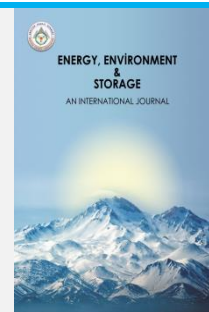




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## Training on Creating Learning Media to Improve the Ability to Create Learning Media Kamishibai for Environmental and Disaster Education

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### ABSTRACT

Indonesia is a country that is prone to disasters caused by environmental damage; therefore, community preparedness in facing disasters must start early. Bogor Regency is a city with very high rainfall; flash floods and landslides often occur in this area. The geographical contours of the Bogor district area are hilly and mountainous, making landslides frequent. Environmental education and disaster mitigation are efforts to provide knowledge to the broader community. With environmental education and disaster mitigation, it is necessary to disseminate learning methods that can be taught to students at school. In this training, attended by 17 teachers at SMP Negeri 2 Caringin, Bogor Regency, the participants took part in training on creating learning media to teach environmental impacts and disaster mitigation. This teaching media was adopted from learning media in Japan, namely Kamishibai. The participants were given socialization about Kamishibai, how to create scenarios, take pictures and present them. Data was collected through questionnaires and narratives created by participants. From the data collection results, participants felt they had new knowledge and abilities in creating learning media for environmental education and disaster mitigation. Participants also thought that Kamishibai media was exciting and made teaching easier for teachers. Kamishibai's scenario narrative was calculated using cloud words, counting the words that emerged from the narrative compiled by the training participants; landslides, floods, earthquakes, and rubbish were the words that dominated the other words.

Keywords: Environmental Education, Disaster education, Disaster mitigation learning media, Mitigation training

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### INTRODUCTION

Caringin District is one of 40 (forty) Districts in Bogor Regency with an area of 5,729.9 Ha, located at 556 above sea level, humidity with an average temperature of 27–30°C and rainfall of 3,183 mm/year. The hydrometeorological disaster triggered landslides, floods and fallen trees in Bogor district, West Java, for two days, 11-12 October 2022. This natural disaster caused by high-intensity rainfall also caused fatalities and injuries. Meanwhile, the Meteorology, Climatology and Geophysics Agency (BMKG) noted that the West Java region will still be hit by extreme weather and potential hydrometeorological disasters such as strong winds, heavy rain, floods, flash floods and landslides until the following week (27

December 2023 - 3 January 2024). During 2010 - 2020 in Indonesia, hydrometeorological disasters frequently occurred, especially landslides due to deforested forests, tornadoes, and floods. As a result of climate change, hydrometeorological disasters can occur. Caringin District is one of the Bogor Regency areas at risk of hydrometeorological disasters.

Environmental problems are related to deforestation, causing further environmental damage and triggering natural disasters. How must society protect the environment to reduce the possibility of natural disasters, landslides, and floods?

Early disaster prevention is necessary to overcome the increase in disaster victims in the Bogor Regency area. Disaster literacy through environmental and disaster education is one effort that can be made. This is also supported by the regional government, which states that there is a need to strengthen disaster knowledge or literacy among the community, especially those who live in disaster-prone areas, for example, people who live around the slopes of the highlands.

Efforts to reduce disaster risk require good disaster management and an orderly system. Education should be integrated with the education sector and school subjects. Many disaster victims are children under the age of 15 years and under. Many are victims of disasters, and many experience stress and trauma. This negative impact can be reduced by providing knowledge about natural disasters and training students in dealing with natural disasters.

The school community, including students, teachers, parents, and communities around disaster-prone areas, need to receive environmental education and natural disaster mitigation from an early age to reduce the impacts that occur after natural disasters. One strategy can be implemented through conservation education to increase knowledge, behavior, and attitude in environmental education and community skills related to surrounding natural resources' positive and negative impacts. This is also supported by previous researchers who said that knowledge about natural disasters and the impacts they cause, both positive and negative, needs to be understood by the public. This research aims to produce environmental education and disaster mitigation media that can be used as supporting material for teaching disaster mitigation.



**Figure 1.** Map Indonesia and Bogor

Education about awareness of natural disasters has been carried out since children are in daycare at school up to university level. At every level of education, they are periodically given training in dealing with disasters and disaster evacuation. This is one of the actions taken because Japan is a disaster-prone country; Japan has a long record of disasters. In the disaster SOP, the government requires that every building erected must be earthquake-resistant because Japan is a country that is often hit by earthquakes. The learning method regarding preventing natural disasters in Japan has been tested. Therefore, teaching and introduction methods for disaster mitigation were tested in Bogor.

## 2. MATERIALS AND METHODS

### 2.1. Design of Research

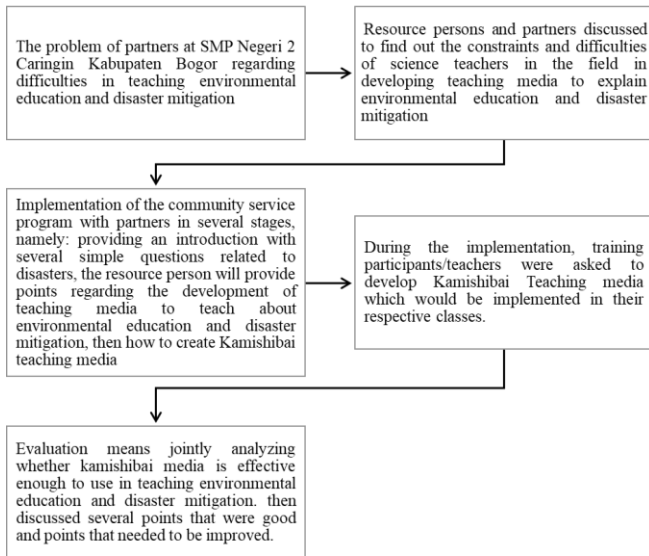
This research involved 20 teachers at SMP Negeri 2 Caringin, Bogor Regency. Give consent to participate in training and testing of environmental education and disaster mitigation learning media using methods commonly used in schools in Japan. The design is longitudinal, including pre-and post-training assessments and testing. This training plan and learning trials are teacher capability development carried out as part of a disaster education research program using kamishibai.

### 2.2. Overview of the Research Program

The training and trial program will be implemented in December 2023 at SMP Negeri 2 Caringin Bogor. Training participants were given training about Kamishibai and how to use it. Then, examples of cards with natural disaster themes are given earthquakes and floods caused by heavy rain. After debriefing, participants are trained to create scenarios about the storyline that the participants will create. Then, sketch the story. When creating a story, it consists of 5 cards, consisting of the first page in the form of a cover, cause, effect, and problem-solving.

### 2.3. Evaluation of the Research Programs

The participants carry out activities to create media according to the directions and flow determined to produce a communicative Kamishibai. Even though the participants were initially unsure, they could take good pictures. However, Kamishibai is a medium that does not require good images but conveys the message in a more prioritized way. Teacher collaboration as a group creates maximum Kamishibai love. The presentation was well done and focused. Below is the training research scheme flow for making disaster mitigation learning media, Kamishibai.



Figures 2. Research flow of Kamishibai media creation

2.4. Statistical Analysis research

In this training, participants were given a questionnaire regarding the benefits of taking part in training to create disaster mitigation learning media in the form of kamishibai, after which data was also taken based on stories created by participants in groups, then processed using a word cloud to count how many words appeared.

3. RESULT

3.1 Flow of training activities

The activity, which 17 participants attended, was carried out at SMP Negeri 2 Caringin and went smoothly; all participants followed directions and produced four sets of Kamishibai with the theme of disaster mitigation, ready to be tested on each student. Below, in Figure 3, is a photo of the activities of the training participants according to the flow of making Kamishibai.



Figures 3. Photos of training participants' activities





from floods and landslides. Bare forests cause hot air and flash floods. After several years, the forest became fertile again, filled with shady trees. The air becomes clean, and there are no more floods and landslides.



### 3.4.2 Group 2, Title: Waste Causes Floods

Kamishibai's narrative entitled Garbage Causes Floods.

One day, on a sunny morning, a boy named Udin was walking around a river full of rubbish. Then Udin thought, why does this river have so much rubbish? Where does this rubbish come from? Udin was sad to see the river flow blocked because it was full of rubbish. Udin saw Ogal throwing rubbish into the river. Udin saw Ogal throwing rubbish into the river because it was full of rubbish. Udin saw Ogal throwing rubbish into the river. The waste is of various types, including organic and plastic waste. Udin was very surprised to see the rubbish; it turned out that several residents were also throwing rubbish in the river. Over time, the river becomes dirty with rubbish and the river's flow is blocked because the rubbish piles up. After that, over time, the river became polluted and smelly. This polluted river is very damaging to the environment around the river. Finally, to overcome this problem, the village head created a rubbish dump near the village so that people would not throw rubbish into the river because it would cause flooding, damaging the environment. People are apprehensive about the floods that will come when the rain comes. Therefore, people clean up rubbish in rivers, preventing flooding. Once clean, everyone will be happy with a clean river without trash and protected from flooding.



Figure 4. The results of the drawing work of group 1 training participants





Figure. 5 The results of the drawing work of group 2 training participants

3.4.3 Group 3, Title: Rescue Bell

Village occupation has occupied the volcanic slopes in peace for decades. This is where Deni grew up under the care of his grandparents. Several years later, when he was growing up, the volcano began to emit smoke. This went on continuously for months. Until one day, there was much smoke followed by a thunderous roar. Deni went straight to the kamling post and hit the rescue bell. Hearing clapping, people came out of breath and asked, "What's wrong?" The mountain will erupt, said Deni; "I know where a safe place is, said Deni.

While the residents were getting ready, the village head called the disaster management agency, after which the village head looked for vehicles to evacuate the residents, especially children and the elderly. Thanks to Deni's alertness, all the residents were successfully evacuated and saved.

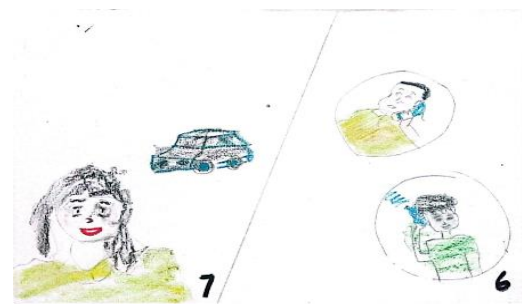


Figure. 6. The results of the drawing work of group 3 training participants

### 3. CONCLUSION

Schools are the most effective vehicle for increasing disaster literacy among the community (Juhadi, 2021). More teachers will be able to make learning media with training in making learning media for disaster mitigation. It is hoped that there will be more teachers who can teach disaster mitigation so that more and more people will understand how to deal with disasters, whether earthquakes, landslides, floods, or strong winds.

### ACKNOWLEDGMENTS /

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