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MORALITY BEFORE KNOWLEDGE

Training on creating learning media for handling of disaster mitigation for elementary school teachers

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ABSTRACT

Background: Indonesia is known as a disaster-prone country, the total amount of damage due to disasters is said to be the fourth largest in the world. The impact of global warming results in very high rainfall and large-scale damage. Apart from weather disasters, a number of damages also occur due to geological disasters. To stop disaster damage in the long term, it is important to create sustainable communities. It is important not to separate the environment and disaster prevention, but to learn about the nature that sometimes threatens us just as we learn about the nature around us. Under these conditions, until now Indonesia has not included practical disaster education in the learning curriculum, because it is considered important to include disaster management training in school communities. Because of this, disaster management methods were tested in Japan, tested in elementary schools in the city of Mataram, Indonesia. This research aims to evaluate whether adapting traditional Japanese educational methods such as "exploring the environment (Machitanken)" and "picture story performances (Kamishibai)", and presentations (hapyoukai) are adapted to local conditions. existing policies in Indonesia, can be applied in Indonesia. **Methods:** This research was conducted in the city of Mataram, carried out for one year via Zoom, involving 7 elementary school teachers, one middle school teacher, and three lecturers. **Findings:** The participants were given knowledge about how to provide disaster education. **Conclusion:** To further strengthen teachers' abilities and skills in teaching about disasters, teachers were given training for 6 months via Zoom and for one week in Kitakyushu City to make teaching materials. **Novelty/Originality of this Study:** The novelty of this study lies in its implementation of disaster mitigation education for elementary school teachers in Mataram using traditional Japanese methods such as Machitanken and Kamishibai. This approach is unique as it integrates cultural techniques from Japan into the Indonesian educational context, aiming to enhance teachers' ability to educate students on disaster preparedness in a practical and engaging manner.

KEYWORDS: disaster education; learning media; mitigation training.

1. Introduction

The management of disasters is an ancient body of knowledge, with evidence tracing back to 3200 BC. Over the centuries, various initiatives, such as the declaration of the

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International Decade of Natural Disaster Reduction (IDNDR) in the 1990s and the Yokohama Strategies, have contributed to the evolution of modern disaster management. This field is commonly understood through the four-phase approach, which consists of mitigation, preparedness, response, and recovery. As disaster management has developed, it has become evident that disasters impact poverty and social issues, making it a complex discipline. However, facilitating responses to help nations in the aftermath of disasters remains an important and expanding branch of this knowledge (Coppola, 2015).

The many natural disasters that occur in Indonesia require the community and state apparatus to be prepared to face these disasters (National Research Council, 2011). Damage often occurs, there is a lack of clean water, electricity and food supplies stop. Therefore, anticipating disaster conditions will be better, and preparing the community for disasters to occur. Of course, by training the community to be able to prepare before a natural disaster occurs.

Mataram is one of the cities in West Nusa Tenggara Province, based on geographical, climatological, topographic and sociological conditions, it is a disaster-prone area in Indonesia. Of the 14 types of disasters that frequently occur in Indonesia (Putri and Faimun, 2021), 11 of them occur in NTB Province. Geographically, NTB Province is located on the earth's plates, namely the Indo-Australian Plate (southern part) and the Eurasian Plate (northern part) so it is vulnerable to earthquakes. Likewise, climatological conditions can cause extreme weather and tornadoes. In terms of topographic conditions, the hills pose a threat of floods and landslides. Several types of disasters have a fairly high frequency of occurrence, such as floods, landslides, tornadoes, droughts (Adiyoso and Kanegae, 2012). Therefore, the NTB Provincial Government in the 2019-2023 RPJMD has made disaster issues one of the important matters in regional development. Mataram is a tourism area that really supports the economic activities of its people. The people of Mataram must be prepared to face natural disasters, therefore knowledge and self-saving measures are needed when natural disasters occur (Aldrich, 2013).

Early disaster prevention is very necessary in order to overcome the increase in natural disaster victims in NTB. One effort that can be made is disaster literacy through disaster education. This was also supported by the chairman of BNPB who stated that there was 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 volcanoes.

Education can be a determining factor in reducing disaster risk, therefore good disaster management is needed and it should be integrated with the education sector (Morris and Edwards, 2008). Understanding potential disasters must be one of the learning materials given to elementary school students, with the aim of reducing the number of deaths and accidents in children under the age of 15 years. Many children under the age of 15 are victims of disasters, many experiencing stress and trauma. This negative impact can be minimized by providing disaster literacy and providing training to deal with disasters (Tuladhar et al., 2015).

School communities and those around disaster-prone areas need to receive disaster mitigation education from an early age as an effort to reduce the negative impacts that may occur. One strategy that can be implemented is through conservation education to increase community knowledge and skills regarding the positive and negative impacts of surrounding natural resources (Collymore, 2011). 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 (Muzenda-Mudavanhu et al., 2016). The aim of this research is to produce disaster mitigation education media which can be used as supporting material for teaching disaster mitigation.

Just like in Indonesia, Japan is a disaster-prone country, Japan has a long record of disasters. In the disaster SOP, the government requires that every building be earthquake resistant, because Japan is a country that frequently experiences earthquakes. Disaster awareness education has been carried out since children were in day care at school and at every level of education they are regularly given training in dealing with disasters and disaster evacuation (Kagawa and Selby, 2012). One example to consider is how Japan

performed initial responses to the Great East Japan Earthquake in 2011, particularly in the Oga Peninsula. After the disaster occurred, the Chief Cabinet Secretary for Crisis Management and the Director General of relevant ministries established a response team and emergency headquarters. Their instructions focused on first assessing the damage, ensuring the safety of residents, securing lifelines and transportation networks, and providing accurate information to residents. The key strength of their approach was in collecting and transmitting disaster information. For instance, over 150 reports were released on the official residence website. This kind of system makes it easier for the government to dispatch investigation teams while ensuring support for emergency supplies and transportation (Kotaki, 2015).

Disaster mitigation education is part of the curriculum and has the same standards throughout Japan. Because disaster response training is always carried out periodically, a community has been formed that is ready with a system when a disaster occurs (Center, 2008). They have also been prepared to prepare disaster preparedness equipment. Every house, school, office and others have a disaster bag, preserved food, flashlight, emergency medicine and emergency necessities packed in one emergency bag backpack. The government has also determined areas for evacuation, and has disaster evacuation maps in each area. So that people know and understand where they should go when directed to evacuate. Has a warning system to be alert before an earthquake occurs and through notifications on cell phones, emails and speakers that can be heard throughout the city. Training for dealing with disasters has been carried out in schools, public services and the general public for a long time and consistently to this day (Wisner, 2006).

The urgency of this research. It is important to explain why this research is important and to demonstrate the superiority of this article over others on a similar theme. Trial research: Disaster mitigation and management education is very important, because in the city of Mataram, there is not much education and outreach to the community (Mohammad-pajooh and Ab Aziz, 2014). To be understood by the public and as an educational tool for the public. With this trial, it is hoped that all levels will understand how to deal with disasters. This researcher is also no less important about the practice of litigation training, because this trial uses traditional methods that are used throughout Japan. In elementary schools in Japan, they include disaster mitigation lessons in school subjects. This disaster mitigation trial using traditional Japanese methods was carried out in the city of Mataram. Will trial participants benefit from this training? The advantage of this article is that this journal highlights disaster mitigation trials in Mataram and at schools that have never carried out these trials.

2. Methods

2.1 Profile respondent and design of research

The profile of respondents in this research is, elementary school teachers in the upstream, middle and downstream areas of the Jangkok River and the Department of Education chose these 3 schools. Meanwhile, the exclusion criteria used in selecting the informant were, he had to be a grade 4-5 teacher, under 30 years old, liked environmental studies and had high motivation when teaching. The principal of each school selected teachers based on these criteria.

This research involved 6 teachers from 3 elementary schools in the city of Mataram, one teacher from the city of Malang, one teacher from the city of Bogor and 2 teachers from the city of Bandung, who gave consent to participate in training and testing of disaster education learning media using the method used. 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 the disaster education research program.

2.2 Overview of the research program

Below is a further explanation regarding the stages of research analysis (Figure 1). The training and trial program was implemented in 2021. The contents are structured as elementary school level disaster education training and trials which aim to train teachers to become human resources who are able to create media to teach disaster mitigation education using traditional Japanese methods. This research is correlational survey research. The research method used is a quantitative research method with the development model used is the Research and Development (R&D) model with the Analyze, Design, Development, Implementation, and Evaluation (ADDIE) (Widyastuti, 2019) design which consists of five stages, namely analysis, design, development, implementation, and evaluation. The aim of this training and trial is to make teachers human resources who are able to design and develop learning media for teaching disaster education (Johnson, 2014). And can use this media. Apart from that, it is hoped that using this media will make it easier to convey messages to students in their class (Lubis et al., 2023).

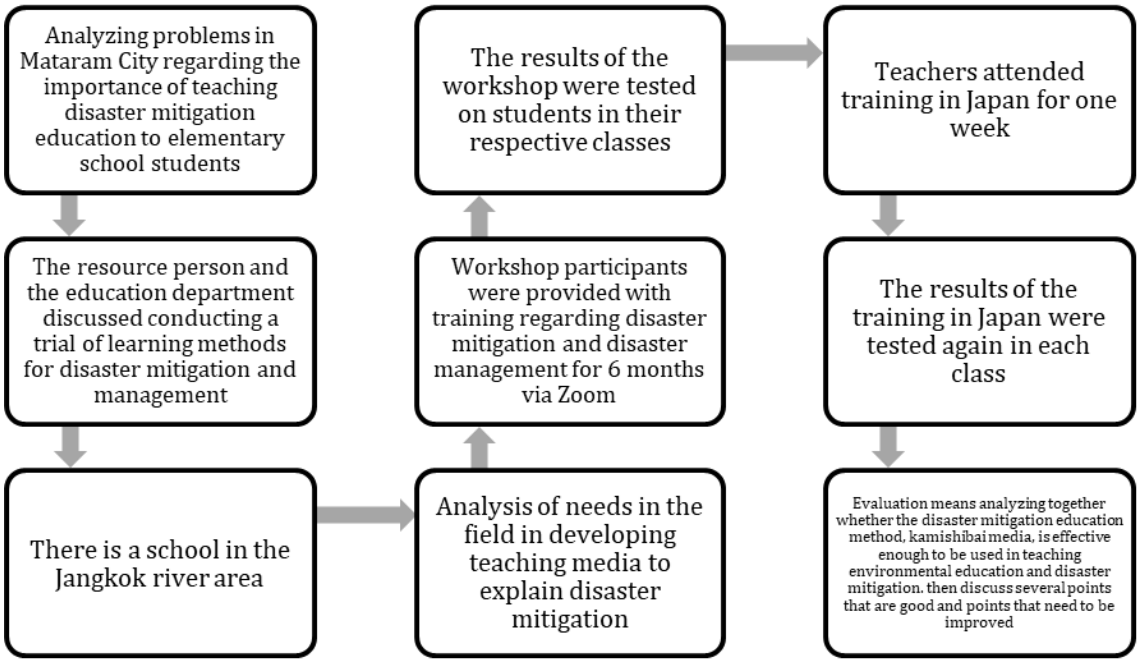

Fig. 1. Research analysis stages

During training and trial activities, teachers were introduced to mitigation education methods commonly used in Japan, namely activities to explore the surrounding environment (Machitanken) (Kumiko, 2015), making story cards (Kamishibai) and presentations (Happyoukai). The aim of the first stage of study is analysis, where teachers learn about what disasters have occurred and study areas around the school that are dangerous, potentially dangerous, safe and unsafe areas around the school. This information was obtained through interviews with residents around the school. Then the design stage is, based on the results of the machitanken, the teacher creates a Kamishibai (Ueki) design based on the results of interviews with residents around the school. This aims to enable the teacher to create learning media that will be used to teach disaster education to students in his class.

In the development stage, 11 teachers were given training in the city of Kitakyushu, Japan. While in Kitakyushu City, teachers received direct training from Machitanken, Kamishibai and Happyoukai experts. During the week, training was given on how to carry out Machitanken activities correctly according to the leaning plan guidelines (Asakura and Ishii, 1999), how to make kamishibai that fit the grid and how to make the correct presentation so that it is easy for students to understand in class. After receiving training at

Kitakyushu, it is hoped that teachers will gain new knowledge and new experiences related to disaster education learning. Then it is hoped that he will also become a guide to spread this method to other teachers in the city of Mataram.

Machitaken is a method of learning to get to know the environment which is usually carried out by elementary school students in grades 2 and 3. It aims to enable lower grade students to get to know the environment around the school and where they live well. At this age, grade 2 and 3 students are just getting to know the environment outside the home. The goal is for students to love and care for the environment more. After exploring the environment, they will make a report in the form of mapping, which explains safe places in the event of a disaster, public facilities, places of business and they will also find out what kind of environmental problems they are facing. Then think about problem solving and present it in class.

After doing the Machitanken activity, students make picture story cards, which are usually called Kamishibai. Kamishibai is a method of conveying messages using picture cards. Kamishibai is a medium that has been used in Japan since the Meiji Kingdom (1868-1912) (Hamid et al., 2021). At that time, it was used by traveling candy sellers to gather small children to buy their wares. The merchant told folk tales and stories of the Kingdom. After listening to the story, children buy candy and other snacks. Until now, Kamishibai is still used as a tool to convey messages, used in schools and public libraries. But we can also find Kamishibai reading at public events. Kamishibai usually consists of 6-12 picture cards (Kojima, 2013), in one set, a continuous story. The storyteller will use his skills to read the narrative, so that the listeners can get lost and enjoy the storyline.

2.3 Simulated program, evaluation of the research programs, and statistical analysis research

After the teacher does Machitanken, makes mapping and makes Kamishibai, the teacher carries out a simulation, how to do Machitanken, make mapping, how to make Kamishibai and present it. The teacher received a lot of input from Machitanken and Kamishibai experts during training in Kitakyushu city. To create Kamishibai, teachers are required not only to have the ability to create story scenarios, but are required to be able to draw shapes that can convey messages to listeners. After successfully drawing Kamishibai, the teacher simulates how to read Kamishibai's narrative with the correct intonation. So listeners will focus on the storyline. The uniqueness of Kamishibai is that listeners will feel involved in the situation described by the narrator.

Table 1. Trial of disaster mitigation learning

Types of stages	
Analysis	Teachers and students analyze what disasters have occurred and potential disasters. The teacher and students visit several places around the school, to find areas that are dangerous and safe when an earthquake occurs.
Design	The teacher plans what kindof Kamishibai (picture card) design can convey messages to students about disaster prevention and management.
Development	The teacher trialed the Kamishibai with students in their own class, and then evaluate the Kamishibai. During the workshop in Kitakyushu City, the evaluation results are consulted with the Kamishibai expert, and then improved, according to the direction of the Kamishibai expert.
Implementation	Finalized Kamishibai trialed in the classroom. Observing the condition of students before and after the trial.
Evaluation	Calculating changes in students' knowledge of disaster mitigation. Before – Treatment – After.

Before the treatment, the teacher is asked questions, from the results of this measurement we get the participant's score before the treatment. After the measurement, the treatment is given again. After the treatment, another measurement was carried out with the same questions as before the treatment. We get the participant's score, the score after treatment. The scores before treatment and scores after treatment were then analyzed

to see whether the treatment we provided significantly increased participants' knowledge or not. If the results are significant, it means that the treatment we provided had the impact of increasing participants' knowledge. It can be seen that the score after treatment has relatively increased (increased) compared to the score before treatment. On the other hand, if the results are not significant, then the treatment we provide has no impact or does not increase the participants' knowledge. This can be seen from the score after treatment which is relatively unchanged when compared to before treatment, depicted in Table 1. Pre and post-intervention assessments were carried out on the teacher's understanding and ability to plan Machitanken lessons, use Kamishibai and make presentations. This includes whether the teacher has the ability to create and use Kamishibai as a teaching medium, especially the ability to tell stories using Kamishibai.

The analysis compares scores before and after training. Through questionnaires and interviews. Wilcoxon signed rank test was used for statistical analysis. The level of significance was set at $p < 0.05$. The teachers created a narrative for Kamishibai, with the theme of disaster. From Kamishibai's narrative written by the teacher, the types of words used were calculated using text mining. To find out how many words that appear are related to mitigation.

3. Results and Discussion

Each subsection in the article must consist of a paragraph explaining the subsection. If there are tables, they should also be explained. The analytical method used is too simple. Further explanation is needed regarding the stages of research analysis, especially in the statistical analysis section. In the results and discussion section the author has explained that the disaster learning method increases the knowledge and experience of training participants. However, this discussion is still general in nature and does not specifically link it to aspects that have the potential to encourage training participants to understand learning methods. It needs to be explained by comparing it with related research in other countries, especially in Japan, which is the reference country for this learning method.

3.1 Characteristics of the research participants

The demographic characteristics of the participants are presented in Table 2. The table indicates that this study involved 3 male and 8 female participants. Of these, 7 were elementary school teachers who taught grades 4 and 5. Additionally, the sample included junior high school teachers whose schools were located in the vicinity of the earthquake-affected area. Furthermore, 3 of the participants were university lecturers who specialized in disaster mitigation research. The minimum educational qualification of the participants was a bachelor's degree in elementary education, while some also held master's degrees.

Table 2. Characteristics of the research participants

Demographic information	Item	Frequency	%
Gender	Male	3	27
	Female	8	73
Affiliation	Elementary school 5 Cakranegara	2	18
	Elementary school 34 Mataram	2	18
	Elementary school 35 Ampenan	2	18
	Universitas Mataram	1	9
	Elementary school 5 Kab. Malang	1	9
	Junior high school 3 Cileungsi Bogor	1	9
	Politeknik Kesehatan Bandung	2	18
Affiliation with a teaching subject	Primary Teacher Education	7	64
	Lecturer of Primary School Teacher Education	1	9
	Master education	1	9
	Community health	2	18

3.2 Participants' experience with disaster situations

The questions presented in Table 3 were intended to gather information about the participants' experiences in dealing with earthquakes. Accordingly, the questions were designed to elicit responses related to disaster situations. The data indicates that 73% of the participants had previously experienced natural disasters, while 55% had undergone evacuation to shelters. However, 91% of the participants reported never having attended any training on natural disaster management. Despite the lack of formal disaster management training, 100% of the participants had voluntarily served as disaster response volunteers and had conducted outreach and awareness activities regarding disaster management.

Table 3. Participants' experience with disaster situations

No	Questionnaire	Yes	%	No	%
1	Have experienced a natural disaster	8	73	3	27
2	Have experienced evacuation at a shelter	6	55	5	45
3	Ever participated in natural disaster management training	1	9	10	91
4	Ever volunteered as a disaster volunteer	0	0	11	100
5	Ever socialised disaster management	0	0	11	100

3.3 Attainment of knowledge in the cognitive, behavior and affective domains

Table 4. shows the Wilcoxon signed-rank test results for the training goals in the cognitive, behavior and affective. This research found that the behavior section has two points with description not significant about media and natural disaster. While the knowledge and affective sections all points with description significant. This shows that in this study, before and after implementation there were significant changes. In this research, we do not measure the effect size derived from Wilcoxon's statistics. Other researchers propose this to understand the effectiveness of learning, suggesting that these insights could be highly valuable for future research (Sundawa et al., 2020).

Table 4. The Wilcoxon signed-rank test results for the training goals in the cognitive, behavior and affective (N=11)

Learning domain	Question	Before		After		Z	Sig.	Description
		Mean	Mean rank	Mean	Mean rank			
Cognitive	Disaster is a natural phenomenon	3.727	1.14	4.727	1.86	-2.714	0.007	Significant
	Disasters consist of heavenly and earthly disasters	2.545	1.14	4.909	1.86	-2.640	0.008	Significant
	Natural disasters can occur at any time	4.454	1.23	5.000	1.77	-2.449	0.014	Significant
	Earthquakes and landslides are earth disasters	4.181	1.14	4.909	1.86	-2.828	0.005	Significant
	Rainstorms. strong winds are celestial disasters	3.363	1.09	4.818	1.91	-2.754	0.006	Significant
Behavior	It is important to teach mitigation education to students	4.181	1.23	5.00	1.77	-2.333	0.020	Significant
	There is a need for learning media that can explain about natural disasters	4.090	1.32	5.00	1.68	-1.857	0.063	Not significant
	We cannot avoid natural disasters	3.636	1.32	4.272	1.68	-1.890	0.059	Not significant

	Training to deal with disasters. makes us alert when facing disasters	4.000	1.27	4.727	1.73	-2.121	0.034	Significant
	Ignorance of how to cope with disasters will make people panic when facing disasters	3.727	1.27	4.727	1.73	-2.070	0.038	Significant
Affective	I teach students about natural disasters and the type of disasters	2.000	1.00	4.727	2.00	-2.961	0.003	Significant
	To make it easier to understand, I make learning media to explain disasters	1.818	1.00	4.818	2.00	-2.980	0.003	Significant
	I participated in disaster management training as one of my efforts to teach about disasters	3.181	1.14	4.818	1.86	-2.585	0.010	Significant
	I explain disaster potential to students because it is important	2.727	1.18	4.727	1.82	-2.414	0.016	Significant
	I also teach the community about disaster mitigation and management	2.000	1.05	4.363	1.95	-2.850	0.004	Significant

From the questions distributed, on the behavior point, the results were not significant, because the before and after answers had very little difference. Initially, participants answered with a high average value. Overall, these findings show significant differences between before and after overall. The cognitive results after treatment showed a higher mean of 24.363. These findings are in line with research conducted in Argentina, which demonstrated that Kamishibai enhances cognition when shared orally with others. It was also found that all students increased their vocabulary banks by more than two words (Ansaldo, 2022).

The results of data analysis, significant test results stated that learning domain knowledge, behavior and attitude were declared significant, in Table 4 and Table 5 in the question section. Learning media is needed to explain natural disasters and we cannot avoid natural disasters, it is not significant, because from the previous answer, the value is already high, so there is no influence from the treatment.

Table 5. Result of mean before-after learning domain

Learning domain	N	Before		After		Z	Significant	Description
		Mean	Mean rank	Mean	Mean rank			
Cognitive	11	18.227	1.05	24.363	1.95	-2.821	0.005	Significant
Behavior	11	19.636	1.09	23.727	1.91	-2.692	0.007	Significant
Affective	11	11.727	1.00	23.454	2.00	2.950	0.003	Significant

3.4 Vocabulary and number of words

Table 6 is the tabular and graphical results of the Kamishibai narrative text mining. This study can observe that there are seven words that often appear next to "Earthquake," with the highest similarity score of 27 points, which is 2% of the total 1,287 words. Followed by words such as "flood," "emergency bag," and "panic." This shows that these four words are most often associated by teachers.

Table 6. Results of word analysis using cloud

No	Word	Total word	Number	%
1	Earthquake (*gempa)*	1,287	27	2
2	Flood (*banjir)*		21	2
3	Emergency bag		18	1
4	Panic (*panik*)		18	1
5	Evacuate (*mengungsi*)		15	1
6	Everyone (*semunaya*)		12	1
7	Residents (*warga*)		12	1

Other researchers who have conducted studies in Denpasar, Indonesia, about disasters claim that words related to the kinesthetic sense of shock are used to describe earthquake situations. Rather than making people afraid of disasters, using onomatopoeic words personifies a concept that is easier to understand (Damayanti et al., 2020). The figure below is a visualization of how similar words accompany other minor-level words. This visualization aims to show how other words appear and can potentially guide future analysis to enhance the clarity and direction of the research (Figure 2).

Fig. 2. Sentence views in word cloud

3.5 Outline of the development of EE and disaster

3.5.1 Analysis and deisgn

In the first stage of program implementation, the training participants analyzed what needs must be met when facing a disaster. Participants discussed what students should do if a disaster occurs. The participants analyzed past events that occurred in their respective places. Then list the things needed when facing a disaster. In 2022, a large earthquake hit Mataram. For the most part, students at these 3 schools, including earthquake victims, were interviewed in class, 100% of students said they immediately ran out of the house when the earthquake occurred. Table 7 shows a list of earthquakes in Lombok from 2021 to 2023.

Table 7. List of earthquakes in Lombok in 2021-2023

Date	Time	Richter scale	Preventive action
28/10/2021	20:48:00 WITA	2.8	Ran away of the house
25/1/2022	05:14 WITA	4.6	Ran away of the house
24/7/2023	7:10:18 WITA	4.4	Ran away of the house

Designing training trials for students carried out by teachers, teachers design learning with the theme of disaster mitigation, namely with stages: students observe conditions around the school, draw a mapping of the conditions of the school environment, where are the safe places to evacuate and which places are dangerous when there is a disaster. Then interview the people who live in the school, asking about the history of disasters that have occurred in the area.

3.5.2 Development

Training participants make kamishibai which tells the content of how to teach disaster education to students using kamishibai. The activities carried out by the teacher are a series of lessons that must be carried out when testing with students. As mentioned in the method section, the results of this training are

3.*5.2.1 Lets make a hazard map around the school*

In this part, the training participants go around with directions given by one of the trainers. In this training, the participants succeeded in making a mapping which was carried out in Mojiko, a tourist area in the city of Kitakyushu. Where the participants observe the area. Previously they received instructions on how to make mapping. Participants were divided into two large groups. The results are in image number X. In the mapping in Mojiko Retro there are three themes that we have to look for. Green is sustainable, red is a building typical of Japanese culture and blue is something unique. There are lots of new things that can be seen so that mapping is very interactive and fun. When the mapping has been completed, the training participants provide notes containing descriptions of the facilities and buildings based on the three colors that have been determined. The mapping that was created was presented on February 11 2023 at the University of Kitakyushu, in front of 2021 SDGs course students and lecturers at Kitakyushu University (Figure 3).

Fig. 3. Results of mapping images and participant presentations

3.5.2.2 Let's make an emergency bag

In this part, participants are asked to look at 30 pictures of objects on the monitor layer, these objects are needed when a disaster occurs, within 60 seconds, then after that, participants are asked to write down on paper what objects they see on the screen. earlier. Then discuss what items are actually needed when a disaster occurs and you evacuate. Then participants make story cards (Kamishibai) to convey the message to students. Below is the work of one of the kamishibai done by the participants, shown in Figure 4.

Fig. 4. Picture of emergency bag

The next activity is learning about disaster education. The following are some of the activities carried out during disaster education, namely Japanese people's views on natural disasters, preparing emergency bags, simulating earthquakes using miniature houses, Figure 75, and learning to cook in refugee camps when a disaster occurs. Conceptualize an emergency bag or what is known as an emergency bag which is really needed by each family. The government regulations regarding the contents of an emergency bag, namely, contain; Water, gadgets, gadget chargers, newspapers, tissue paper, matches, emergency food, rain jackets, clothes, medicine boxes, toiletries, wallets, towels, flashlights, masks, coins, sanitizer, plastic, radio and toilet paper. Apart from that, training participants learned to make emergency food, namely Japanese curry

Fig. 5. Earthquake simulation using a house model

3.5.2.3 Making kamishibai

Participants carry out activities to make Kamishibai cards guided by expert trainers in the kamishibai field. During the training, participants were explained about the origins and history of Kamishibai. Then participants were taught how to find suitable ideas to make Kamishibai's theme, then they were also taught how to create a scenario draft for

Kamishibai, as in Figure 6 and create images on Kamishibai cards. Apart from that, participants were also taught how to convey messages using Kamishibai.

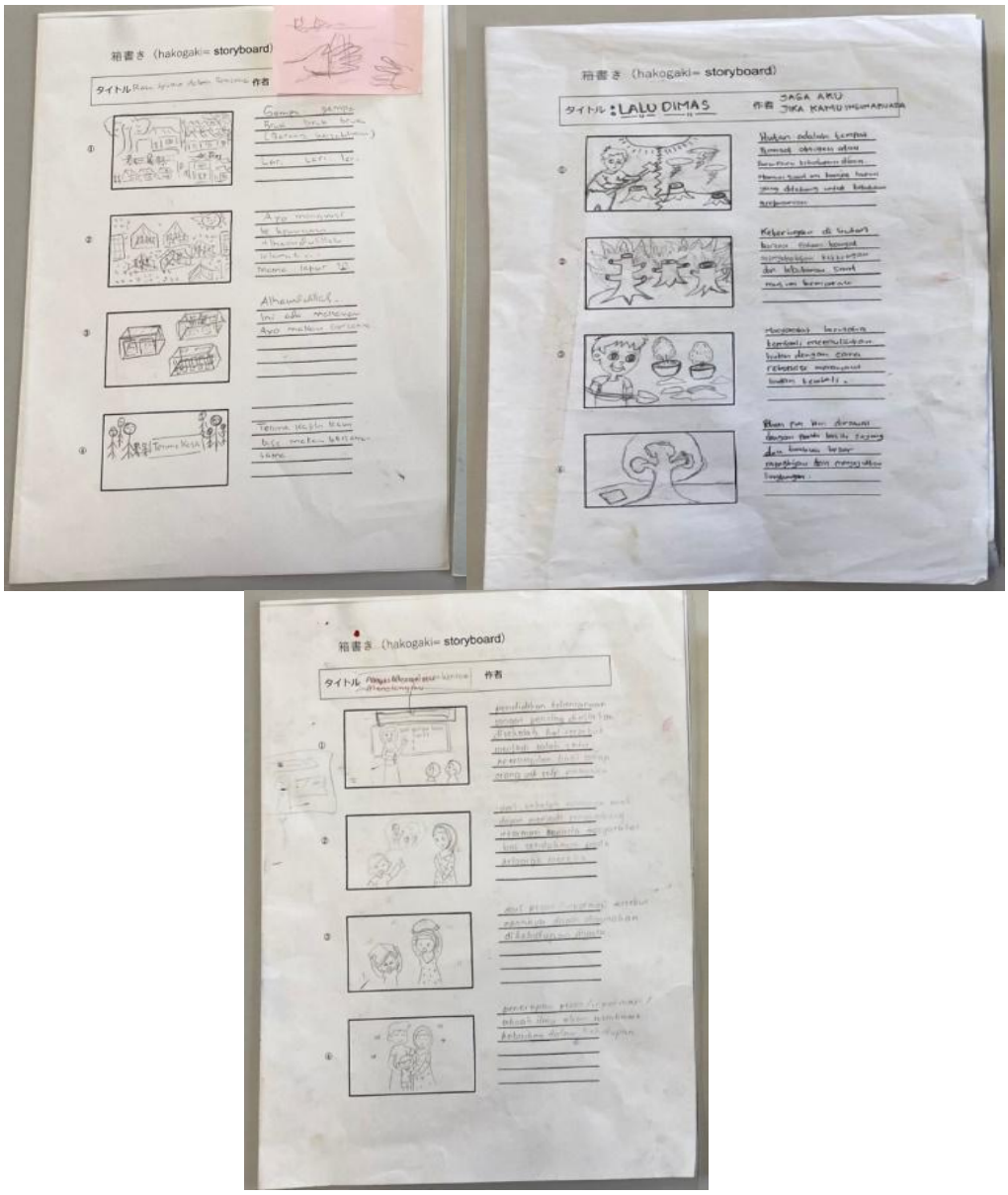

Fig. 6. Sheet of Kamishibai script draft

Kamishibai is a communication medium that has been used since ancient times. created in 1930 and can be done face to face, using images that are easy to understand and have a very strong message, can adjust the story and images according to needs. The use of kamishibai is often used as a learning medium so that teachers can create and adapt kamishibai for students. When using Kamishibai, readers must be able to express using voice intonation, so that listeners can enjoy listening to the story. Additionally, researchers also claim that it isn't just about gaining knowledge on disaster prevention, but also about acquiring wisdom that allows participants to realize the importance of life, cooperation, and preparedness, and to respond to situations proactively (Wongphyat and Tanaka, 2020).

This activity is very useful for those who work as teachers to create a pleasant classroom atmosphere for students during the learning process. From the results of the training on making Kamishibai, all participants succeeded in making Kamishibai, a very interesting disaster mitigation lesson. As in photo Figure 7.

Fig. 7. Training of kamishibai in Kitakyushu

Kamisihbai with the earthquake theme is most often chosen by training participants, with the reason that earthquakes often occur in the Mataram area, people's ignorance in dealing with earthquakes, is a target for teachers to teach earthquake management and steps to deal with earthquakes. As in Figure 8.

(a)

(b)

Fig. 8. (a) Kamishibai knowledge helps you, and (b) Kamishibai don't panic

Another Kamishibai has a flood theme, this theme was chosen by several training participants who came from Bandung City and Malang City, where this city experiences a lot of flooding when it rains heavily, as in Figure 9, Kamishibai When the Flood Comes and Kamishibai Danger of the Sound of Rain.

(a)

(b)

Fig. 9. (a) Kamishibai When the Flood Comes, and (b) Dangers of Rain Sound

3.5.3 Implementation

After the training participants returned to Indonesia, the teachers tried out the Kamishibai they made in their respective schools. The students' response was very positive, when the teacher asked again about disaster management, the students were able to answer correctly. Teachers can see the difference between before learning and after learning. As in photo Figure 10.

Fig. 10. Kamishibai try out in class

3.6 Discussion

From the results of these training and workshop activities, all training participants stated that they had gained new experience and knowledge. This experience is similar to the one mentioned in a previous comment. Teachers from other research have noted that students were very enthusiastic and enjoyed drawing to convey interesting messages. Although it is challenging in terms of concept and illustration, students have gained better skills than before (Rachman et al., 2024a).

Before attending the training, they did not know how to teach environmental education and disaster management in an interesting way (Hamid et al., 2021). After attending this training, they will be able to make learning plans and can create learning media. Planning learning using the environmental recognition method, namely Machitanken, is their first experience, but they are of the opinion that this method is very effective, because students will pay attention to the environment they visit in detail so that they become more familiar with the conditions of the environment around which they live. Students will be more careful about the problems they see in the field. Making mapping further encourages students to analyze and remember (Ueki).

Pouring on mapping and making Kamishibai, as a form of teaching material to learn how to solve problems currently being faced in the surrounding environment, then presentation. The training participants immediately felt how to carry out this activity directly. From the results of the learning trials on disaster mitigation, this training was very effective in increasing the capacity of training participants to teach disaster education. Moreover, in Mataram City and Malang City, there is not much material about disasters that is studied by elementary school students. Kamishibai media and the machitanken method really help teachers in explaining disaster mitigation. It is easier for students to imagine it. The significant increase shows a change in the training participants who took part in this training. In making comparisons, Bogor, one of the densely populated cities in Java Island, Indonesia, has conducted training and trials of Kamishibai for junior high school teachers. It was conveyed that Kamishibai does not require high-quality images but prioritizes the delivery method of the message. Ultimately, participants grasped the idea of how to deal with disasters and increased literacy within the community (Rachman et al., 2024b). On the contrary, researchers introduced the Kamiholo method, which utilizes holographic 3D images. This state-of-the-art technology supports learning in Era 4.0, used in dark

classrooms, as opposed to the conventional open classrooms used for Kamishibai. Kamiholo leads to increased curiosity and eagerness to start lessons, creating a higher-interest learning atmosphere (Hernawan et al., 2022). In more advanced research on Kamishibai, limitations have been highlighted due to the time period being too short to identify the learning curve as a result of targeted intervention. The time frame—not only during the treatment but also post-implementation—is crucial to effectively highlight the potential impact of the methods (Frith, 2018).

4. Conclusions

In the conclusion section, you need to include the implications of your research results. It is important to show that your research results can answer the research objectives and contribute to your field of study. Apart from that, you also need to explain research suggestions that can encourage future research contributions or suggestions aimed at relevant institutions or policy makers. Using the Machitanken and Kamishibai methods in teaching disaster education is suitable for use in Indonesian schools, because from the results of testing on students this method is effective in increasing students' knowledge and is able to make students concentrate. The training program carried out by teachers in Kitakyushu had a very good impact, because the teachers received direct training from experts, so they could carry out machitanken lessons and make kamishibai in the correct stages. From the results of interviews and listening to opinions, it was found that teachers had new knowledge before and after this training program. Many things have been seen and learned, making teachers more confident in putting forward new ideas and new innovations.

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Author Contribution
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