School Community Disaster Resilience: Promoting Geological Disaster Preparedness among Early Childhood Education Teachers

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Abstract: Preparedness of all components of the school community, including teachers, is essential to build a school's resilience to disasters. This study aims to: (1) examine the geological disaster preparedness level of Early Childhood Education (ECE) teachers in Cisompet District, Garut Regency, and (2) investigate the effectiveness of education on geological disaster preparedness for ECE teachers. This descriptive quantitative study involved 86 ECE teachers recruited using convenient sampling. Data collection was carried out using a pre-test and post-test questionnaire. The results revealed that the teachers' geological disaster preparedness index was 68.94 (ready), which comprised parameters of knowledge and attitudes, emergency response plans, disaster warning systems, and resource mobilization. A geological disaster preparedness education program was conducted for ECE teachers, covering types of geological disasters, potential disasters in Cisompet District, and the establishment of disaster-safe schools. Based on the increase in the percentage of correct answers between the pre-test and post-test, the geological disaster preparedness education for ECE teachers was deemed relatively effective. However, the study found that there is no disaster warning system in either schools or community areas, despite the high disaster risk index. Follow-up activities, particularly through hands-on practice such as disaster evacuation simulations, formulating school disaster contingency plans, and developing learning innovations with disaster content for young children, are still needed.

INTRODUCTION

Natural disasters that occur repeatedly or over a prolonged period significantly disrupt people's lives and ultimately alter the social structure and response in the affected areas (Puja Ilham, 2023; Tanaka, 2012). This situation necessitates adaptation and mitigation initiatives in response to disasters. One such initiative is school-based education on disaster risk reduction (DRR) (Cabatay & Gonzales, 2024; Dailidienë et al., 2021). Schools are particularly vulnerable to disasters compared to other public institutions, facing disruptions in teaching and learning activities, and, most dangerously, loss of life (Consortium for Disaster Éducation, 2011). However, DRR and climate change issues are not consistently integrated into school...
curricula, posing a challenge for the implementation of disaster education in various countries (Weichselgartner & Pigeon, 2015; Shiwaku & Shaw, 2016).

Multiple stakeholders have employed various approaches to promote the establishment of Disaster Safe Education Units from primary to secondary education. Despite the significance of disaster education and training in the "pre-disaster" phase, Indonesia's National Education Law does not include disaster education and training in its framework (Maulidiya et al., 2021). The aim of DRR education is to foster a culture of safety and disaster preparedness in schools from an early age. Schools are expected to become institutions capable of changing people's attitudes and behaviors towards disasters, thereby enhancing community disaster resilience (Nurdin et al., 2017; Sudaryono, 2019).

According to the Disaster Safe Education Road Map 2020-2024, the main challenges to implementing safe school programs include the program not being considered a priority, the school community's lack of understanding of local disaster conditions, the absence of binding regulations, the non-establishment of joint secretariats for safe schools in all provinces, low community participation, and a lack of human resources (Badan Nasional Penanggulangan Bencana, 2023). Although Ministerial Regulation of Education No. 33/2019 concerning the implementation of safe school programs has been issued, municipalities are not obligated to implement them in the absence of corresponding local regulations. The government has established a legal basis with the Regulation of the Head of National Disaster Management Agency No. 4/2012, providing guidelines for implementing Disaster-Safe Schools. However, the responsibility for implementation remains with local governments. Decentralization allows for the adaptation of the DRR curriculum to local content (Selby et al., 2012). Consequently, the government must play a significant role in supporting the implementation of DRR education, primarily through policy sector strengthening (Mutasa, 2016; Pandey et al., 2017; Pahleviannur, 2019).

According to Regulation of The Regent of Garut No. 72/2021 regarding the 2022 Regional Board of Disaster Work Plan, Garut Regency has a high disaster risk. This is corroborated by the 2022 Disaster Risk Index data, which indicates that Garut Regency ranks fourth in West Java Province with a score of 164.91 (high-risk category) (Adi et al., 2022). Garut Regency frequently experiences natural disasters such as landslides, flash floods, earthquakes, tsunamis in coastal areas, eruptions of Mount Papandayan and Mount Guntur, droughts, and other non-natural disasters (Peraturan Bupati Garut, 2021). Cisompet, one of the districts in Garut Regency, is particularly known for its high potential for ground motion (Bakri et al., 2019). Geological disasters are defined as natural events or occurrences related to earthly cycles or caused by geological factors (Wahyu & Rushendra, 2022).

Considering the high risk of disasters, the education and strengthening of school community preparedness for geological disasters must be a priority, especially at the equivalent Early Childhood Education (ECE) level (kindergartens, playgroups, and similar ECE units) in Cisompet District. Teachers are a vital component of the educational community, primarily responsible for guiding students in developing knowledge, independence, and other skills (Uibu et al., 2011; Brown, 2008). Given
young children's physical and mental development, the teacher's role becomes even more crucial. Young children belong to the disaster-vulnerable group regarding their physical, psychological, and cognitive well-being. Furthermore, children represent the largest segment of the population in developing countries and are often the main victims of disasters (Martin, 2010; Muzenda-Mudavanhu, 2016). Consequently, ECE teachers must ensure the safety of the tools and media used in the learning process (Bean-Mellinger, 2021; Measom, 2018). ECE teachers are responsible for ensuring child safety while creating a meaningful school environment. Efforts to prepare teachers to be disaster-aware and develop school community resilience are fundamental, particularly in ECE institutions.

To plan for strengthening ECE teachers' geological disaster preparedness, a questionnaire was administered to determine the teachers' geological disaster preparedness index. The results were used to promote geological disaster preparedness among teachers. This study aims to determine the level of preparedness of ECE teachers in Cisompet District, Garut Regency, for geological disasters. Additionally, as a contribution to efforts to build community resilience in ECE institutions, the researchers collaborated with the Pusat Kegiatan Gugus (PKG) of Cisompet District to conduct webinar-based geological disaster preparedness education for ECE teachers. Concurrently, this research assessed the efficacy of these activities.

Overall, this research is expected to contribute to DRR initiatives as a manifestation of the Sendai Framework for DRR 2015-2030, focusing on understanding disaster risk. It also provides access to open-source data (documentation, methodology, analysis, procedures, and frameworks) for integrated disaster risk management that supports sustainable development. The long-term benefits of this research involve developing a safe learning environment, implementing effective DRR procedures, and strengthening school resilience.

**METHOD**

The research employed a quantitative approach with descriptive methods. The study included 86 Early Childhood Education (ECE) teachers (84 women and 2 men) from kindergartens, playgroups, and similar ECE units in Cisompet District, Garut Regency. Participants were recruited using a convenience sampling technique. In May 2023, a sequence of activities was conducted as part of the study. The initial phase involved surveying to determine the teachers' level of geological disaster preparedness. The second phase involved implementing pretests and posttests for teachers on geological disaster preparedness education activities.

In the first phase, the researcher sent an invitation to the Pusat Kegiatan Gugus (PKG) administrator to participate in a survey on the level of geological disaster preparedness and educational activities on geological disaster preparedness for ECE teachers via WhatsApp (with a Google Form link to fill in the survey). Pusat Kegiatan Gugus, or the Cluster Activity Center, is the coordination forum between Early Childhood Education Institutions (kindergartens, playgroups, similar ECE units, and Al-Quran Learning Centers) that provides coaching activities for 3-8 ECE Clusters in the District's area (Dinas Pendidikan Kabupaten Banjar, 2022). ThePKG administrator relayed the information to ECE teachers in Cisompet District. Teachers willing to participate in the study were then directed to a Google Form to complete a questionnaire. In the second phase, teachers participated in geological disaster preparedness education activities through a webinar organized by PKG Cisompet District and researchers. Participants completed the pretest before the educational webinar and
the posttest after the event. Both the pretest and posttest were completed online via Google Forms.

The questionnaire, consisting of 22 questions on a Guttman scale (with "yes" and "no" answers), was used to assess teachers' geological disaster preparedness. The researchers designed the questionnaire based on four of the five parameters of school community preparedness determined by The Indonesian Institute of Sciences (LIPI): (1) Knowledge and Attitude (KA), (2) Emergency Response Plan (EP), (3) Early Warning System (WS), and (4) Resource Mobilization Capacity (RMC). The indicators for each parameter are displayed alongside the graphs of the survey results (Figures 1 to 4). Below is the formula for the school preparedness index for the teacher component (S2), formulated by LIPI-UNESCO, used for data analysis:

\[
\text{Teacher preparedness index (S2)} = 0.71 \times \text{KA index} + 0.17 \times \text{EP index} + 0.05 \times \text{WS index} + 0.07 \times \text{RMC index}
\]

Table 1 presents the various categories of the school disaster preparedness index, which serve as a crucial reference for interpreting the outcomes of the data analysis. These categories provide a structured framework to evaluate and understand the level of preparedness in schools, allowing for a comprehensive assessment of the data collected.

<table>
<thead>
<tr>
<th>No</th>
<th>Index Score (%)</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>80 - 100</td>
<td>Very Ready</td>
</tr>
<tr>
<td>2</td>
<td>65 - 79</td>
<td>Ready</td>
</tr>
<tr>
<td>3</td>
<td>55 - 64</td>
<td>Almost Ready</td>
</tr>
<tr>
<td>4</td>
<td>40 - 54</td>
<td>Less Ready</td>
</tr>
<tr>
<td>5</td>
<td>&gt; 40</td>
<td>Not Ready</td>
</tr>
</tbody>
</table>
The pretest and posttest consisted of five open-ended questions that assessed participants' knowledge on the following topics: (1) potential geological disaster risks in Cisompet District, (2) the pillars of a comprehensive Disaster Safe Education Unit (SPAB-Satuan Pendidikan Aman Bencana), (3) school emergency response procedures, (4) school disaster warning systems, and (5) supporting resources for school disaster management. The answers provided by each participant were categorized based on specific themes or keywords. The analysis was then conducted by calculating the proportion of respondents who answered according to each theme or keyword. The research phases are displayed in Figure 1.

RESULT AND DISCUSSION

Geological Disaster Preparedness Index for ECE Teachers

The survey on the Knowledge and Attitude parameter revealed a response percentage of 74.86%. The indicators consisted of nine questions about respondents' knowledge and attitudes toward geological disasters, including information sources, characteristics, definitions, potential disasters, and responses. Among the seven types of geological disasters (landslide, volcanic eruption, earthquake, tsunami, sinkhole, ground motion, and rockfall), respondents were most knowledgeable about earthquakes (91.86%), followed by tsunamis (88.37%) and landslides (84.88%). However, only 34.88% knew about sinkholes. Regarding the seven sources of disaster information (print media, Internet, electronic media, government agencies, NGOs, friends/family, and advertisements), participants received the most information from Internet media (95.35%) and the least from NGOs (60.47%). Figure 2 displays the comprehensive knowledge and attitude index graphs.

![Graph of Knowledge and Attitude Parameter Index (KA).](image)

The Emergency Response Plan (EP) index parameter comprises five indicators, averaging 66.28%. Schools with first aid kits and emergency supplies (76.74%) scored higher compared to those with the lowest scores in school policies (45.35%). According to the teachers, their schools do not yet have comprehensive policies on collective agreements, standard operating procedures, contingency plans, fixed procedures, or plans for continuing education in...
emergency conditions. Additionally, they have never identified potentially hazardous locations in their schools or made plans to address them. As a precautionary measure, schools are often equipped with first aid kits to assist students or staff who may be injured during school activities. The participants' EP index is displayed in Figure 3.

**Indicators**:  
A. Know emergency procedures  
B. The school has a procedure for emergencies  
C. The school has first-aid supplies  
D. Prepare young children for potential disaster emergencies  
E. Know the school’s emergency evacuation route

![Figure 3. Graph of Emergency Response Plan (EP).](image)

The average parameter index for the Disaster Warning System (WS) is 21.32%, the lowest among the four assessed parameters. The majority of respondents were unfamiliar with this term. Despite living in a disaster-prone area, the Cisompet district does not yet have a comprehensive early warning system at either the local (school) or community level.

**Indicators**:  
A. There is a local emergency warning system in the area where you live  
B. The school has geological emergency alert resources  
C. The school is equipped with a disaster warning system

![Figure 4. Disaster Warning System (WS) Graph.](image)

The resource mobilization parameter index, which includes five indicators, concluded with an average of 49.30%. Most respondents (90.70%) agreed that schools must conduct specific socialization on geological disaster management at the ECE level, involving the school, parents, and the neighborhood to enhance community disaster preparedness. The results also indicate that respondents are generally not concerned with resource mobilization.
Indicators*:
A. Have participated in a school geological disaster evacuation simulation
B. ECE-level socialization on disaster management is necessary for the school community
C. The school provides an emergency disaster budget
D. Have received training in disaster preparedness
E. Know who to contact in the case of a school emergency

Based on the analysis results, the ECE teachers' preparedness index for the four parameters is 68.94%, which falls within the "ready" category. To further strengthen the geological disaster preparedness of teachers and as a follow-up to the survey, researchers and PKG Cisompet conducted a webinar for ECE teachers. It is anticipated that the implementation of this education will eventually contribute to increased disaster resilience within the school community.

Effectiveness of Geological Disaster Preparedness Education for ECE Teachers

This section refers to geological disaster preparedness education activities for teachers, which were held as webinars covering two major topics: "Sharing Knowledge About Geological Disasters" and "Education on Geological Disaster Preparedness for Early Childhood Education."

Audiovisual media was used to facilitate participants' understanding of the content and to make the presentation more engaging. Participants were also given the opportunity to ask questions and discuss school-based DRR efforts. The first topic emphasized the types and causes of geological disasters. Additionally, participants were provided with a topographical map of the Cisompet Sub-District to help them comprehend the relationship between both man-made and natural characteristics and disaster vulnerability in the area. This presentation aimed to help participants understand the characteristics of their living area, classified as vulnerable to natural processes that have the potential to cause disasters.

The second topic focused on disaster response planning in the education sector, referring to the three comprehensive pillars of safe schools: Pillar 1 - Safe School Facilities, Pillar 2 - School Disaster Management, and Pillar 3 - Disaster Risk Reduction Education (Suharwoto et al., 2015). To introduce young children to different types of geological disasters, various games and relevant science experiments were incorporated into the activities. Figure 6 depicts representative screenshots from the educational materials.
During the activity, webinar participants were given a pretest (before the speaker's presentation) and a posttest (after the presentation). The objective was to assess the effectiveness of the activities. The pretest and posttest results indicated an increase in participants' comprehension of the possible risks of geological disasters and efforts to create disaster-safe schools. Therefore, the educational activities conducted were found to be quite effective. Some evidence from the participants' responses showed that they paid close attention to the speaker. The detailed comparison of the participants' pretest and posttest responses is presented in Tables 2 and 3.

Table 2. Participants' Pretest Response to Geological Disaster Preparedness Education.

<table>
<thead>
<tr>
<th>Questions</th>
<th>Pretest Response</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential risk of geological disaster in the participant's live area</td>
<td>Floods, landslides, earthquakes, tsunamis, moving ground</td>
<td>87.93</td>
</tr>
<tr>
<td></td>
<td>Erosion of buildings caused by rivers'</td>
<td>3.45</td>
</tr>
<tr>
<td></td>
<td>Endogenous processes</td>
<td>3.45</td>
</tr>
<tr>
<td></td>
<td>There are none</td>
<td>5.17</td>
</tr>
<tr>
<td>The pillars of comprehensive school safety</td>
<td>Safe school facilities, school disaster management, prevention, and DRR education pillars of safety and security</td>
<td>58.62</td>
</tr>
<tr>
<td></td>
<td>Counseling and/or socialization</td>
<td>12.07</td>
</tr>
<tr>
<td></td>
<td>Pillars of preparedness for disasters</td>
<td>5.17</td>
</tr>
<tr>
<td>School emergency response procedures</td>
<td>Do not panic; find shelter safely, evacuate, sound the alarm, comfort the students</td>
<td>82.83</td>
</tr>
<tr>
<td></td>
<td>Contact the authorities</td>
<td>7.07</td>
</tr>
<tr>
<td></td>
<td>Socialization</td>
<td>3.03</td>
</tr>
<tr>
<td></td>
<td>Not knowing</td>
<td>7.07</td>
</tr>
<tr>
<td>School-based emergency warning system</td>
<td>Sounding alerts, warning lights, and media appeals are all utilized in emergencies</td>
<td>70.71</td>
</tr>
<tr>
<td></td>
<td>First-aid supplies and evacuation route</td>
<td>6.06</td>
</tr>
<tr>
<td></td>
<td>Socialization</td>
<td>14.14</td>
</tr>
<tr>
<td></td>
<td>Not knowing</td>
<td>9.09</td>
</tr>
</tbody>
</table>
As an outcome of the discussion during the webinar activity, teachers provided additional information, such as methods and themes for disseminating disaster-related materials to young children and topic suggestions for future activities. The themes "the universe", "natural phenomena", "my environment", and "disaster mitigation" were proposed by teachers for applied disaster risk reduction education. Storytelling techniques using picture books or posters, science experiments, role-playing (which can be combined with disaster evacuation simulation activities), and field trips (visiting institutions such as the Fire Department or Regional Agency for Disaster Management/BPBD, visiting disaster-affected locations, or directly observing the landscape in their area) can be used to teach young children about geological disasters.

Positive reactions were given to the activities conducted as efforts to raise awareness, improve preparedness, and reduce the school's risk of disaster-related losses. Additionally, these activities contributed to increasing knowledge, mainly about geological disasters. The teachers comprehended the information presented by the speakers. As a follow-up, they proposed topics for further activities, including planning the creation of disaster SOPs at schools, hands-on practice of evacuation simulations (combined with motions and songs), and developing methods (innovations) for DRR implementation in learning (including the creation of teaching aids).

**Discussion**

The survey results for the geological disaster preparedness index for ECE teachers in Cisompet District indicated that the level of preparedness is in the "ready" category. There is a possibility that participants might have browsed the questionnaire beforehand.
and searched the Internet for answers. In line with the survey results, most respondents obtained disaster-related information from the Internet. According to interviews with the PKG Cisompet District administrator, there had never been a similar outreach activity on disaster preparedness at the ECE level, leading to teachers appreciating this initiative. They recognized that Cisompet District is in a geologically hazardous location but noted that no specific actions or initiatives have been taken to reduce disaster risk. Teachers considered disaster preparedness significant due to its inclusion in the school accreditation component; however, they lack expertise in formulating contingency documents.

There are five phases involved in disaster risk management: mitigation, prevention, preparedness, response, and recovery. Preparedness can be interpreted as necessary actions if mitigation cannot prevent a disaster. These activities may include enhancing operational response (providing logistics, conducting drills such as evacuation simulations, and mobilizing personnel) and preparing efficiently to safeguard life or property in the event of an emergency (Federal Emergency Management Agency, 2002, 2016).

Schools are part of the built environment and require a safe learning environment for both students and teachers (UNESCO, 2023). Teachers are primarily responsible for assisting students and other staff in emergencies. In a pedagogical context, it is the teacher's responsibility to inform those around them about disasters. Sometimes, teachers provide emotional support to students and parents in the role of counselors.

UNESCO promotes integrating disaster risk reduction (DRR) education into school curricula globally. The inadequacy of disaster education is exacerbated by the vulnerable condition of school buildings, putting students and teachers at greater risk of harm (UNESCO, 2023). Government intervention is required to integrate DRR into school curricula. At school, students and teachers share responsibility through the learning process, adjusted to each school's local culture and characteristics (Mardiah et al., 2017).

The Indonesian government has published various literature and guidelines that schools can use to create disaster-safe institutions, such as technical guidelines for SPAB implementation, SPAB pillar modules, school-based disaster preparedness frameworks, and guidelines for disaster education in ECE units (The Ministry of Education & Culture, 2016; Suwarwoto et al., 2015; Consortium for Disaster Education, 2011; Hasbi et al., 2019). The primary issue is the regulation. As long as the local government does not have subsidiary legislation to Permendikbud No. 33/2009 or does not form a SPAB Joint Secretariat, it is difficult for schools to obtain this information. Likewise, the ECE teachers in Cisompet District are unaware of the implementation of the SPAB program or similar initiatives. In this instance, Garut Regency does not yet have local government regulations for disaster-safe education.

The Pentahelix Strategy (synergy and collaboration between government, private sector, academia, community, and media) is one of the solutions for promoting ecosystem-based disaster risk education in schools. Schools are considered ecological systems where natural and social systems interact and transfer knowledge. The process involves the three pillars of a comprehensive disaster-safe school (Rahma et al., 2024). As part of the cross-sectoral manifestation in the Pentahelix strategy, researchers and
PKG Cisompet District have conducted geological disaster preparedness education activities for ECE teachers.

Pillar 1 can be strengthened by developing the Visual Inspection for Defining Safety Upgrading Strategies (VISUS) methodology, which identifies the actions required to enhance school resilience from a multi-hazard perspective. To support investment and decision-making, the analysis results will calculate and display priorities for increasing school safety requirements in a particular area. It is crucial to have school structures resistant to disasters to ensure that all school communities are protected from disaster risks and that learning activities remain undisturbed.

Pillar 2, incorporated into school disaster management, is required to map schools’ vulnerability and capacity. All school components are responsible for identifying potential threats to ensure school safety. Preparedness is the key to protecting the school community from disasters.

As for Pillar 3, it precisely represents the teacher's role in establishing a safe school environment. Educating is the process of disseminating the knowledge required to safeguard the school community from disaster-related losses. DRR education equips communities with the skills necessary to mitigate the effects of disasters and disruptions to the educational process (UNESCO, 2023).

At the ECE level, the teacher plays an essential role in creating a safe learning environment and teaching disaster education. This is especially important because young children are particularly vulnerable during emergencies, as they rely on adults for their safety and protection. They may lack the necessary physical, emotional, and cognitive abilities to cope with emergency situations (Torani et al., 2019). Therefore, teachers must raise awareness and provide basic information on disaster preparedness, prevention, and management (Das & Malaviya, 2014). This will help embed disaster risk reduction in children's minds and equip them with psychosocial preparedness (Elangovan & Kasi, 2014).

Considering teachers’ role in disaster education, it is important to periodically assess their knowledge and proficiency (Chondekar, 2019). One way to do this is by measuring the teacher's disaster preparedness index. However, data regarding the preparedness index of ECE teachers in Indonesia, specifically in Cisompet Garut, is not yet available. This study provides valuable information regarding geological disaster preparedness among ECE teachers in Cisompet Garut. The study reveals that the teachers are in the "ready" category, but more attention is needed to improve the parameters of the Disaster Warning System (WS). The teachers reported that there is no comprehensive early warning system in place for either the school or the community environment.

This study also highlights the importance of providing geological disaster preparedness education to teachers, particularly in Cisompet, which they acknowledge as necessary but rarely receive. The findings indicate that the educational activity increased teachers' knowledge about the potential risks of geological disasters in Cisompet, as well as the pillars of comprehensive school safety, school emergency response procedures, school-based emergency warning systems, and supporting resources for school disaster management. However, teachers expressed that while they possess a certain level of knowledge, they still require training to help them apply it practically. For instance, they are aware that schools need to have standard operating procedures in place for
emergencies, but they lack the knowledge of how to create and communicate those procedures effectively to students and staff.

Therefore, it is recommended that disaster education activities be designed as workshops that provide teachers with hands-on practice and skills related to disaster risk reduction and/or management, such as conducting disaster evacuation simulations, formulating school disaster contingency plans, and developing learning innovations with disaster content for young children.

According to a systematic review and thematic analysis of disaster education for young children by Güvelioğlu & Tantekin Erden (2023), further studies on the long-term effects of disaster education activities or programs are required. The study called for the participation of many stakeholders, including teachers, parents, caregivers, administrators, and school staff, in disaster education programs, disaster prevention training, and regular drills. Another study by Desilia et al. (2023) also emphasizes the importance of teachers in disaster education, specifically the necessity for innovative strategies to improve preparedness and promote disaster education among students. Their study highlights the importance of comprehensive teacher training and empowerment in mitigating disaster risks and increasing school community resilience.

Our study strives to fill this research gap. This research is part of ECE teachers' direct involvement in educational activities on geological disasters, and it is hoped that it will raise teacher awareness and confidence in communicating disaster information to their students. Aside from that, we also propose some future actions as a follow-up to this research. This contributes to the DRR program's long-term impact on the school community.

CONCLUSION

The research findings reveal that Early Childhood Education (ECE) teachers in the Cisompet District of Garut Regency exhibit a level of geological disaster preparedness categorized as "ready." While they demonstrate commendable knowledge and adherence to emergency response plans, opportunities for enhancement exist particularly in the domains of disaster warning systems and readiness in resource mobilization. Furthermore, the educational interventions targeting ECE teachers in the Cisompet District have proven relatively effective in augmenting their understanding of potential geological hazards, the constituent elements of a comprehensive Disaster Safe Education Unit, emergency response protocols, disaster warning mechanisms, and available resources for school disaster management. For future inquiries, it is recommended to employ the school community survey questionnaire developed by The Indonesian Institute of Sciences (LIPI) to assess the disaster preparedness level within the ECE unit community. Additionally, integrating educational initiatives focused on bolstering disaster knowledge and refining preparedness skills through practical exercises, such as disaster evacuation simulations, formulation of school disaster contingency plans, and retrofitting of school infrastructure for safety purposes, is advised.

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