

## IMPLEMENTATION OF DISASTER EDUCATION AND THE LEVEL OF PREPAREDNESS IN SENIOR HIGH SCHOOLS

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### ABSTRACT

This study aims to analyze the implementation of disaster education at SMA Muhammadiyah Zam-zam Banyumas region and determine the level of preparedness of SMA Muhammadiyah Zam-zam Banyumas region in facing disasters. The subjects of this research are students, teachers, and principals. This research uses descriptive qualitative methods with data collection techniques through observation, interviews, and documentation studies. The data obtained was then triangulated to improve the validity of the information. The results showed that disaster material had been integrated into the curriculum, especially geography and physics subjects, and extracurricular activities. However, teachers have not been able to integrate disaster material into history subjects. Furthermore, schools already have supporting facilities such as school health units, evacuation signs, and light fire extinguishers, and carry out incidental disaster simulations. This research also shows that the school still uses a manual system and has not developed a comprehensive emergency response plan document. This study recommends the need to develop emergency response plans, improve disaster warning systems, optimize the integration of disaster material in all subjects, verify supporting facilities, and routine training and simulations.

**Keywords:** Integrated Curriculum, Disaster Material, Senior High School.

### ABSTRAK

Penelitian ini bertujuan untuk menganalisis implementasi pendidikan kebencanaan di SMA Muhammadiyah Zam-zam Kabupaten Banyumas serta mengetahui tingkat kesiapsiagaan SMA Muhammadiyah Zam-zam Kabupaten Banyumas dalam menghadapi bencana. Subjek penelitian ini adalah siswa, guru, dan kepala sekolah. Penelitian ini menggunakan metode deskriptif kualitatif dengan teknik pengumpulan data melalui observasi, wawancara, dan studi dokumentasi. Data yang sudah diperoleh kemudian ditriangulasi untuk meningkatkan validitas informasi. Hasil penelitian menunjukkan bahwa materi kebencanaan telah terintegrasi dalam kurikulum, khususnya mata pelajaran geografi dan fisika, serta kegiatan ekstrakurikuler. Namun demikian, guru belum dapat mengintegrasikan materi kebencanaan dalam mata pelajaran sejarah. Lebih lanjut, sekolah telah memiliki fasilitas pendukung seperti Unit Kesehatan Sekolah (UKS), rambu evakuasi, dan Alat Pemadam Api Ringan (APAR), serta melaksanakan simulasi bencana secara insidental. Penelitian ini juga menunjukkan bahwa sekolah masih menggunakan sistem manual serta belum menyusun dokumen rencana tanggap darurat yang komprehensif. Penelitian ini

*merekomendasikan perlunya penyusunan rencana tanggap darurat, peningkatan sistem peringatan bencana, optimalisasi integrasi materi kebencanaan di semua mata pelajaran, verifikasi fasilitas pendukung, serta pelatihan dan simulasi rutin.*

**Kata kunci:** Kurikulum Terintegrasi, Materi Kebencanaan, Sekolah Menengah Atas.

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## A. INTRODUCTION

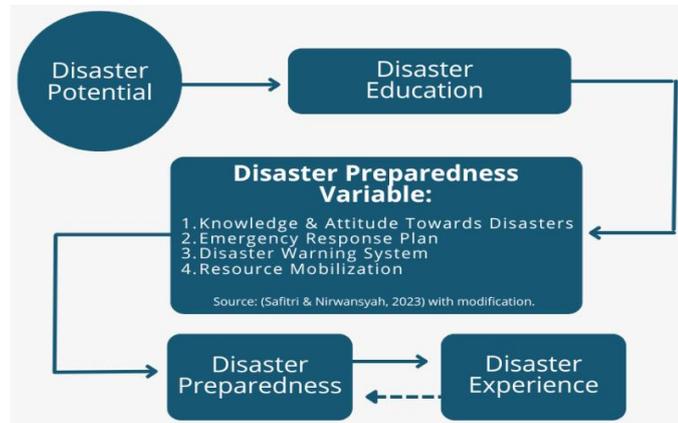
Disaster education should ideally be implemented through a collaborative, interactive and engaging learning approach, thereby creating an active, creative, and effective learning environment. (Setyowulan et al., 2022; Sunartono, 2021; Oktavianti & Ratnasari, 2018). An integrated curriculum can include an understanding of disaster science, safety practices, and risk-driving factors (Tahmidaten & Krismanto, 2019). Enhancing disaster education in schools is crucial, particularly through integration with local knowledge in the local curriculum, which has proven effective in improving students' preparedness (Nifa et al., 2017; Septikasari et al., 2022; Suryadi et al., 2024). Additionally, extracurricular activities such as scouting, young red-cross organization or *Palang Merah Remaja (PMR)* and nature clubs also serve as effective platforms to enhance students' awareness and skills in dealing with disasters (Irnawati, 2023).

Banyumas' potential for natural disasters (i.e. landslides, floods, tornadoes, and the eruption of Mount Slamet) demands increased preparedness, especially at the education level (Dinas Komunikasi dan Informatika Kabupaten Banyumas, 2024). As Cilongok sub-district has a significant number of poor people and limited access to education, collaboration with stakeholders is crucial to bridge the gap in disaster knowledge and skills to improve preparedness capacity (Restuadhi et al., 2022; Nasution & Lestari, 2025; Rofiah et al., 2024; Fansuri et al., 2023; Faisal, 2022). Training is organized to understand disaster risks, as well as take preventive and responsive actions in maintaining the environment and safety (Pranata, 2023).

The development of identity and values is a key focus at the high school level (Franky Rengkung, 2020). Students need to be prepared early on to build a resilient and sustainable personality, as adolescents are an active and creative age group with significant potential to develop awareness of these issues (Khusna, 2022; Nasution & Lestari, 2025). In this context, disaster education plays a crucial role as a means of instilling values of social responsibility and environmental stewardship in high school students, enabling them to actively participate in disaster mitigation (Almira et al., 2022). In facing disasters, teacher preparedness is measured by parameters such as policy, emergency response plans, early warning systems, and resource mobilization, while student preparedness is calculated using parameters such as knowledge, emergency response plans, early warning systems, and resource mobilization (Hermawan, 2022)

The literature showed that the potential disasters in Cilongok Sub-district are floods, landslides and fires (Novita Sari et al., 2024). Disaster education then plays a crucial role in improving community preparedness (Nasution & Lestari, 2025). Providing the right

knowledge, skills and attitude formation regarding disaster education can help improve community preparedness (Afik et al., 2021). The experience of facing disasters is also an important factor that needs to be considered in efforts to improve community preparedness (Ferianto & Hidayati, 2019), the illustrations that have been presented are contained in the following concept (Figure 1).



Source: (Hoffmann & Muttarak, 2017) with modifications

**Figure 1.** Research framework

The background of disaster conditions in the region underlies this research with the formulation of the problem (i) how does the implementation of disaster education at SMA Muhammadiyah Zam-zam? (ii) what is the level of preparedness of SMA Muhammadiyah Zam-zam in facing disasters? This research aims to (i) Know the implementation of disaster education at SMA Muhammadiyah Zam-zam (ii) Identify the level of preparedness in SMA Muhammadiyah Zam-zam against disaster. This is different from previous research which has not specifically explored this relationship in the context of case studies in schools with specific characteristics in disaster-prone areas such as Banyumas. The implementation of disaster education at the high school level is comprehensively discussed in terms of its correlation with the level of preparedness among school communities, to generate contextual recommendations for improvement at SMA Muhammadiyah Zam-Zam through appropriate organization and measures (BPBD Banyumas, 2020).

## B. RESEARCH METHOD

The method in this research uses a qualitative research approach through a case study that focuses on teachers and principals at private school in Banyumas. As applied by (Ragil et al., 2020), this allows for an in-depth analysis of the implementation of disaster education and the level of preparedness. Data was collected through systematic observation of field conditions and learning (Septiyana, 2020), semi-structured interviews with teachers and school principals for comprehensive understanding (Garfias Royo et al., 2024), documentation of visual evidence related to facilities, learning, extracurricular disaster-related activities, and student participation (Adrian, 2016). The data collection process began with the development of interview guidelines, and all data collected from observations, interviews, and documents were then triangulated to enhance the validity of the information (Sopacua & Salakay, 2020; Pujianingsih et al., 2019). (Table 1).

**Table 1.** Research Informants

No	Subject	Code	Quantity
1	Headmaster	Hm	1
2	Teachers:		
	Geography Teacher	Tg	2
	Science Teacher	Tp	1
	Non Science Teacher	Th	1
<b>Total</b>			<b>5</b>

This research adopted the (LIPI-UNESCO/ISDR, 2006) framework which was also applied in (Safitri & Nirwansyah, 2023) and (Taryana et al., 2022) to measure the level of preparedness. This research focuses on the following four main parameters and variables (Table 2).

**Table 2.** Disaster Preparedness Variables

Parameters	Variables
Knowledge & attitude towards disasters	Integration of classroom learning hygiene
	Policies applied to students
	Students' self-confidence in dealing with disasters
Emergency response plan	Emergency response plan in place at school
	Essential facilities for emergencies
	Emergency response drills and evacuation simulations
Disaster alert system	Traditional or technology-based disaster warning systems
	Availability Human resources
Resource mobilization	Availability of physical resources
	Availability of financial resources

Source: (Safitri & Nirwansyah, 2023) with modifications

The research data were analyzed descriptively to reveal the condition of the preparedness of Muhammadiyah Zam-zam High School in facing potential disasters in the Cilongok District area of Banyumas Region. Data analysis procedures in this study are data collection, data reduction, data presentation, and conclusion drawing (Septikasari & Ayriza, 2018).

### C. RESULTS AND DISCUSSION

#### Result

The implementation of disaster education at Muhammadiyah Zam-zam High School in Banyumas Region is reflected in the integration of disaster-related material into the curriculum, particularly in Geography and Physics classes, although integration into History classes remains limited. The school also utilizes various programs, such as the KOKAM extracurricular activity and the School Environment Orientation Program (MPLS), as means to introduce concepts and train disaster preparedness. The school's level of preparedness is evident from the improvement in students' knowledge and attitudes toward disasters, although it is not yet fully supported by a comprehensive emergency response plan. Supporting facilities such as UKS, APAR, and evacuation routes are available, but the disaster warning system is still manual. Resource mobilization efforts are carried out

through active student involvement, the placement of health workers, and budget allocation in the RKAS. However, the integration of disaster preparedness material into the curriculum as a whole still needs to be optimized.

### **Implementation of Disaster Education at SMA Muhammadiyah Zam-zam**

#### **Integration of Learning Materials**

The integration of disaster material into various subjects is key to increasing students' awareness and preparedness for disasters (Nuraeni, 2021). This integration can be done in various ways, including integrating material into teaching materials, core subjects, local content, extracurricular activities, self-development programs, and school policies (Rahmat et al., 2020). Disaster material has been integrated into the school curriculum, especially through geography subjects (Fitriana, 2021). The main material taught is located in grade 10, namely an in-depth discussion of disaster mitigation.

*“I also teach basic concepts of geography such as geographical location, soil types, and climate, which are then directly related to the potential for natural disasters in a region or the nearest disaster in Cilongok itself” (Tg 1)*

Students can understand how geographical factors can affect the vulnerability of an area to disasters and the mitigation measures that need to be taken through learning from geography materials (Nisa, 2024). Disaster learning is deeply integrated in geography subjects through various methods such as lectures, discussions, and case studies. Students not only receive the material passively, but are also actively involved in analyzing disaster situations and formulating solutions. Evaluation of student understanding is done through student worksheets, but there is no comprehensive evaluation system to measure the effectiveness of the overall disaster mitigation program at the school level to achieve the expected goals (Ninasafitri et al., 2024).

Physics concepts such as seismic waves, potential energy, and Newton's law are very relevant in understanding natural disasters such as earthquakes and landslides (Hardini, 2023). These concepts are associated with real disaster events such as analyzing earthquake videos, explaining the process of disaster occurrence and handling through science and technology concepts in physics and explaining why buildings collapse. Other learning methods have also been carried out in the 2022/2023 academic year through a simple practicum in class 11 MIPA 3 by making a miniature sonic seismograph, students can observe directly how seismic waves propagate (See figure 2). As explained below

*“Later, the base will vibrate which the detection turns into a signal, now the children can only measure and analyze to determine the strength and characteristics of the earthquake” (Tp)*

The linking of disaster material with the concept of science and technology (IPTEK) by physics teachers is a positive thing that can increase students' understanding of the causes and solutions of disasters (Aristawati et al., 2018). Thus, students become more interested in learning about disasters and realize the importance of science in dealing with disaster risks (Sunimbar et al., 2022).



**Figure 2.** a) Miniature Sonic Seismograph (b) Miniature earthquake sensor learning poster made by 11th grade MIPA 3 students

An analysis of the history curriculum and teaching materials shows that the integration of disaster material has not been the main focus. Although some natural disasters such as volcanic eruptions or earthquakes may be mentioned in the context of certain historical events, more in-depth discussions of the causes, impacts and mitigation efforts are still very limited. The tsunami disaster that occurred in Aceh in 2004 is one of the historical events that needs to be told to the current generation (Zahara, 2019). In accordance with the statement “The historical material taught emphasizes more on political, social, and economic aspects” (Th). Whereas the interdisciplinary approach of social science opens up opportunities to integrate various other important aspects such as the environment and disaster, which unfortunately have not received proportional attention (Febriani, 2021). The integration of disaster material requires a careful approach so as not to reduce the essence of other material in the curriculum (Kurniawan et al., 2024).

Zam-zam High School in Banyumas Region is proactively integrating disaster-related material into its curriculum, in line with global and national initiatives on disaster education, which are highly relevant (UNESCO & UNICEF, 2022). Efforts to integrate disaster-related content continue despite challenges such as the absence of mandatory disaster-related content in the national curriculum and the low adoption rate of disaster-safe educational institutions (SPAB), which remain areas of concern (Desilia et al., 2023; Amri et al., 2022). Schools are striving to utilize local wisdom approaches and various other resources, such as the use of e-books (Hidayat, 2023), to enrich learning materials and create relevant and effective learning experiences for students (Almukarramah et al., 2019). (See table 3).

### **Extracurricular Activities and School Programs**

One of the efforts made by SMA Muhammadiyah Zam-zam in integrating disaster education is through school programs, especially in the pre-orientation program or *Masa Pengenalan Lingkungan Sekolah* (MPLS) activities. MPLS presents a variety of activities, ranging from seminars, group discussions to fun games to bring new students closer to school (Rokhmah et al., 2021) (See figure 3a). This activity is an important momentum to introduce the concept of disaster preparedness and instill new students' awareness of various important aspects related to the school environment, including potential disaster risks that may occur (Apriliyani et al., 2024). In accordance with the following statement

*"At the beginning of the year, we have an activity called the orientation period, which is now called MPLS. One of the materials presented is about understanding related to the school environment, which certainly introduces children to the potential for natural disasters. We convey this at the beginning of the year in relation to the potentials that may occur here, including water shortages. Water shortage in Cilongok is prone to it, so we convey such things to students from the beginning so that they know what to do to overcome it" (Hm)*

The MPLS program not only pays attention to the potential for natural disasters but also to the potential for fire. A bitter experience has occurred in the school dormitory, where a room caught fire due to students' negligence in playing with fire (See figure 3b). According to the following information "We had a fire a long time ago in 2020" (Hm). The experience is a valuable lesson for the school to continue to raise students' awareness of potential fire risks and the importance of preventive measures (Kartika et al., 2022).



**Figure 3.** (a) MPLS (a program implemented every new school year) (b) The condition of one of the burnt rooms

The MPLS program at SMA Muhammadiyah Zam-zam not only introduces new students to the school environment physically, but also equips them with knowledge and preparedness seminars in dealing with various potential disasters. Although disaster education carried out through this school program is only general in nature, this step is an important foundation in building a disaster-aware culture in the school environment (Angraini et al., 2019).

The intracurricular program also implements disaster education at SMA Muhammadiyah Zam-zam through organized extracurricular activities. Extracurricular activities that play an important role in disaster management are the *Komando Kesiapsiagaan Angkatan Muda Muhammadiyah* (KOKAM) and *Palang Merah Remaja* (PMR). KOKAM of SMA Muhammadiyah Zam-zam collaborates closely with Muhammadiyah Disaster Management Center (MDMC) in an effort to increase students' capacity in facing and overcoming disasters. MDMC itself is an institution under PP Muhammadiyah that focuses on humanitarian activities, especially in disaster management, both during emergencies and in building community resilience (An Nur et al., 2024). KOKAM extracurricular activities are carried out regularly 2-3 times a week, which shows the high commitment of the school and students' enthusiasm for disaster issues.

*"Often the activities of the Kokam are when there is a disaster that occurs around Cilongok. There was a fire not long ago in Pernasidi, then there was a landslide on the Kumpe lake road and so on, our children from Kokam were also deployed to help with the mitigation activities" (Hm)*

The active involvement of students in KOKAM activities is an important indicator of the growth of social sensitivity and concern for disaster issues (Prihantoro et al., 2021).

KOKAM's extracurricular activities are designed to equip students with the knowledge and skills needed to understand potential disasters, perform countermeasures, and self-rescue efforts. Before going into real action, prospective KOKAM members follow a series of education and training (Diklat) (see Figure 4a). The briefing aims to increase personal capacity, understand the concept of KOKAM and foster the spirit of korsa or a sense of brotherhood among members (see Figure 4b). The organizational structure of KOKAM actively involves students in various fields. According to the statement “The task is in the field of humanitarian assistance services, disaster, and ecology” (Hm). Coordination is carried out with a holistic approach, considering various internal and external factors that affect the needs and dynamics of the organization.

a

b

**Figure 4.** KOKAM Extracurricular (a) KOKAM members of SMA Muhammadiyah Zam-zam participated in clearing the road covered by landslide in Telaga Kumpe area, Cilongok. (b) Training of KOKAM members of SMA Muhammadiyah Zam-zam

PMR also plays an important role in disaster education, namely as a forum for students to develop knowledge and skills in the fields of first aid, health, and disaster preparedness (Fitriani & Rusman, 2024). PMR extracurricular activities are carried out regularly every week, which shows the enthusiasm and commitment of students in learning and developing abilities in the field of martyrdom (See Figure 5a). PMR at SMA Muhammadiyah Zam-zam is focused on female students, although this does not diminish the essence of the disaster education they receive. Students involved in KOKAM and PMR extracurricular activities receive special training related to disaster management. According to the following statement “As for routine training, it is only for those who are in Kokam and PMR” (Hm). By providing specialized training, schools can ensure that students have the necessary capabilities to respond effectively to disasters (Pramita et al., 2022). The activeness of PMR Wira Avicena of SMA Muhammadiyah Zam-zam can be seen in its participation in the 30th Jumbara 2024 organized by PMI Banyumas Region. This activity was held in Banteran, Sumbang District, Banyumas (See Figure 5b).



**Figure 5.** PMR extracurricular (a) One-week PMR extracurricular activities (b) Participation of PMR WIRA AVICENA in Jumbara 2024

### Preparedness Level of SMA Muhammadiyah Zam-zam Knowledge and Attitude Towards Disasters

The integration of disaster material in the school curriculum, especially in geography subjects, has made a significant contribution in increasing students' awareness of disaster risk (Asep & Novio, 2024). Various types of disasters have become routine topics of discussion in learning. According to the statement "Disaster materials, especially earthquakes, tsunamis, and volcanic eruptions, are often integrated in learning" (Tg 1). Active learning methods, such as discussions and case studies, invite students to not only passively receive information, but also analyze disaster situations and formulate solutions. This increased awareness is very important because knowledge about disasters and their risks is closely related to the level of preparedness of individuals and communities (Hafida, 2020). With a good understanding, students will be better prepared to face potential disaster threats, both physically and mentally (Pranajati, 2022). In addition to the knowledge gained from formal learning, teachers also convey traditional knowledge related to disaster signs, such as what happened in the eruption of Mount Slamet.

*"Where the mountain makes a rumbling sound, the temperature around the area close to Mount Slamet rises, an example of traditional knowledge carried out in schools in the event of signs of disaster is prayer and eating together with papaya vegetable dishes (jangan gandul). This is believed to ward off the eruption of Mount Slamet with the term 'Gandulan', which is a hereditary tradition to ask for safety" (Tg 2)*

The benchmark for the success of the disaster education program at SMA Muhammadiyah Zam-zam is that it has implemented several important policies. The school in particular also routinely organizes PMR and KOKAM extracurricular activities related to disaster mitigation, such as first aid training and evacuation simulations. Students were active in asking questions and participating in discussions, showing their readiness in facing disasters (Rahmasari, 2024). Evidenced by the statement

*"Experience during the fire disaster, they were at the forefront to overcome it. Especially from students who may be academically less energetic in class, but apparently have a higher kinesthetic spirit" (Hm)*

The proactive attitude and active participation of students in the activity (see Figure 6), reflects a high level of preparedness driven by adequate knowledge and awareness of the importance of mitigation measures (Rimbawan, 2023).



Figure 6. After the fire, students work together to clean up the burned facilities

### Emergency Response Plan

The school does not yet have an emergency response plan document, even though this document is very crucial as a guide for all school members in dealing with emergency situations (Septiyana, 2020). An emergency response plan is a document of technical and

managerial actions established to prevent or better cope with emergency or critical situations, ideally including an introduction, school profile, event scenarios, resources and needs, standard procedures for implementing emergency response, plans for safe locations and evacuation routes, and flow of fixed procedures (*protap*) for implementing emergency response (Roswanto, 2022; Tyas et al., 2020; Utami, 2016). The school has provided several important facilities and infrastructure to support emergency preparedness and response (as presented in figure 7a). According to the following statement

*“The available facilities are the health facility service or UKS which is equipped with health workers, evacuation signs that are installed at several strategic points, gathering points that must have been determined to be far from tall buildings or poles and so on, Light Fire Extinguishers which are placed in locations that are considered vulnerable and in the corner of the room, and we also have an ambulance usually parked near the mosque there” (Hm)*

Regarding evacuation routes, the school has tried to meet the set standards (see Figure 7b). The evacuation route is directed towards a gathering point located on the lowest floor of the building with easy access (as presented in figure 7c). This effort shows the school's awareness of the importance of safe and efficient evacuation routes. However, verification and validation by the authorities are necessary to ensure that existing evacuation routes and assembly points truly meet safety standards (Matondang et al., 2024; Firdaus, 2022). A clear and detailed contingency plan, including evacuation routes, assembly points, and emergency communications, is essential in improving preparedness (Lestari, 2024).



**Figure 7.** Supporting facilities for emergency preparedness and handling (a) Pos Kesehatan Pesantren (b) Availability of fire extinguishers and evacuation routes (c) Gathering point boards

The school has made various efforts to improve disaster preparedness, which is an important part of implementing emergency response plans (Suharwoto, 2015), such as earthquake simulations with MDMC, fire evacuation simulations with the fire department (see Figure 8a), and participation in a reforestation program coordinated by the environmental agency as an effort to reduce disaster risk (see Figure 8b).



**Figure 8.** (a) Fire evacuation simulation with DAMKAR (b) Tree planting with Banyumas Region Environmental Agency

### Disaster Warning System

The school does not yet have an automatic disaster warning system such as a siren or an app. The existing warning system is still manual, relying on the school bell and the participation of security guards (as presented in figure 9). According to the statement “Security guards monitor the situation and ring the bell according to the condition” (Hm). An ideal early warning system involving technology can convey information quickly and clearly to all school residents regarding potential hazards and actions to be taken (Rahman et al., 2024; Budi et al., 2024; Pradika et al., 2018).



Figure 9. Use of tet bells or electric bells as disaster alarms

Based on the experience of security guards, ringing the bell during a fire in one of the rooms proved effective in alerting students, thus enabling rapid evacuation and early treatment. The speed and clarity of emergency information is crucial for effective evacuation and risk minimization (Mukarromah & Pranoto, 2024). The school recognizes the importance of improving the disaster warning system and has plans to increase its effectiveness in the future, including investment in early warning technology, regular training for security guards and school staff in the use of the system, and socialization of warning codes or signals to all students and staff (Faridy, 2024).

### Resource Mobilization

The availability of physical resources in the school, such as supporting infrastructure like evacuation sites and evacuation routes, is already in place, although it has not yet been verified by the relevant authorities. Schools continue to strive to meet the established safety and comfort standards, such as assembly points on the lowest floor, easy access, and evacuation routes that do not overlap. The mobilization of competent human resources, such as health workers, is crucial for providing first aid and medical support during disasters (Delima & Putra, 2021). According to the information that “To support the availability of competent human resources in their respective fields, we also employ health workers at poskestren” (Hm).

In terms of financial resources, the school has allocated an annual budget in the school activity and budget plan or *rencana kegiatan dan anggaran sekolah* (RKAS) to support disaster mitigation activities (Dewi, 2020). In this context, Zam-zam High School has allocated funds within the framework of disaster risk reduction. The budget was prepared during the RKAS deliberation meeting. As stated by the school principal, “The RKAS is allocated for the procurement of first aid kits, refilling fire extinguishers, and creating evacuation routes” (Hm). Although the available budget is not yet sufficient to

meet all needs in the event of a disaster, the school strives to include budget allocations for first aid kits, fire extinguishers, and the creation of evacuation routes in the school budget each year. Adequate budget allocation for the procurement of first aid kits, fire extinguishers, and the creation of evacuation routes demonstrates the school's commitment to improving disaster preparedness (Manuhua, 2019; Ruslanjari et al., 2024).

#### D. CONCLUSION

The implementation of disaster education at SMA Muhammadiyah Zam-zam Banyumas Region shows positive efforts through the integration of disaster material in the curriculum, especially in science subjects such as geography and physics that directly intersect with disaster issues. Non-science subjects such as history, the integration of disaster material still needs to be optimized as people learned in the past to face and adapt to disasters. MPLS activities also play a role in introducing the concept of disaster preparedness to new students. KOKAM and PMR extracurricular activities provide a platform for students to develop knowledge and skills in disaster management. Overall, these efforts contribute to increasing students' awareness and knowledge of disasters.

Muhammadiyah Zam-zam High School in Banyumas Region has demonstrated progress in disaster preparedness through improved student knowledge and attitudes, supported by the integration of disaster-related materials into the curriculum and extracurricular activities. However, it still faces challenges such as the absence of a comprehensive emergency response plan, a manual warning system, and suboptimal integration of disaster-related materials across all subjects. Supporting facilities and regular simulations have been conducted. Budget allocation in the RKAS continues to be pursued. Overall, Muhammadiyah Zam-zam High School continues to develop, but strategic steps are needed to address challenges and enhance overall disaster preparedness.

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