

Workshop of Disaster Resilience School for Geography Teachers in Banjarmasin

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Abstract

Banjarmasin is highly vulnerable to floods and residential fires, highlighting the urgency of integrating disaster education into school curricula. This community service program aimed to strengthen geography teachers' capacity in promoting the concept of Disaster-Resilient Schools. The workshop applied a participatory approach, combining interactive lectures, group discussions, disaster simulations, and the development of school action plans. Geography teachers from Banjarmasin were actively involved throughout the sessions. Findings indicate significant improvement in teachers' knowledge of disaster mitigation and preparedness, as well as enhanced skills in designing disaster-resilient school programs. Participants also demonstrated strong motivation to integrate disaster-related topics into geography lessons and to foster contextual learning strategies relevant to local risks. Based on questionnaire responses and reflective discussions at the end of the workshop, the participating geography teachers gave highly positive feedback on the program's implementation. Most teachers stated that the materials delivered were relevant to classroom needs and aligned with the disaster vulnerability context in Banjarmasin.

Keywords: disaster mitigation; disaster-resilient school; geography teachers; preparedness

INTRODUCTION

Banjarmasin City, the administrative center of South Kalimantan Province, is highly vulnerable to hydrometeorological disasters, including flooding, waterlogging, and residential fires. Schools, as educational institutions, are also not immune to the negative impacts of flooding, which can disrupt the learning process, damage school facilities, and pose health risks and psychological trauma to students. Schools play a strategic role in disaster mitigation education because they can reach a large number of young people and shape mindsets and attitudes that are responsive to disaster risks (Wicaksono & Sibuea, 2022). By making schools a center for disaster mitigation education, students can be trained to recognize early signs of disaster, carry out evacuations calmly and in a structured manner, help others and work together during emergencies, and become agents of change who disseminate preparedness information at home and in their communities (Salsabilah et al., 2022).

The most effective initial step to achieve this is to support and participate in the National Disaster Management Agency (BNPB) program to establish Disaster Preparedness Schools (SSB). Disaster Preparedness Schools are school-based programs designed to build community preparedness for potential disasters in Indonesia, in general, and in South Kalimantan in

particular. This program aims to raise awareness among all elements, both individual and collective, within the school environment, so they understand and are prepared to face disasters before, during, and after they occur (Masrizal & Iqbal, 2022; Triyono et al., 2013).

The research results show that schools must provide safety instruction to their students. Disaster-safe schools can be realized through three main pillars: (1) safe school facilities, (2) disaster management in schools, and (3) disaster prevention and risk reduction education. Education in schools is not sufficient by simply including a disaster management-based curriculum (Sudrajad et al., 2023), but must also create schools that are comfortable and safe for students and teachers when disasters occur, both natural and non-natural disasters, such as residential fires (Anisah, 2019; Dwiningrum, 2017).

The workshop partners were teachers from the Geography Subject Teachers' Conference (MGMP) in Banjarmasin. Observations and discussions with teachers revealed that several schools had received disaster awareness training from the Banjarmasin Regional Disaster Management Agency (BPBD) and were actively involved in these activities. However, in terms of school preparedness, most schools still lacked adequate Disaster Management Plan (RPB) documents. Only two schools had prepared such documents, and these had not been updated in the last three years. This lack of disaster-planning documentation prevented essential programs, such as evacuation simulations, rescue route mapping, and the formation of school preparedness teams, from operating at their full potential. In emergencies, schools still relied on external assistance because they lacked a planned internal preparedness system. Based on this, the purpose of this community service activity was to increase geography teachers' capacity to design and implement the concept of disaster-resilient schools in senior high schools in Banjarmasin.

METHOD

Location and Time of Activity

The community service activities were carried out in August–September 2025. The activities were held at the Geography Education Department Laboratory, FKIP ULM. The implementation time was adjusted to the MGMP's routine activities. Table 1 presents the time allocation during the activities.

Table 1. Activity Time Allocation

Date	Activities	Information	Duration
August, 2025	Observation and FGD with MGMP	Community Service Team	
Wednesday, September 10, 2025	Disaster Risk Reduction Concept and Disaster Education Policy	- Dr. Parida Angriani, M.Pd - Dr. Eva Alviawati, M.Sc	60 minutes
	Introduction to the Disaster Resilient School Program	- M. Muhaimin, S.Pd., M.Sc	90 minutes
	Discussion on the Drafting of Disaster Resilient School Modules	- Aswin Nur Saputra, S.Pd., M.Sc - M. Muhaimin, S.Pd., M.Sc	120 minutes
	Disaster Simulation Using Virtual Reality (Oculus)	- Aswin Nur Saputra, S.Pd., M.Sc - M. Muhaimin, S.Pd., M.Sc	60 minutes
	Discussion and Evaluation	- Participant - ULM Community Service Team	30 minutes

Participant

The participants in this community service activity were members of the Geography Subject Teachers' Conference (MGMP) of Senior High Schools in Banjarmasin, totaling 25 teachers.

Activity Stages

The activities were carried out in several stages: pre-activity, implementation, and post-activity. The following table summarizes the methods used for training implementation.

Table 2. Activity Implementation Method

No.	Method	Activities
1.	Pre-activity	- Observations at schools to identify partner issues (MGMP) - Outreach to MGMP regarding the community service team plan - Developing a partner satisfaction instrument regarding the activities to be carried out - Based on the discussion results, the proposed solution is a disaster-resilient school workshop for geography teachers in Banjarmasin.
2.	Implementation of activities	- Providing workshop materials on disaster-resilient schools for geography teachers in Banjarmasin - Discussion on the development of a draft module for disaster-resilient schools - Disaster simulation using Virtual Reality (Oculus)
3.	Post activity	Evaluation of activities to improve future activities

Evaluation

The activity evaluation was conducted to assess the increase in geography teachers' capacity to design and implement the concept of disaster-resilient schools in Banjarmasin Senior High Schools. The assessment used questionnaires distributed to teachers, including one on participants' knowledge of Disaster Resilient Schools and another on teacher satisfaction with the community service activities. Indicators of achievement and teacher satisfaction were evident in the scoring categories. There were eight multiple-choice questions on knowledge, compared before and after the workshop activities, while the satisfaction questionnaire consisted of five questions. The following is presented in Table 3 regarding teacher knowledge of Disaster Resilient Schools and in Table 4 regarding teacher satisfaction with the implementation of the activities.

Table 3. Teachers' Knowledge of the Disaster Resilient School Program

No.	Measured Aspects	Indicator
1.	Understanding the basic concepts of Disaster Resilient Schools	Explaining the meaning of disaster-resilient schools.
2.	Knowledge of types of disaster threats	List the types of natural and non-natural disasters that could occur at school.
3.	Components/pillars of Disaster Resilient Schools	Mention the three main pillars of Disaster Resilient Schools.
4.	Preparedness planning	Explain the function of contingency plans in schools.
5.	Risk mapping	Explaining the function of the school risk map
6.	The role of geography teachers	Identifying the role of geography teachers in developing Disaster Resilient Schools.
7.	Simulation	Explaining the purpose of implementing disaster simulations in schools.
8.	Integration in the curriculum	Explain the purpose of integrating disaster education into geography learning.

Table 4. Teacher Satisfaction with Activities

No.	Measured Aspects
1.	Suitability of workshop materials to needs and usefulness
2.	Clarity of the material presented
3.	Effectiveness of implementation time
4.	The resource person's ability
5.	The accuracy of using the workshop method

RESULTS AND DISCUSSION

This community service program aims to improve geography teachers' capacity to design and implement disaster-resilient school concepts in senior high schools in Banjarmasin. The results of this community service activity are as follows:

Pre-Activity

The pre-activity phase began with school observations to identify partner issues. Next, outreach was conducted to high school geography teachers who were members of the Geography Subject Teachers' Conference regarding the community service team's plan to conduct a Disaster Resilient School workshop. The outreach was conducted on July 23, 2025, during the geography teachers' conference at SMAN 13 Banjarmasin. Then, on August 13, 2025, at MAN 1 Banjarmasin, the community service team met with teachers again to coordinate the implementation schedule for the community service, as shown in Figure 1 below.



Figure 1. Coordination with partners (Source: Community Service Team Documentation, 2025)

After coordination, it was agreed that the workshop would be held in accordance with the partners' regular schedule. Therefore, the workshop will be held on September 10, 2025, at the Geography Education Department, Faculty of Teacher Training and Education, Lambung Mangkurat University (ULM).

Implementation of Activities

At this stage, the geography teachers were provided with workshop materials on disaster-resilient schools, followed by discussions on drafting school-based disaster modules and conducting disaster mitigation simulations using Virtual Reality (Oculus). During the activity, the community service team held discussions with teachers about disaster-resilient schools and shared their opinions. The workshop was held on Wednesday, September 10, 2025, in accordance with the regular partner activity schedule. Table 5 presents a rundown of ULM's Community Service (PkM) activities.

Table 5. Rundown of ULM Community Service (PkM) Activities

Date	Time (WITA)	Activities	Speaker
Wednesday, September 10, 2025	09.00 – 09.15	Opening	- Chairman of Geography Subject Teachers' Conference (MGMP) - ULM Community Service Team
	09.15 – 10.15	Material 1: Disaster Risk Reduction Concept and Disaster Education Policy	- Dr. Parida Angriani, M.Pd - Dr. Eva Alviawati, M.Sc
	10.15 – 11.30	Material 2: Introduction to the Disaster Resilient School Program	- M. Muhaimin, S.Pd., M.Sc
	11.30 – 12.30	Discussion on the Drafting of Disaster Resilient School Modules	- Aswin Nur Saputra, S.Pd., M.Sc - M. Muhaimin, S.Pd., M.Sc
	12.30 – 13.30	Break	
	13.30 – 14.30	Discussion on the Drafting of Disaster Resilient School Modules	- Aswin Nur Saputra, S.Pd., M.Sc - M. Muhaimin, S.Pd., M.Sc
	14.30 – 15.30	Disaster Simulation Using Virtual Reality (Oculus)	- Aswin Nur Saputra, S.Pd., M.Sc - M. Muhaimin, S.Pd., M.Sc
	15.30 – 16.00	Evaluation and Closing	- ULM Community Service Team

The implementation of Disaster Resilient Schools is essential, because it is one form of fulfilling the right of every child in Indonesia to live a life safe from disasters while studying at school through the three pillars of disaster-safe schools, namely (1) providing school facilities that are safe from disasters, (2) developing disaster preparedness behavior, and (3) providing education on disaster prevention and risk reduction. The safe school approach can serve as a model for improving safety in the construction of residential homes, community health centers, and other public buildings. Schools are also often a place of connection and learning for the entire community. Children are the learners who receive knowledge most quickly. They not only integrate new knowledge into their daily lives but also become a source of inspiration for their families and communities regarding healthy, safe behavior, which they learn at school (BPBD Aceh, 2022; Herlina et al., 2025; Winarto, 2018).

Disaster Resilient Schools have many benefits, namely (1) reducing the risk of injury and loss of life during a disaster by having clear safety procedures and regular drills, (2) helping to build a culture of preparedness among students and the school community, so that they are more responsive and prepared to face emergencies, (3) by having a contingency plan, schools can minimize disruption to learning activities even if a disaster occurs, so that education continues, and (4) teaching students to care more about the environment and understand the importance of protecting nature so that the risk of disasters can be reduced (Angraini et al., 2019; Lestari, 2024). However, implementing Disaster Resilient Schools faces many challenges, including limited funding, limited awareness, and inadequate training. Therefore, solutions are needed to address these challenges, such as collaborating with the government, NGOs, or the private sector to obtain financial and technical support for program implementation. Training teachers and school staff in disaster management and disaster-preparedness teaching techniques can also be provided. Furthermore, campaigns on the importance of Disaster-Resilient Schools are available to the

broader community to raise awareness and participation (Arfani et al., 2023; Fauzi & Handayani, 2021; Mulyaningsih & Prajayanti, 2025).

Disaster Resilient Schools are a crucial step in protecting young people from the risks of natural disasters. With secure infrastructure, sound educational preparedness, and effective risk management, schools can become safe and conducive places for learning, even in the face of a potential disaster. Implementing this program requires commitment and collaboration from various parties, but the long-term benefits are significant: a resilient generation prepared to face disasters (Ansori & Santoso, 2019; Kemendikbud, 2020; Muhlis et al., 2024; Puspaningrum et al., 2023). The following provides images of the workshop activities. The first session covered disaster risk reduction and disaster education policy, as well as an introduction to the disaster-resilient school program. Following the presentation, a discussion focused on plans to draft a school-based disaster management module.



Figure 2. Presentation of Material by the Speaker

To better understand disaster-related material, the Community Service Team conducted a Virtual Reality-based simulation using an Oculus device (Figure 3). The use of VR in this activity aims to provide workshop participants with a realistic experience of disaster simulations, such as earthquakes, tsunamis, floods, and fires virtually. This can help them understand how to act and take shelter, as well as increase awareness, preparedness, and effective response when a real disaster occurs. (BNPB, 2024; Editya, 2022; Sukirman et al., 2019).

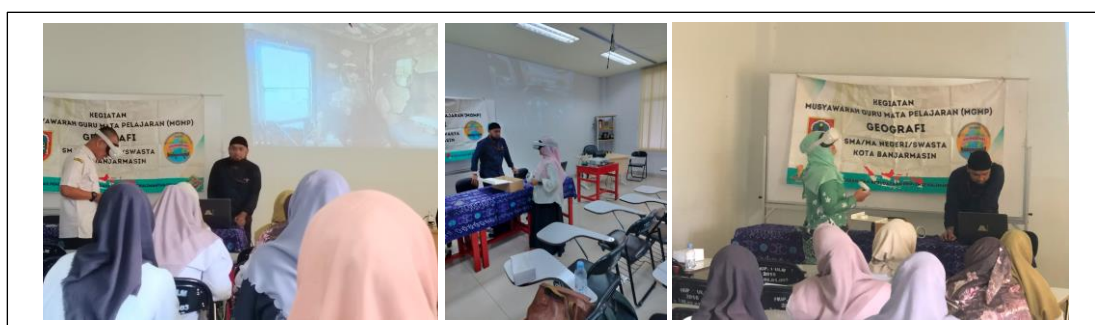


Figure 3. Disaster Simulation Using Virtual Reality

Post Activity

This activity evaluated the implemented activities. The evaluation took place during a discussion and Q&A session with teachers before the closing ceremony. The goal was to assess the success of the activities. The evaluation results were derived from a questionnaire completed by workshop participants. Table 6 below presents the results of the analysis regarding teachers' knowledge of Disaster Resilient Schools.

Table 6. Teachers' Knowledge of Disaster Resilient Schools

No.	Score	Number of Teachers	Percentage	Category
1.	70 - 80	18	72%	High
2.	50 - 60	5	20%	Medium
3.	≤ 40	2	8%	Low
		25	100%	

Based on the initial discussion (a question-and-answer session before the activity), the teachers stated that their knowledge of disaster-resilient schools was still limited, particularly regarding the three main pillars of Disaster Resilient Schools: school contingency planning and school risk mapping. However, after participating in the workshop, teachers' knowledge of the disaster-resilient school program increased, as shown in Table 6.

Based on the evaluation of the activity, most teachers found the training materials relevant and easy to understand. They were very enthusiastic about participating, especially during the disaster simulation using virtual reality devices. The results of the teacher satisfaction evaluation of the workshop activities are shown in Table 7 below.

Table 7. Evaluation of Training Activities

Statement	Maximum Score	Achievement Score	Average	Percentage
Suitability of training materials to needs and usefulness	100	100	4,00	100%
Clarity of the material presented	100	92	3,68	92%
Effectiveness of implementation time	100	88	3,52	88%
The speaker's ability	100	92	3,68	92%
The accuracy of the use of training methods	100	96	3,84	96%

Based on the teachers' responses, they greatly appreciated the activities. Participants felt their knowledge of Disaster Resilient Schools (STB) had increased and expressed their desire to form a School Disaster Preparedness Team, develop a School-Based Disaster Mitigation Guide, create a school risk map and evacuation routes for use in disaster simulations, and conduct disaster response simulations at school.

Obstacles

In general, there were no significant obstacles to implementing the community service, as the partners warmly welcomed the activity and provided full support. The implementation schedule was also appropriate, because the activity was carried out during the routine partner activity meeting. The only obstacle felt was the workshop's limited time: only one day. While preparing the draft Disaster Resilient School module, a lengthy, ongoing discussion was required. In addition, the simulation time was also very short, and the limited equipment meant that not all teachers had the opportunity to use the VR-assisted simulation tool. Therefore, a follow-up workshop with a mentoring scheme should be designed to ensure program continuity.

CONCLUSION

The workshop had a positive impact on improving teachers' conceptual understanding and practical skills in integrating disaster education into their learning. Evaluation results showed a significant increase in teachers' knowledge of disaster mitigation and preparedness, as well as their ability to develop applicable school action plans. Teachers also demonstrated high motivation to implement the workshop findings in their learning activities and the school

environment. The main advantage of this activity lies in its participatory approach, which allows teachers to play an active role by engaging in discussions, simulations, and practice to develop action plans. This not only increased understanding but also strengthened practical skills directly relevant to school needs. This activity also encouraged concrete initiatives from teachers to foster a culture of disaster awareness in the educational environment. However, this activity still has limitations, including the relatively small number of participants, which resulted in the impact not being evenly distributed across all schools in Banjarmasin. The short implementation time did not allow for an in-depth understanding of the material, particularly on post-disaster management. Therefore, further involvement of more schools across subject areas, as well as other stakeholders such as the Regional Disaster Management Agency (BPBD) and community organizations, is needed. Ongoing mentoring is also essential to ensure schools can consistently and sustainably implement the Disaster Resilient School concept.

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