy focused on enhancing community capacity. Mitigation education aims not only to provide knowledge but also to build attitudes, skills, and collective awareness in facing disaster threats. In disaster management, mitigation is understood as a systematic effort undertaken before a disaster occurs to reduce the risks and potential impacts (Khambali, 2017). Therefore, schools are seen as a strategic space for developing a disaster-resilient generation. Furthermore, the Education for Sustainable Development (ESD) approach emphasizes that education must encourage students to understand the relationship between humans, the environment, and the sustainability of life. In this context, flash flood mitigation education is not only concerned with self-rescue during disasters but also instills the values of environmental awareness, nature conservation, and social responsibility as part of sustainable development.

The novelty of this service activity lies in applying flash flood mitigation education based on students' local experiences in flood-affected areas through an educational, participatory approach that combines audiovisual media, educational songs, simple simulations, and reflection through writing messages and student impressions. In contrast to disaster education programs, which generally focus on delivering material in one direction, this activity encourages students' active involvement in linking disaster experiences in their environment with appropriate mitigation actions and environmentally responsible behavior. This approach is expected to increase students' understanding, preparedness, and ecological awareness in a more contextually and sustainably meaningful way.

Meureudu 6 Public Elementary School was chosen as the location for the community service activity because it is located in Pidie Jaya Regency, which was affected by a hydrometeorological disaster in late 2025. Extreme rainfall since November 26, 2025, has caused flooding in several areas of Pidie Jaya Regency, including Meureudu District. The Pidie Jaya Regency Government even declared and extended a hydrometeorological disaster emergency status until December 22, 2025, in response to the increasing disaster risk in the region.

Several previous studies have examined the implementation of disaster curriculum at the elementary school level. According to Nurjanah et al. (2018), school-based learning programs improve student understanding and preparedness. Consistent with this, Ri et al. (2017) in their study on disaster risk reduction education in Indonesia argue that schools are an effective channel for disseminating disaster knowledge, given their clear and comprehensive curricula. Pramono et al. (2020) argue that blended



learning in disaster education results in better learning retention than traditional teaching methods.

The purpose of this community service is to reduce the impacts mentioned above by implementing a comprehensive, contextual, and integrated educational program on flash flood mitigation. The specific objectives of this activity are as follows: (1) increasing students' understanding of the meaning, causes, and impacts of flash floods; (2) increasing students' ability to recognize the signs of flash floods and determine appropriate self-rescue actions; and (3) increasing students' awareness of ecological issues as a component of commitment to sustainable development. The next section of this article will discuss the implementation method, the activity's results, and its implications for program development in the current era.

2. METHOD

This community service activity was carried out on January 17, 2026, at Meureudu 6 Public Elementary School, Meureudu District, Pidie Jaya Regency. The location was selected based on the area's vulnerability to hydrometeorological disasters, as well as the flooding that hit the Meureudu area in 2025, which caused infrastructure damage and disrupted community activities. These conditions indicate that the community, especially elementary school students, needs to be equipped with disaster mitigation knowledge and skills from an early age. Furthermore, initial observations indicate that the implementation of structured disaster education in the school environment is still limited. Therefore, education-based interventions are needed to improve students' knowledge and preparedness for the risk of flash floods.

The target group for this activity was 25 sixth-grade students. This target group was selected because students at this level have more developed cognitive abilities, enabling them to understand disaster mitigation concepts more comprehensively. According to Piaget (1972), children aged around 11–12 years enter the formal operational stage, a stage of cognitive development in which individuals can think logically, understand cause-and-effect relationships, and solve problems in abstract situations. These abilities enable students to understand disaster risks, recognize mitigation measures, and make appropriate decisions in emergencies. Furthermore, sixth-grade students are also in a transitional phase toward higher education, so it is hoped that the knowledge gained can be internalized and applied in everyday life.

This community service activity uses a participatory-educational approach that positions students as active subjects in the disaster mitigation learning process. This approach was chosen because it is considered more effective than the one-way lecture method at increasing student understanding and engagement. The participatory approach is considered effective in building community capacity for disaster risk



reduction because it involves active participant involvement in the learning process (Lassa et al., 2018). Through this participatory approach, students not only receive information but are also invited to discuss, express opinions, recognize environmental conditions, and understand what to do in the event of a flash flood. Furthermore, an interactive educational approach is used to create a learning environment that is enjoyable and easy to understand for elementary school students. The activity began with a preparatory phase, which included initial observations of the school site, coordination with school officials, development of outreach materials, and preparation of learning media. The initial observations were conducted to identify the school's environmental conditions, students' level of understanding of disasters, and educational needs relevant to the local context. Next, the community service team developed outreach materials tailored to elementary school students, using simple language, engaging visuals, and contextual examples relevant to students' daily lives.

During implementation, activities are conducted through a combination of interactive lectures, discussions, simple simulations, audiovisual media, and educational games. The use of audiovisual media helps students understand the flash flood situation visually, making the material easier to understand and remember. Apart from that, simple simulations are conducted to train students in their preparedness to deal with emergencies, such as recognizing evacuation routes and taking self-saving measures during flash floods. This method is expected to improve students' cognitive, affective, and psychomotor abilities simultaneously.

Evaluation is carried out by simply observing student participation, conducting question-and-answer sessions, and providing feedback at the end of the activity. Indicators of the success of the activity include increased understanding of the causes and impacts of flash floods, the ability to recognize signs of disaster, understanding of mitigation steps, and increased awareness of the importance of protecting the environment. Apart from that, students' enthusiasm during activities is also used as an indicator of success in building interest and awareness of disaster issues from an early age. Socialization activities are conducted in a single day, lasting approximately 90 minutes. Implementation of activities is divided into three main stages, namely:

- a. *Material Delivery* : The material was delivered via a PowerPoint (PPT) presentation displayed on a laptop. The material covered the basic concepts of flash floods, their causes and impacts, mitigation measures before, during, and after a disaster, and their relationship to the principles of sustainable development. To strengthen students' understanding and retention, an audio recording of an educational song on disaster mitigation was played at the end of the session, providing a fun and engaging learning experience.



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- b. *Evaluation and Q&A* : This stage was conducted to assess students' understanding of the material presented. Students were allowed to ask questions and review the material they had learned. Several students actively participated in answering questions and re-explaining the concept of flash flood mitigation, indicating increased cognitive understanding.
 - c. *Providing Feedback* : In the final stage, students received feedback through writing messages and impressions using short notes. This method aimed to determine the extent to which the material was understood and to evaluate the effectiveness of the outreach activities. The feedback indicated that students grasped the core of the material and understood the importance of disaster mitigation as part of efforts to maintain environmental sustainability.

Overall, the stages of this activity are designed systematically and participatory to ensure that the educational process is not only one-way but also involves students in actively understanding and internalizing the material provided.

3. RESULTS DISCUSSION

A flash flood mitigation outreach activity held in January 2026 at SDN 6 Meureudu resulted in significant changes in students' understanding and attitudes. Before the activity, most students had only a basic understanding of flooding and did not fully understand the concept of flash floods, including their causes, impacts, and mitigation methods. After the activity, students' understanding significantly improved: they were able to distinguish between ordinary floods and flash floods, understood the causal factors from both natural and human activities, and demonstrated increased concern for the environment as part of disaster prevention efforts. The material presented in this activity covered five main topics: (1) the definition and characteristics of flash floods, (2) the factors that cause them, (3) pre-disaster preparation steps, (4) recognizing the signs of impending flash floods, and (5) self-rescue measures during and after a flash flood, including their relationship to the principles of sustainable development.

1. Introduction to the concept of flash floods

The first material presented was an introduction to flash floods. Flash floods are sudden, intense floods that occur in mountainous areas or upstream rivers after prolonged heavy rain. Flash flood water flows quickly and forcefully, and can carry mud, stones, wood, and other debris. This can damage homes and endanger lives. To help students understand why flash floods are much more dangerous and must be monitored



early, visual media is used to illustrate the differences between normal floods and flash floods.

2. Main Factors Causing Flash Floods

The second topic discussed the main causes of flash floods. The primary factor is prolonged heavy rainfall, which prevents rainwater from being absorbed by the soil and forces it to flow slowly into residential areas at very high rates. A second factor is heavy rainfall, which can trigger landslides in mountainous areas. Landslides increase the force of the water flow, worsening flooding in surrounding areas. Another factor is deforestation, which reduces the soil's capacity to absorb rainwater. During this session, the facilitator placed the greatest emphasis on the role of vegetation and forests in flood mitigation, while also underscoring the value of environmental conservation as part of our shared responsibility for sustainable development.

3. Preparing for Flash Floods

This material discusses the steps to take before a flash flood occurs. Students are then made aware that when a flash flood occurs, they must remain alert and pay attention to information from teachers and parents, as well as official announcements about the possibility of flash floods. Finally, students are taught to avoid playing in rivers or near other water sources, as water levels can rise suddenly and endanger people.

4. Introducing the Signs of an Impending Flash Flood

The fourth topic introduces students to the first signs of a flood, namely: (1) the water suddenly rises rapidly and becomes cloudy; (2) large amounts of wood, twigs, and mud carried by the river; and (3) a rumbling sound coming from the river or mountain. Students are taught to immediately notify a teacher or nearby adult if they hear or see these signs.

5. Actions when flash floods occur

Material: The most interesting part of the material is the last section, namely, what to do when a flash flood occurs. Then, students learn evacuation procedures in an emergency, including remaining calm and following the teacher or officer in charge's instructions. They do this by carrying out small simulations at school. In addition, the simulation emphasizes that playing in puddles or returning home to get things is absolutely prohibited, as these actions are very dangerous. Material on actions after floods increases students' understanding of the importance of ensuring their safety before returning home, avoiding contaminated wells and other sources of disease, and keeping the environment and themselves clean as part of community recovery.

The implementation of socialization activities led to changes in students' understanding and attitudes towards flash flood mitigation. Before the activity, most



students understood floods as events in which water overflows due to heavy rain, unaware of the characteristics of flash floods, which have faster currents and can carry dangerous debris. After the socialization, students were able to explain the differences between normal floods and flash floods, recognize the factors that cause them, and understand the steps to save themselves in the event of a disaster. This change can be seen from the increase in students' ability to answer questions given during evaluation and discussion sessions. These results show that learning experiences and education are closely related to increased individual perceptions and preparedness to face disasters (Shaw dkk, 2004).

Apart from enhancing cognitive understanding, this activity also affects students' affective aspects, especially in building environmental awareness. Previously, some students still considered activities such as littering or cutting down trees as unrelated to the flood disaster. However, after the material was presented, students began to understand that environmental damage could increase the risk of flash floods. This understanding shows that disaster mitigation education can be an effective means of instilling the values of environmental concern and social responsibility from an early age.

The results of this activity align with research (Amri et al., 2017), which indicates that school-based disaster risk reduction education can significantly increase students' preparedness capacity. Schools are strategic spaces for building a culture of disaster awareness, as students can become agents of information dissemination to their families and the surrounding community. This finding is also supported by Rafliana et al. (2016), who explain that disaster education for children has a long-term effect on the formation of a resilient society. Thus, flash flood mitigation educational activities not only increase individual students' knowledge but also have the potential to strengthen community preparedness more broadly.

From a sustainable development perspective, this activity contributes to achieving the Sustainable Development Goals (SDGs), specifically SDG 4 on quality education, SDG 11 on sustainable cities and settlements, and SDG 13 on climate change mitigation. The disaster mitigation education provided to students not only aims to increase preparedness for flash floods but also to develop an adaptive mindset towards environmental change. Students' awareness of the importance of protecting forests, not littering, and maintaining river cleanliness can help implement sustainable development values in their daily lives. Increasing the community's adaptive capacity to environmental change is also an important part of sustainable human development (UNDP, 2020).

Throughout the activity, students demonstrated high enthusiasm, especially during the simulation and interactive discussion sessions. The use of visual media,

educational videos, and disaster-mitigation songs helped students better understand the material. The interactive, fun learning approach encouraged students to be more active in asking and answering questions and in sharing their experiences of flooding in their local areas. This situation indicates that participatory learning methods are more effective in disaster education for elementary school-aged children than conventional, one-way approaches.

Even though this activity went well, several obstacles were encountered during implementation. Time limitations mean the evacuation simulation material cannot be carried out in a more in-depth, structured manner. Apart from that, the unavailability of supporting facilities, such as evacuation routes and disaster education materials, in schools is a challenge in itself for the sustainability of disaster mitigation programs. Therefore, further collaboration among schools, local governments, and related institutions is needed to integrate disaster education sustainably into the school environment.



Figure 1. Providing material to students

In Figure 1 above, the team is providing material to students interactively through visual presentations and a communicative approach adapted to the characteristics of elementary school students. In this session, students were observed actively paying attention to the material explanation and responding to questions posed by the implementation team. The use of visual media is considered effective in helping students understand the concept of flash floods, which were previously abstract, and make it more concrete and easier to understand. Apart from that, the two-way interaction during the activity increased students' confidence to ask questions and express their opinions about their experiences with extreme weather and flooding in their surrounding environment. This condition shows that an educational-participatory approach can increase student involvement in the disaster mitigation learning process.



Figure 2. Closing, by giving prizes to students who contributed to the activity

In Figure 2 above, the research team expresses appreciation to students who actively participate to strengthen motivation in the learning process. This method aims to encourage more active student involvement during the activity and create a pleasant learning atmosphere. Students' enthusiasm during the closing session shows that an interactive and appreciative learning approach can increase students' interest in disaster mitigation material. Apart from that, the closing activity also provided students with a moment to reflect on the importance of disaster preparedness and concern for the environment as part of everyday life. In this way, educational activities not only provide additional knowledge but also create memorable, meaningful learning experiences for students.

The flash flood mitigation education program implemented at the Meureudu 6 Elementary School has the potential to be developed into a sustainable school-based program. The program's sustainability can be achieved through integrating disaster materials into thematic learning activities, conducting regular evacuation simulations, and fostering a culture of disaster awareness in the school environment. Apart from that, the involvement of teachers as the main assistants for students is an important factor in maintaining the continuity of mitigation education after the service activities are completed. Therefore, support from the school is needed to develop similar activities regularly so that students' understanding and preparedness can continue to improve.

In the context of community-based disaster risk reduction, schools have a strategic role as centers of education and the dissemination of disaster information. The knowledge gained by students during the activity can be transferred to their families and the surrounding community, ensuring the educational impact is not limited to the activity participants. Thus, disaster mitigation education in elementary schools can be a long-term social investment in building a more resilient society against the threat of hydrometeorological disasters.



Apart from that, this activity shows that integrating disaster issues into sustainable development can be implemented through a simple approach appropriate to students' ages. Students' awareness of the importance of keeping the environment clean, conserving trees, and avoiding activities that can harm the environment is a concrete embodiment of sustainable development values. Developing this behavior is the first step toward creating a generation that is concerned about the environment and able to adapt to future climate change. However, this program still has limitations, especially its relatively short implementation period and the lack of a long-term evaluation of changes in student behavior after the activities. Therefore, further research and service activities are needed to assess the long-term effectiveness of disaster mitigation education, including its impact on students', families', and the school community's preparedness.

4. CONCLUSION

Community service activities thru flash flood mitigation education at SD Negeri 6 Meureudu have provided additional knowledge and understanding to students about the causes, impacts, signs, and mitigation steps of flash floods. Based on observations during activities, question-and-answer sessions, and participants' feedback, students showed high enthusiasm. They were able to explain the material presented, including self-saving measures and the importance of protecting the environment to reduce disaster risk. This activity also shows that an educational-participatory approach using visual media, interactive discussions, simple simulations, and educational songs can serve as an alternative to contextual disaster learning in elementary schools. However, the activity evaluation remains descriptive, so more structured measures are needed in subsequent activities, such as the use of pre-test and post-test instruments, to obtain a more objective picture of changes in students' knowledge and preparedness. Thus, school-based flash flood mitigation education programs have the potential to support the formation of a culture of disaster awareness from an early age.

5. ACKNOWLEDGEMENTS

The Author would like to thank the Principal of Meureudu 6 Elementary School and the entire board of teachers for opening the room and providing full facilitation during the activity. Thanks are also addressed to all participating students who participated enthusiastically. This activity is part of the community service program, which serves as a concrete form of the university's contribution to the development of a sustainable, disaster-resilient community.



6. REFERENCE

- Amri, A., Bird, D. K., Ronan, K., Haynes, K., & Towers, B. (2017). Disaster Risk Reduction education in Indonesia: Challenges and recommendations for scaling up. *Natural Hazards and Earth System Sciences*, 4(17), 595–612.
- Fathani, T. F.; Karnawati, D.; Wilopo, W. (2016). An integrated methodology to develop a standard for landslide early warning systems. *Natural Hazards and Earth System Sciences*, 16(9), 2123–2135.
- Herliansyah, R., Fitria, I., Rauf, N. M., & Achmad, A. K. (2025). Modeling Disaster Risk in Indonesia: A Latent Variable Modeling Approach to Heva Assessment. *Jurnal Statistika Dan Aplikasinya*, 9(2). <https://doi.org/10.21009/jsa.09201>
- Khambali, I. (2017). *Manajemen penanggulangan bencana*. Andi Offset.
- Lassa, J. A. ., Nugraha, E. ., & Ramli, M. S. (2018). Community-Based Disaster Risk Management in Indonesia: Policies and Practices. *Progress in Disaster Science*, 2.
- Mulyasari, F. ., Shaw, R. ., & Takeuchi, Y. (2011). Disaster Awareness Training for Students in Indonesia: Lesson from Yogyakarta. *Journal of Natural Disaster Science*, 33(1), 1–13.
- Nations, U. (2015). *Transforming our world: The 2030 agenda for sustainable development*.
- Nurjanah, N. ., Sugiharto, R. ., Kuswanda, D. ., BP, S. ., & Adikoesoemo, A. (2018). *Manajemen Bencana* (Edisi Revi). Alfabeta.
- OECD. (2020). *Disaster risk financing and insurance: Key trends and challenges*.
- Pahleviannur, M. R. (2019). Edukasi sadar bencana melalui sosialisasi kebencanaan sebagai upaya peningkatan pengetahuan siswa terhadap mitigasi bencana. *Jurnal Pendidikan Ilmu Sosial*, 29(1), 49–55.
- Pramono, R. ., Yudhistira, D. ., & Widana, I. D. K. K. (2020). Pengaruh Pendidikan Mitigasi Bencana Berbasis Partisipatif Terhadap Kesiapsiagaan Siswa Sekolah Dasar. *Jurnal Pendidikan Geografi*, 20(1), 45–56.
- Rafliana, I. ., Djalante, R. ., Rudyanto, A. . J., & Amsari. (2016). Disaster risk reduction education in Indonesia: Progress and prospect. *Procedia - Social and Behavioral Sciences*, 227, 555–561.
- Shaw, R.; Shiwaku, K.; Kobayashi, H.; Kobayashi, M. (2004). Linking experience, education, perception and earthquake preparedness. *Disaster Prevention and Management*, 13(1C), 39–49.
- Suharwoto, G. (2020). *Sekolah aman bencana: Panduan implementasi*. Pusat Kurikulum dan Pembelajaran, Kementerian Pendidikan dan Kebudayaan Republik Indonesia.



UNDP. (2020). *Human development report 2020: The next frontier—Human development and the Anthropocene*.

Wisner, B.; Blaikie, P.; Cannon, T.; Davis, I. (2004). *At risk: Natural hazards, people's vulnerability and disasters* (2nd ed.). Routledge.

Yulaelawati, E. ., & Usman, S. (2008). *Mencerdasi bencana*. Grasindo.