The Seybold Report

ISSN 1533-9211

DOI 10.5281/zenodo.7385942

TRACING THE LEVEL OF DISASTER LITERACY IN SOCIAL STUDIES SUBJECTS: WHAT IS THE LITERACY LEVEL OF NATURAL DISASTERS OF STUDENTS IN INDONESIA?

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Abstract

This research is based on the location of Indonesia, which is prone to natural disasters, so how the government prepares disaster preparedness for its people. One of them is education that can contribute to community to have disaster literacy. One of how disaster education can be integrated through social studies subjects in junior high schools is that it can equip students to have knowledge of disaster, have attitudes that must be carried out in disaster preparedness, and develop skills in disaster preparedness. This research method is limited to a preliminary study or concept, which includes three initial steps, namely: (1) initial data and information collection, (2) planning, and (3) initial product development. The population of the study was all junior high school students in West Java who are prone to natural disasters (earthquakes, volcanic eruptions, landslides, and tsunamis) considering the condition of West Java Province, which has a high to low level of disaster complexity. The number of samples had taken utilizing stratified random sampling schools that are prone to natural disasters with a total of 371 students. The research results that can be obtained are that, based on the research results, students in schools already have good basic knowledge about natural disasters. However, the attitudes and skills in student preparedness are still low. This can be caused by a lack of training or disaster simulation in the community or school. Based on these findings, it is necessary to practice or simulate disasters in schools or the community to prepare for disasters.

Subjects: Business, Management; Human Resource Management

Keywords: Social Studies Subjects, Disaster Literacy, Disaster Exercise, Simulation.

Classification codes: M10; M12; O15

1. INTRODUCTION

Indonesia is an archipelagic country located in Southeast Asia, Indonesia has a population of about 268 million people, has more than 17,508 islands, and is one of the largest archipelagic countries in the world with a coastline of up to 81,000 km. Indonesia's social and cultural side has been one of the most generous countries in the first world for five consecutive years, based on the 2022 World Giving Index (Adyasari et al., 2021). Geographically, Indonesia is one of the countries with a high level of disaster vulnerability in the world and even ranks first out of 256 countries in the world with a higher potential for a tsunami disaster compared to Japan (Seddiky et al., 2020).

The United Nations International Strategy for Disaster Reduction also mentioned that Indonesia is categorized as the country most prone to natural disasters in the world. Indonesia's geographical and geological location at the confluence of three major tectonic plates, namely the Indo-Australian plate, the Eurasian plate and the Pacific plate, causes frequent earthquakes (Shaw, 2020). Indonesia is also an active mountain path with 129 volcanoes, and 80 are

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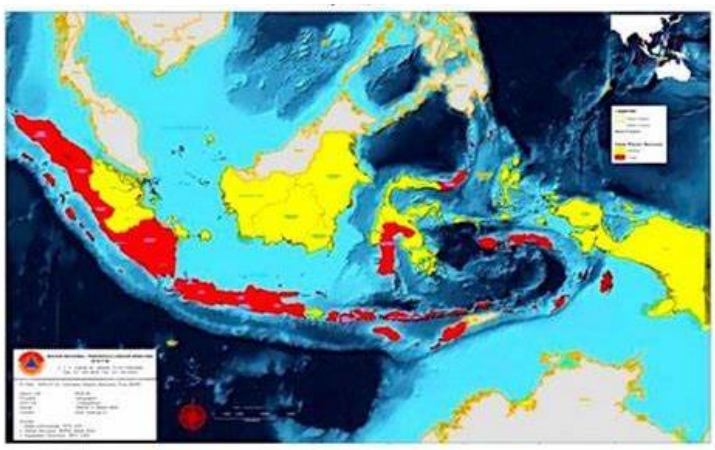
ISSN 1533-9211
DOI 10.5281/zenodo.7385942

dangerous and make Indonesia part of the "Ring of Fire", a collection of active volcanoes surrounding the Pacific Ocean. Indonesia is located in an area that has a tropical climate, so Indonesia is very vulnerable to drought in the dry season. Disasters that often occur in Indonesia during the dry season are droughts which cause land fires and haze disasters in Indonesia (Heppenstall et al., 2018). Meanwhile, floods with high rainfall often cause natural disasters such as landslides, with many casualties in the rainy season. The following is a map of the high number of natural disasters in Indonesia in 2021 sourced from the National Disaster Management Agency (BNPB) (Cui et al., 2021):

Figure 1: Map of Natural Disasters in Indonesia



Source: https://bnpb.go.id

Figure 1 illustrates that Indonesia is very vulnerable to disasters which are often described as a combination of a lack of capacity or steps to reduce or defend against the potential negative consequences of exposure to a hazard and the existing conditions of vulnerability (Bott & Braun, 2019). The impact of disasters can be in the form of injuries, illnesses, and other negative effects on humans' physical, mental and social welfare, resulting in loss of life. In addition, disasters often result in material losses, such as asset destruction, property damage, environmental degradation, and disruption to social and economic aspects (Cianconi et al., 2020).

Various natural disasters that occurred in Indonesia, the Indonesian government has seriously handled disaster problems with the issuance of Law no. 24 of 2007 concerning disaster management which regulates the implementation of comprehensive disaster management, both pre-disaster, emergency response, and post-disaster. With the issuance of this regulation, disaster mitigation readiness has become part of the government's work program through various ministries (Manurung et al., 2022). International organizations such as the G-20, WHO, UNESCO, and UNISDR have also provided a lot of technical and funding assistance in implementing disaster mitigation programs in Indonesia. Counseling and teaching materials to prepare communities and students in schools to face natural disasters, read signs of impending natural disasters, save themselves and family members or school residents, prepare shelters or

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ISSN 1533-9211
DOI 10.5281/zenodo.7385942

evacuate, overcome post-disaster problems and restore the recovery process have been socialized to community and school (Lindell et al., 2021). Everything is conveyed to the broader community and school residents through social media and integrated into learning, especially social science subjects at the junior high school level (Williams et al., 2022).

One of the indicators in minimizing disasters in Indonesia is disaster education which is integrated into several subjects such as Social Sciences, Natural Sciences, Geography, and Language. Disaster education is influential in changing the broad human mindset in responding to disasters. Disaster education is a way to create good knowledge, resilient attitudes, and safe situations in dealing with disasters. Disaster education is carried out by providing both formal and informal education at all levels of education (Kamil et al., 2020). At the current status of education, there are at least several basic literacy skills that must be mastered, one of which is disaster literacy, which is related to the high potential for natural disasters to occur throughout Indonesia and the lack of knowledge, attitudes, and skills of the community and students regarding various disaster mitigation measures. Disaster literacy is an individual's capacity to read, understand, and use disaster information (Rumambi et al., 2022).

Disaster literacy is one of the efforts that teach individuals to read, understand, and use information, which helps them make the right decisions and follow instructions in disaster mitigation, preparation, response, and recovery. Education is essential in an ongoing effort to socialize and promote disaster prevention (Hoffmann & Blecha, 2020). Individual mindsets need to be built through an educational process that can enhance disaster preparedness. The educational paradigm directs disaster knowledge, which is constructed through interactions with objects, experiences, phenomena, and the environment (Secundo et al., 2021).

Disaster literacy education can develop several components of individual skills, first a basic understanding of disasters. The second is functionally preparing individuals who can be able to have an attitude of disaster preparedness, response, and recovery (Çalışkan & Üner, 2021). And lastly, concerning the capacity of individuals to analyze disasters related to information, empowerment to overcome obstacles and recovery in overcoming disasters. Efforts to cultivate disaster literacy are further considered a process of shaping mindsets and behaviors so that they care and are responsible for themselves, society, and the universe (Fernhaber & Zou, 2022).

This disaster information is used as a consideration in making policies or decisions by following instructions in the context of mitigation, preparedness, response, and spreading false information (hoaxes), which is detrimental and causes every individual panic. With disaster literacy, people can filter, check, and reconsider the disaster information they receive to decide on appropriate and efficient actions (Elbanna et al., 2019). This research was raised considering that disaster education must be taught to students. Many studies have been conducted on disaster and disaster education but are still very limited regarding research on disaster literacy in Indonesia. So, from the limitations of research on disaster literacy, this was raised as a student tracing of student understanding.

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ISSN 1533-9211
DOI 10.5281/zenodo.7385942

2. LITERATUR REVIEW

2.1 Literacy

Literacy is the ability to read and write, gaining further knowledge and abilities related to a particular field. There are five basic skills of media and information literacy identified by UNESCO (comprehension, thinking, criticality, creativity, cultural awareness, and citizenship) necessary for social, spirit, and culture competency. According to The National Literacy Act, literacy is closely related to a person's ability to read, write, speak, and process the information obtained to solve problems faced in everyday life (Stebbing et al., 2019).

From the understanding of literacy in general, it can be concluded that disaster literacy is a personal knowledge, attitude, and skill toward disaster prevention. This includes three main categories in disaster literacy: disaster prevention knowledge, disaster prevention attitudes, and disaster prevention skills (C.-H. Tsai et al., 2020). If these three disaster categories are described, disaster prevention knowledge consists of three indicator indices: disaster identification, disaster knowledge, and response knowledge. Disaster prevention attitudes were evaluated based on sensitivity items, values related to disaster management, and responsibility for disaster prevention (Oktari et al., 2021). Meanwhile, skills for disaster prevention are knowledge for learning about disaster management and mitigation, skills needed for disaster management and mitigation, and essential competencies and attitudes for dealing with disasters (Fathoni, 2018).

Talking about literacy refers to the definition of a person's ability to read and write. According to Muktaf, literacy is not just understanding writing and reading, but literacy leads to elements of interpretation. Literacy is considered a process of understanding the meaning of messages, so literacy practices include writing and language, which are cultural artifacts used by the community to discover certain phenomena (Liu et al., 2020).

2.2 Disaster Literacy

Disaster literacy is an effort to raise public awareness in dealing with a disaster which is very important for the community. Disaster literacy is a keyword that must be understood by the community so that they fully understand (literacy) that the geographical location of their country is in a disaster-prone area (Sawangnate et al., 2022).

Disaster literacy gives someone basic knowledge about what a disaster is and how to reduce disaster risk. Individuals with basic literacy skills must thrive in disasters and become good disaster literate. According to Permana, there is a close relationship between being disaster literate and being very important in making the right decisions during and after a disaster (Teo et al., 2018). This translates into correct behavior, making interventions quickly, and raising awareness of what can be done. Disaster literacy has a crucial role in raising individuals with high awareness and ensuring that those involved in disaster response have sufficient knowledge and experience (Lopes & McKay, 2020).

ISSN 1533-9211

DOI 10.5281/zenodo.7385942

The disaster perspective is closely related to individual literacy-level disasters. To react to any disaster, individuals must first have information about the disaster. The following are the elements of disaster literacy according to Chung & Yen as follows:

a. Disaster prevention is the concept of disaster prevention which includes disaster prevention and disaster relief. In addition, the concept of disaster management is also included in the concept of disaster prevention. Disaster management includes disaster mitigation procedures and methods, disaster preparedness, disaster response, and disaster recovery (Khan et al., 2018).
b. Disaster Mitigation is the prevention of disasters or reducing the adverse effects of disasters through policies and various disaster management (Shah et al., 2020).
c. Disaster preparedness is preparation for potential disasters and includes disaster risk analysis, the establishment of early warning systems, and the training of emergency rescue professionals, and training (Sufri et al., 2020).
d. Disaster response is an effort to respond in the event of a disaster, including the mobilization of rescue workers, the initiation of emergency medical services, the evacuation and placement of disaster-affected communities, and the installation of appropriate infrastructure according to the contingency plan (Mavroulis et al., 2022).
e. Disaster recovery is disaster recovery, such as the recovery of infrastructure, facilities, livelihoods, and living conditions in communities affected by disasters (Su & Le Dé, 2020).

3. METHOD

This research is a research and development that refers to the development steps of Borg & Gall. This research method is limited to a preliminary study or concept, which includes three initial stages, namely: (1) initial data and information collection, (2) planning, and (3) initial product development. The population of the study was all junior high school students in West Java who are prone to natural disasters (earthquakes, volcanic eruptions, landslides, and tsunamis) considering the condition of West Java Province, which has a high to low level of disaster complexity. The number of samples was taken through stratified random sampling, schools prone to natural disasters with 371 students. This research's subject is assessing disaster literacy literature to improve disaster response.

4. RESULTS AND DISCUSSION

4.1 Results and Research Data Related to Student Disaster Literacy

As discussed in the research method, this research uses several methods within the framework of research and development (R&D), which are descriptive and are only limited to preliminary studies. The descriptive research method was used in the initial research to collect data about existing conditions, namely tracing the level of natural disasters in junior high school students. According to the United Nations International Strategy for Disaster Reduction, Indonesia is the country most prone to natural disasters in the world. Indonesia's geological location and

ISSN 1533-9211

DOI 10.5281/zenodo.7385942

position make Indonesia very fertile against natural disasters. Disaster literacy is one of the efforts to provide knowledge, attitudes, and skills to students and the public about the importance of human presence on earth in overcoming disasters. Fostering disaster literacy in students and the community is not easy, it requires awareness efforts in the community for disaster preparedness (Ferri et al., 2020). Educational institutions are one place that can be maximized to achieve this goal. Disaster literacy is needed through educational institutions, especially in primary and secondary schools. Therefore, the teacher's learning process must lead to efforts to raise students' awareness of effective disaster mitigation to prepare for disaster preparedness from an early age.

The study at this stage was also carried out on students in junior high school. Implementation data regarding disaster literacy was obtained through the collection of perceptional opinions about the knowledge, attitudes, and skills of students by using a questionnaire or optional closed-question questionnaire Yes and No. The questionnaire was administered on 27 July to 15 August 2022 using a closed questionnaire data collection technique. The study at this stage was also conducted on 364 students in grades VII-IX (233 students, 131 students) using a questionnaire from Kimura, 2014, Sung-Chin Chung & Cherng-Jyh Yen, 2016 regarding Disaster literacy as many as 21 statement items, which then adopted and revised according to the needs and situations of natural disasters in West Java Province. Before the questionnaire was distributed to 209 students, a trial was conducted on 30 students to measure the validity and reliability of the questionnaire. Based on the questionnaire results, various respondents' answers were obtained, as shown in the following graph. This questionnaire aims to learn more about the understanding of disaster literacy of students at the Junior High School (SMP) level with the types of natural disasters Earthquakes, landslides, floods, and tsunamis.

The understanding of disaster literacy includes three main categories in disaster literacy: disaster prevention knowledge, disaster prevention attitudes, and disaster prevention skills. If the three categories of disasters are described, the ability of disaster prevention consists of three index indicators: disaster recognition, disaster knowledge, and response knowledge (M.-H. Tsai et al., 2020). The attitude toward disaster prevention is evaluated based on the sensitivity of disaster prevention items, values related to disaster management, and responsibility for disaster prevention. Meanwhile, skills for disaster prevention are knowledge for learning about disaster management and mitigation, skills needed for disaster management and mitigation, and essential competencies and attitudes for dealing with disasters (Ao et al., 2021).

Initial questions that were confirmed to students were regarding students' knowledge through teacher statements giving material about disasters, opportunities to ask questions about disasters, examples of disasters in the environment, the use of media in disaster material, social studies teacher's interest in conveying disaster material, making disaster material, and assignment of disaster material. Based on the questionnaire results, various respondents' answers were obtained, as shown in the following graph.

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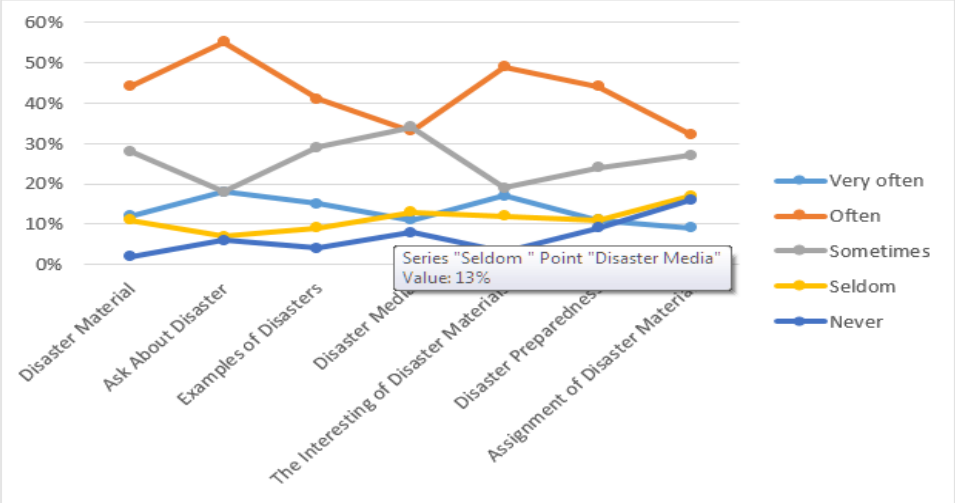
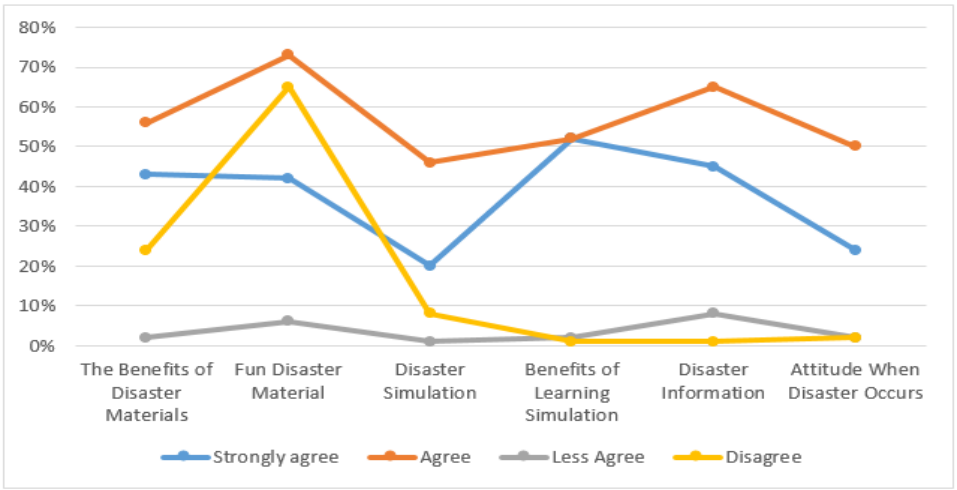
DOI 10.5281/zenodo.7385942

Figure 2: Graph of Disaster Literacy Knowledge



Based on the data on the disaster literacy knowledge indicator with seven questionnaire statements, information was obtained that the majority of students had a moderate level of disaster knowledge. This means that most students should have high disaster literacy considering that Indonesia is prone to natural disasters. Referring to such conditions, what is interesting is that students are very high in asking questions about natural disasters in Indonesia, this should be a capital for social studies learning that can be utilized in social studies learning materials, and material about disasters is only inserted or integrated into social studies learning materials. Furthermore, information is obtained on the disaster literacy attitude indicator as listed in the following graph.

Figure 3: Graph of Disaster Literacy Attitude

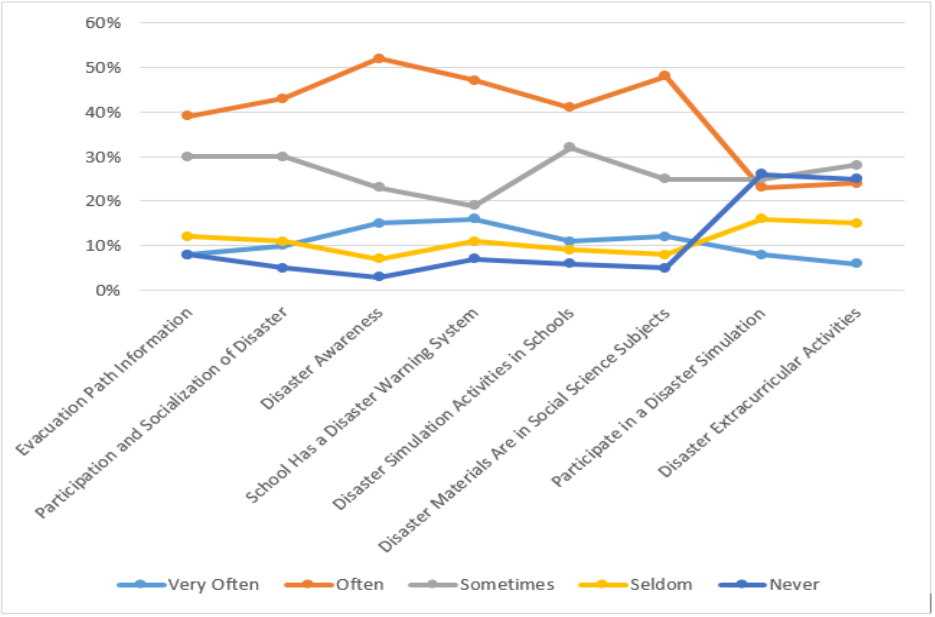


ISSN 1533-9211

DOI 10.5281/zenodo.7385942

Based on data on indicators of disaster literacy attitudes with six statements, namely: the usefulness of disaster materials; fun/interesting disaster material; disaster simulation activities; the benefits of learning disaster simulation; information regarding disaster; and attitude that must be done in the event of a disaster has a relatively high level of disaster literacy. This means that most of the students' attitudes towards disaster literacy are aware of the dangers of disasters that occur in their surrounding environment. Referring to such conditions, the social studies learning process must be used to understand disasters. Furthermore, the skills indicators obtained information listed in the graph.

Figure 4: Graph of Disaster Literacy Skills



Based on the data on the indicators of disaster literacy skills, some students have a very high awareness of disaster mitigation, and this also proves that students know that their country is prone to natural disasters. On the other hand, the disaster literacy skills indicator reveals that if disaster material is found in social studies subjects, this material is very interesting. But unfortunately, the disaster material in social studies subjects is still in the range of knowledge. It can be seen in the graph above that simulation, and extracurricular activities are still very low and minimal. Thus, through the social studies learning process, it is hoped that disaster literacy skill activities can involve students in social studies or extracurricular learning activities.

4.2 Understanding of Natural Disasters for Students

Literacy in the context of natural disasters can be interpreted as a person's capacity to read, understand, use information to make decisions, and follow instructions to mitigate natural disasters. Low levels of literacy can lead to errors in interpreting natural disasters. Mistakes in interpreting natural disasters can be categorized into two major groups: disasters resulting from human negligence and disasters coming from God's power. The interpretation in the first group

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ISSN 1533-9211
DOI 10.5281/zenodo.7385942

is everything that humans can account for, ranging from human error as the cause of various disasters to poor post-disaster management. The second interpretation relates to all disasters that come from God because they see the condition of the Indonesian people who are very religious, that disaster is a punishment from God. This usually appears to explain various things humans cannot explain, such as the causes of natural disasters and the reasons why a disaster occurs (Nelson & Lima, 2020).

In achieving students who master disaster literacy, it is crucial to arrange them through various educational programs. One example applied in developed countries prone to natural disasters, such as Japan and Taiwan, is disaster mitigation education. One of the ways to mitigate disaster is to implement disaster literacy. Disaster literacy is one of the efforts made to reduce disaster risk. According to Emily, disaster literacy is identifying, understanding, interpreting, and communicating disaster-related information (Bakhov et al., 2021).

The disaster literacy program has three stages that need to be implemented sequentially. The first stage is the essential knowledge stage, followed by the functional stage and the last stage is the interactive stage. In the first stage, basic knowledge about natural disasters that may occur in a community is conveyed to students (Wang et al., 2021). Various techniques include counseling, sticking posters in the class bulletin, WAG discussions, asking questions through social media, and so on. The purpose of this stage is that students can understand the potential for natural disasters in their environment and ways to save themselves that need to be done in the event of a natural disaster. At this stage, the need for appropriate learning media is very high, and learning media must be brief, accurate, and easy to understand. Do not let the learning media created confuse students and interfere with the disaster mitigation process.

Second, in the functional stage, students are expected to be able to carry out various disaster literacy programs independently. Understand what to do in the event of a disaster. For example, in the event of a disaster, students can provide emergency assistance to the medical team or other functional skills needed in the event of a natural disaster (Angrist et al., 2021). Third, in the interactive stage, students are creatively and independently expected to be able to independently compose various steps to save themselves when a natural disaster occurs or afterward. Students have been directed to no longer be passive victims of natural disasters but to independently become part of the disaster response team. In this third stage, students are expected to be able to independently organize disaster mitigation measures following the characteristics of disasters in their area (Murray et al., 2019).

In implementing disaster prevention, one of the focuses in schools is to make school members understand the warning signs of a disaster and know the steps that must be taken to reduce risk and prevent disasters. The forms that can be carried out in disaster literacy are as follows:

a. Integrated into the lesson: disaster literacy can be integrated into the lesson by first analyzing the learning objectives. The aim is to determine what subjects should be combined with disaster literacy. After obtaining the subjects to be integrated, the next step is to develop syllabus learning tools, learning implementation plans (RPP), modules, and assessment sheets (Kamil et al., 2020). At the junior high school level, it can be integrated into social studies, science, or

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ISSN 1533-9211
DOI 10.5281/zenodo.7385942

Indonesian language subjects. Of course, these subjects need to be adapted to the themes that exist in these subjects. In addition to learning tools made by teachers, teaching materials can help the continuity of disaster literacy in the classroom. The teacher prepares supporting teaching materials such as textbooks with pictures or illustrations that can stimulate students' imagination and thinking power in studying disasters. Social Sciences (IPS) is a subject that can be integrated into disaster literacy content. This is in line with the objectives of IPS Education, namely, "the primary purpose of social studies is to help the young people develop the ability to make informed and reasoned decisions for the public as good citizens of a culturally diverse, democratic society in an interdependent world".

b. Socialization at school; Disaster literacy can be done through disaster prevention during and after a disaster. At the prevention stage, students are taught to be aware of disasters. One of the pieces of information conveyed is that one does not readily believe in the news circulating about disasters, students are given an understanding of maintaining the natural surroundings so that disasters occur (Abukhalaf et al., 2022). Students are also provided information about the symptoms and threats of disasters in their area. When a disaster occurs, students are given an understanding of self-evacuation to protect themselves and get out of a disaster. Students are given information about the stages of self-rescue from disasters. Students can be given illustrations in the form of pictures or posters containing self-evacuation that can be displayed in the classroom or school environment and then practiced together. In the post-disaster stage, students understand how to clean the debris from the disaster and how to clean the house with an antiseptic so that disease does not develop.

5. CONCLUSION

Indonesia has a high potential for natural disasters, so it demands the readiness of the government and the community to anticipate natural disasters in the vicinity of their homes. After the major natural disasters in Aceh and Palu, the Indonesian government was very serious about disaster mitigation, both before a natural disaster occurred, during an incident, and during reconstruction and recovery after a natural disaster occurred. Great attention is paid to the government, but no movement or program requires the community to have basic knowledge about natural disasters or how to save themselves from natural disasters. Disaster literacy is one form of basic literacy that every individual must master. Considering that each individual and student at school already has a disaster literacy level which tends to be moderate on the disaster literacy indicator of knowledge, tends to be high on the attitude disaster literacy indicator, and very high on skills disaster literacy. This shows that based on the research results, Indonesian people and students in schools already have good basic knowledge about natural disasters. However, the attitudes and skills in student preparedness are still low. This can be caused by a lack of training or disaster simulation in the community or school. Based on these findings, it is necessary to practice or simulate disasters in schools or the community to prepare for disasters.

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ISSN 1533-9211
DOI 10.5281/zenodo.7385942

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DOI 10.5281/zenodo.7385942

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