

INCREASING COMMUNITY PREPAREDNESS IN FACING POTENTIAL EARTHQUAKE AND TSUNAMI HAZARDS THROUGH THE SIGAPTSUNAMI.ID

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ABSTRACT

Increasing preparedness to face potential earthquake and tsunami hazards is an important effort in protecting the community from the potential impacts of these disasters. This paper describes community outreach activities which are a form of collaboration between communication and art and design, which aims to improve the preparedness of the people of Panggarangan Village in particular, and the coastal area of Banten in general, in facing the potential danger of earthquakes and tsunamis in their area. The method used in this activity begins with identifying problems in the target area, making animated videos of tsunami preparedness, developing sigaptsunami.id pages, training volunteers for information management, and door-to-door socialization to the community. The result of this activity is the existence of a disaster preparedness information center that can be accessed in real time and continuously updated to foster sustainable community preparedness.

Keywords: disaster communication, disaster preparedness, disaster preparedness animation video, disaster preparedness campaign.

INTRODUCTION

Indonesia has a high risk of disaster because of its geological and geographical location. The National Disaster Management Agency (BNPB) states that the geological location at the confluence of tectonic plates makes Indonesia prone to earthquakes, tsunamis, and volcanic eruptions. In addition, Indonesia's geographical conditions are in the tropics and are located at the confluence of oceans and continents, making Indonesia prone to floods, land landslides, flash floods, extreme weather, to drought. (Badan Nasional Penanggulangan Bencana, 2023).

BNPB released the 2022 Indonesia Disaster Risk Index, and said that based on the calculation of the disaster risk index in 2022, there are 13 provinces in Indonesia that are in high risk category, 21 provinces are in medium disaster risk category, and none of the provinces is in the low disaster risk category (Badan Nasional Penanggulangan Bencana, 2023). Still from the same data source, it is stated that in 2022, there were 3,544 disaster events that affected 6,144,324 people in Indonesia that year (Badan Nasional Penanggulangan Bencana, 2023).

The Indonesian region lies between the Asian and Australian tectonic plates, a zone with high tectonic activity on the Pacific Ring of Fire, which is filled with rows of active volcanoes. (Fakhrudin & Elmada, 2022).

Indonesia, which is located on the Pacific Ring of Fire, makes more than 60 percent of Indonesia's population live in areas that are vulnerable to earthquakes (Statista Research Department, 2023). Data from Statista states that in 2020 there were more than 8000 earthquakes in Indonesia. This figure is down around 11 thousand events from the previous year. The data shows how Indonesia is very vulnerable to potential earthquake hazards.

One of the research projects that had attracted public attention was released by the ITB team, which mentioned the potential for a large tsunami with a height of up to 20m triggered by an earthquake of magnitude up to magnitude 8.7, which occurred in the south of Java Island (Center for Earthquake Science and Technology, 2020). Various reactions have emerged regarding this modeling, even so the community is still expected not to panic and increase their preparedness in the face of the potential danger of the earthquake and tsunami (Rizkoh, 2022). Head of Geodesy at ITB, Heri Andreas, said that there was an accumulation of energy in the megathrust section of the Sunda Strait segment, which is in the south of Java Island. From the modeling carried out, if there is an earthquake with a magnitude of 8.7 to 9.0 then there will be a possibility of a tsunami as high as 20 meters (Tim Detikcom, 2021).

Disaster risk can be avoided or reduced by providing awareness to the public about the potential hazards that exist around them (Susilo & Putranto, 2021). One of the keys in disaster management is communication. Not only during and after disasters, but also an important part of initiative, response, and recovery (Moorthy, Benny, & Gill, 2018).

Based on this background, the team, consisting of lecturers from the Faculty of Communication Sciences and the Faculty of Art and Design, tried to intervene to improve community preparedness in the Panggarangan Village area, Lebak Regency,

which was also potentially affected by the earthquake and tsunami as mentioned above. The scope of these activities includes problem identification, platform and content design for disaster preparedness improvement campaigns, and socialization.

This activity also Gugus Mitigasi Lebak Selatan (GMLS), an initiative of the Lebak community in coastal areas, from various elements of community organizations, who pay great attention to the importance of preparedness to face natural disasters independently.

METHOD

Based on what has been described earlier, here are some things that are efforts to increase community preparedness in facing the dangers of earthquakes and tsunamis.

1. Preparation.

a) **Online Focus Group Discussion**

As a first step in identifying problems and targets, a focus group discussion (FGD) was conducted together with partners, the Gugus Mitigasi Lebak Selatan (GMLS) which had already started mitigation efforts in the area. This discussion was held on May 31, 2022. Through the FGD, several things were obtained that were still gaps in mitigation activities that had been carried out.

b) **Field Observation**

To complement the FGD which was previously carried out online, the team conducted a direct field review on July 19-21, 2022. During the visit, there were several activities carried out to obtain sufficient data as a basis for designing the campaign message later, namely conducting observations and interviews with residents, FGD with GMLS and village communities, observing evacuation points, and observing existing media.

2. Realization

a) Design and Production of Tsunami Alert Animation Video

One of the problems found in the previous stage is the absence of messages specifically targeting children in the elementary and junior high school age range. Thus, one of the solutions proposed is making animated videos that are adjusted to children's media consumption at that age based on data that has been obtained before.

b) Design and Production of Sigaptsunami.id and Guidebooks

Another problem that was also found was the absence of an information center that specifically reported what had been done as a mitigation effort, as well as being a means of *knowledge management* for Gugus Mitigasi Lebak Selatan. For this reason, website design and production with a sigaptsunami.id domain is carried out which is expected to become a center of information related to preparedness in facing potential earthquake and tsunami hazards in the region. In addition, a guidebook is also designed that can be accessed on the page.

c) Sigaptsunami.id page management training for volunteers

After the page is successfully launched, of course, there needs to be continuous data management and updating efforts. For this reason, training was carried out for volunteers of the Gugus Mitigasi Lebak Selatan regarding the management of the page, so that later the page can continue to be updated independently.

d) Door to Door Socialization

The last step taken is door-to-door socialization, equipped with stickers containing barcodes which if scanned will lead to the sigaptsunami.id page. The socialization was carried out in the

coastal area, accompanied by volunteers from Gugus Mitigasi Lebak Selatan

RESULT AND DISCUSSION

1. FGD Results and Field Observations

There are several things found in the initial steps of this activity, namely online FGD and field observations carried out. From the FGD conducted online, it was found that there was no information center that specifically informed any mitigation-related activities that had been carried out in the area, emergency contact information if they occurred disasters, and the management of information related to population data that can be the basis for decision making when a disaster occurs. In addition, mitigation messages have been conveyed with general messages, so there is a need for campaign messages that are specific to certain age groups, such as for example to elementary, or junior high school age, which of course requires a different approach.

The results of the online discussion were then also complemented by field observations carried out in the coastal area of Panggarangan Village. Findings in the field show that tsunamis are better known by terms that use the language of the region, namely *cah laut*. People already have awareness of the potential dangers of earthquakes and tsunamis that are around them. Even so, the steps that must be taken when an earthquake and tsunami occur have not been well mastered by them. There are residents who even say that when an earthquake occurs, they tend to be reluctant to evacuate to higher places because they are worried when they must leave their homes and their belongings and feel troublesome when they must carry the important documents they have. For residents, the response they understand when there is a tsunami early warning is only limited to evacuating to higher places. The lack of information on response measures

that can be accessed makes people do not have enough knowledge regarding the response that must be carried out when an earthquake occurs and the existence of tsunami early warning.



Picture 1 Visit to Residents' Homes

Observations on the existing media that have been installed there show that the condition is still quite good, it's just that some of the sizes are too small so it is difficult for people to see. Even so, there are still not many media that guide response steps when an earthquake occurs and there is no announcement on tsunami warning that is installed in people's homes, places business, as well as tourist attractions. This lack of information has the potential to cause panic and chaos when disasters occur.



Picture 2 Information Media Observation

One of the things that can be explored is the dissemination of information through digital media, both through websites, social media, citizen communication groups, and so on. This considers on the findings that the internet

network in the region is quite good and people understand how to use social media and digital devices. Based on observations, even residents from the elementary age range have been fluent in using their devices to access and share information.



Figure 3 Observations to Coastal Residents

Related to one of the campaign's specific target options related to disaster literacy that was discussed at the online FGD, namely a more specific message for children, the team made observations at SDN 3 Panggarangan located on the coastal area. From these observations, it was found that it turned out that the students were very familiar with how to respond when an earthquake occurred and tsunami early warning. This is because the school has often received training and practice on this matter.



Figure 4 Information Collection to Students

The results of the interview showed that this elementary school student became one of the most concerned about mitigation and preparedness in facing this potential. Even so,

their parents have not had the same concern. One of the potential activities is that these children can become *agents of change* to communicate mitigation and preparedness to their families. In addition, what is also the result of observation is that elementary school students are quite accustomed to using internet devices and the TikTok platform with the basis of audio-visual content being the most frequently accessed media and used as a place for students to find information and entertainment.

2. Tsunami Alert Video and Sigaptsunami.id Page as a Solution

The results of the FGD and field observations that have been carried out are then implemented into two main campaign media, namely videos and websites that also contain response guidelines when disasters occur. The first practical step is to make a brief related to guidebooks, videos, and websites.

BRIEF

Membuat buku panduan dan video animasi terkait langkah tanggap Tsunami dari **Buku Panduan Kesiapsiagaan Bencana** halaman 21 - 25.

Buku Panduan

- Ukuran A4 (Potrait)
- Casual & Light
- Jumlah halaman fleksibel asal mudah dibaca

Video Animasi

- 1080x1920 (Potrait)

Picture 5 Brief Video and Guidebook

In addition, the team also made a mock-up for a website that is planned as an information center to store information related to disaster mitigation that can be accessed in real time by the community.



Figure 6 Website Mock-Up

After that, execution is carried out to produce animated videos, guidebooks, and pages that will contain this information. The page with sigaptsunami.id domain has been launched and can be accessed by the public to be able to find out information related to the following. After the guidebook and animated video are produced, the material is then uploaded. The guidebook can be downloaded at the following link <https://www.sigaptsunami.id/panduan>, can be seen in the following image also is a screenshot of the first page of the guidebook.



Figure 7 Start Page of Guidebook

In addition, there are animated videos in portrait format because we consider the main device used by the public is a smart phone. The video can be watched at the following link www.sigaptsunami.id/video and here is a screenshot image of the video.



Figure 8 Beginning of Animated Video

3. Door to Door Socialization and Sticker Sticking

After the sigaptsunami.id page was launched, the team conducted door-to-door socialization to notify the existence of a new information center containing community preparedness guidance materials in the face of the potential danger of earthquakes and tsunamis that exist in their region. In addition to being done verbally, the team also prepared stickers with barcode images which if scanned using a smartphone will lead to the sigaptsunami.id page.



Figure 9 Stickers Sticking in Business Places

The stickers are placed not only to people's homes, but also in businesses, and places that are easily seen by many people. Of course, before the placement is done, a re-explanation is made regarding the potential danger of earthquakes and tsunamis, as well as requests for permission to place the stickers.



Figure 10 Scan Barcode

After the sticker is placed, people are also taught how to scan barcodes from the devices they have. Continuous repetition of information is expected to increase public awareness and create a sense of urgency to understand the potential dangers around them.

4. Sustainability of the Program to Increase Community Preparedness for Potential Earthquake and Tsunami Hazards

In order to maintain the sustainability of this program, especially related to the management of the sigaptsunami.id page, the team conducted training for volunteers of the Gugus Mitigasi Lebak Selatan, so that they could continue to update the information on the page. The basics of website management were given, and according to the team's monitoring, to this day volunteers continue to update the information on the page, especially related to news of ongoing activities related to disaster mitigation.

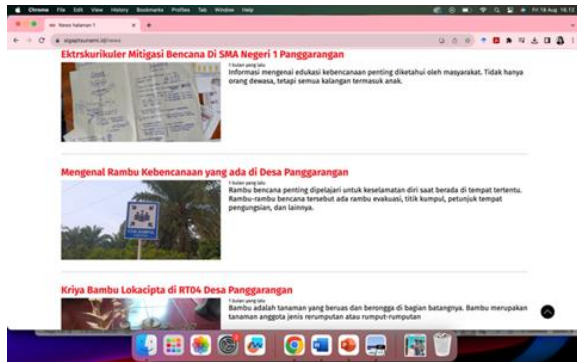


Figure 11 Screenshot of the News Menu

It can be seen in the picture that the news page continues to be updated, in addition to its purpose to disseminate mitigation efforts that continue to be carried out, as well as an effort to document these efforts.

The future development plan of this program is the existence of a menu that can be a way for the Gugus Mitigasi Lebak Selatan to collect data on residents in the area. The data will later be used as a basis for decision making if a disaster occurs, such as decisions regarding requests for assistance needed. For example, if from these data there are several toddlers and children, then the

assistance that can be provided is diapers, formula milk, and so on.

5. Discussion of Activities related to the Context of Disaster Communication

In disaster communication, it is important for communicators who convey messages to people in disaster-prone areas to find things that can connect and attract interest from the community. One way is to understand the environment from the point of view of said society (Hasmira, 2021). This has been done by the team by identifying problems at the beginning through FGD and through field observations that go directly to the community. Often, we get stuck with the communicator's perspective, when the most important thing is to understand what the needs of society affected.

In this activity, it was also found that the use of local languages, namely ca ah laut, which is more often heard by local people, is also more effective in conveying the potential dangers around them. Ca ah laut itself means flood from the sea, which means the same as tsunami. Even if we look further, Fakhruddin & Elmada also found that not only through different mentions, but there are local stories passed down from generation to generation related to the ca ah laut. The use of language and stories that are close to the community, through this activity, has proven to make people more connected to the message communicators want to convey.

Related to the discussion of knowledge management which since the beginning has been the main concern of this activity, Oktari et.al (2020) mentioned that there are several important things that can be the reason why knowledge management is important. In disaster communication, knowledge sharing can be done to reduce potential damage and loss, in addition information management can be a database or framework for support in decision making. Oktari et. Al mentioned that it is important to capture knowledge through community

observation and experience, as well as use local knowledge related to disasters. This knowledge can then be developed and juxtaposed with scientific knowledge as conveyed by Fakhruddin & Elmada. Later, the data can also be processed using technology so that it is useful in disaster management, from pre- to post-disaster.

The creation of sigaptsunami.id page is one of the right solutions to problems related to knowledge management earlier. This effort must also be pursued to continue with the development of other innovative features that support knowledge management in disaster risk reduction.

CONCLUSION

Increasing community preparedness in facing potential hazards that exist around them is an important aspect in maintaining community safety and sustainability. Indonesia as one of the most vulnerable countries of natural disasters needs to continue to make these efforts so that people can understand the risks around them and mitigate these risks.

This community outreach activity that focuses on improving preparedness shows that the combination of approaches derived from two scientific domains can produce comprehensive outcomes and in accordance with what the community needs. In addition, the combination of diverse approaches is expected to have a positive impact in raising public awareness about the potential hazards of earthquakes and tsunamis that exist around them, and the steps that need to be taken when disasters occur. In addition, this activity also provides lessons on the importance of a holistic approach, by collaborating technology, visual creativity, and direct interaction in its activities.

The development of the sigaptsunami.id page, which is expected to be a center of information related to mitigation and preparedness for potential earthquake and

tsunami hazards, is also expected to continue to be developed so that it can become a place for knowledge management which can later be useful as a basis for decision making.

In conclusion, this community outreach activity has made a significant contribution in improving preparedness to face potential earthquake and tsunami hazards, especially in Panggarangan Village and in general on the coast of Lebak Regency, Banten Province. By combining various methods and approaches, people are expected to be better prepared and able to face the threat of natural disasters with better knowledge of risks.

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