

# Exploring the Mitigation Programs at Primary School Located in the Devastating Tsunami Affected Area in Aceh - Indonesia

By

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## ABSTRACT

The earthquake and tsunami that hit the province of Aceh, Indonesia at the end of December 2004 caused the loss of life of more than 200,000 people, including those from the community where this research takes place, the village of Deah Glumpang, Meuraxa sub-district, Banda Aceh town. Nearly 95 percent of the houses and buildings were wiped out by the tsunami and more than 80% of the people living in this area were killed. One of the reasons why such a heartbreaking tragedy occurred was that people including students had never known or been taught about disaster risk. Learning from this condition, SDN 48, a state primary school located in the area, have offered mitigation programs to the students. The program has been going for more than 2 years and is feasible to study to see its impact on students. For this purpose, the researchers conducted interviews with the teachers including the school principal and students, and it was obtained that almost 85% of them like this program very much and considered it very useful in anticipating similar disasters in the future. However, according to respondents, the program should be improved and developed to be more progressive and to include other participants like parents in order to anticipate similar disasters. Furthermore, the program should also be disseminated to other schools in the City of Banda Aceh or in various places in Aceh and Indonesia.

**Key Words: Mitigation Program, Earthquake, Aceh Tsunami**

## **INTRODUCTION**

Natural disasters often unpredictably occur to a community, which results in people's losses of properties and lives. An earthquake measuring 9.0 on the Richter scale struck off the western coast of North Sumatra on 26 December 2004 and triggered massive waves that devastated coastal regions throughout the Indian Ocean rim. Aceh Province in Indonesia suffered the greatest mortality, with widespread destruction extending along more than 1,000 km of coastline, and it was reported that more than 270,000 people were killed or missing in 14 countries. In Aceh province alone, the most devastated by the disaster, was reported more than 200,000 people died or missing.

Among the victims of the tragedy in Aceh province, it was estimated that as many as 33,000 children died or lost one or both parents. Besides the loss of life, the tsunami displaced more than half a million people and destroyed homes, roads, businesses, schools, health facilities, places of work, and many others. The evidence of the enormity of the catastrophe is still clearly visible to date in Aceh such as mass graves, a ship above the roof of the house, and a 2,600-ton electricity vessel once in the sea flung 3 kilometers inland, and various documents were printed and online media talked about the disaster. The unforgettable experiences of the victims of the earthquake and tsunami are still well recalled in the minds of many Acehnese people, especially those who survived from the disaster and suffered traumas for a long time. The witnesses who are still alive often tell how sea water rolled them so that they were separated from their parents and never met them again.

It is very necessary that humans make efforts to anticipate or at least to reduce the risk of such disasters. These efforts can be in the form of stories passed down from generation to generation related to disasters or in the documents kept in a safe place such as a library for everybody to study. It can also be applied in the field of education to teach children what to do if a similar disaster occurs.

During the earthquake and tsunami recovery period, many teachers and students in Aceh or around the disaster area were trained by various international institutions related to disaster risks, but over time the community's readiness to deal with disasters began to decline and be forgotten. Realizing this, the City of Banda Aceh has initiated schools near the coast assigned to be disaster response schools, and primary school SDN 48, where this research was conducted, was one of them.

The researchers selected this school with the reason that among 15 schools around the Banda Aceh coast that had been assigned to be the disaster response schools, this school is considered having a better program in preparing or training children and teachers to be responsive to disasters. Besides, the school also has support from TDMRC (Tsunami and Disaster Mitigation Research Centre) from Syiah Kuala University in establishing the mitigation programs. The research was conducted to see how the disaster response program was designed and practiced in primary school SDN 48 and its impact on the children and teachers.

## **LITERATURE REVIEW**

### **A. Natural and Non Natural Disasters**

Disasters often occur unpredictably, but when it happens it is hard to forget, and sometimes it remains in our mind for a long time. Natural disasters such as earthquakes and tsunamis can hardly be predicted accurately, but some other disasters can be detected even if there are no exact dates and time such as landslides, floods and forest fires. Some of the disasters that occur seem to be closely related to human activities that disrupt the balance of nature with its environment such as illegal logging, illegal mining and forest fires. Some other disasters such as storms, droughts and global warming can be known thanks to the presence of technology.

Natural disasters are often interpreted as “sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community’s or society’s ability to cope with using its own resources. More specifically, the disaster is divided into two, namely: 1)

natural types of disasters such as earthquakes and tsunamis, drought and lack of water, hurricanes, tornadoes, and floods. 2) man-made and technological types of disasters in the form of toxic materials, nuclear blast, biological weapon, and explosion.

Similar to other disasters, earthquakes and tsunamis like those occurring in Aceh can be sudden and very destructive. Besides, they create social and environmental problems, and it also results in economic problems that usually last a long time. However, compared to weather or biological disasters, damage from earthquakes and tsunamis is usually more severe and requires a long time to recover because it is difficult to access in a fast and precise time (Guo, 2010). Each disaster usually produces an impact, some are usually resolved quickly and some take a long time to cure it. Particularly for the impact of natural disasters, ChildFund (2018) shows its effects are, among others, displaced populations, health risks, food scarcity, stress and emotion.

Natural disasters are often unpredictable and can make the whole community shocked and some people even lose their lives or physical disabilities for life. Others, through disaster, can experience emotional distress, feelings of anxiety, constant worry, difficulty sleeping, and depression. Children who experience disasters as said by Dyrefrove et al. (2018) require special attention from parents or social bodies.

## **B. The Impact of Disasters on Children**

It is estimated that three things happen due to natural disasters that can endanger children and often with long-term effects: 1) disaster can cause children's physical health. Maybe they are injured or killed, malnourished without having foods or diarrheal disease due to contaminated water and difficult to access to medical care; 2) disasters can cause mental health problems such as stress, fear and sadness because they lost their beloved persons such as parents; and 3) disasters can disrupt children's education because families have move to new places because school and homes were destroyed.

By knowing the enormous impact caused by natural disasters in various forms to children, it is appropriate for educational institutions like schools to prepare children to deal with disasters or to reduce the impact because children are usually the most susceptible to the disaster. Schools need to have various programs and activities designed

to be socialized and practiced with children. Merchan (2015) said that by informing children about how to prepare for and respond to disasters, they become involved in the process, have greater power over the outcome of their situation, which consequently makes them less vulnerable both during and after a disaster. By preparing children mentally and physically for a disaster, families and communities can diminish some of the concerns they have in a disaster's aftermath.

Wulf (2010) suggests nine ways as follows: 1) create an emergency plan in advance and discuss it as a family, 2) make it as fun as you can, 3) try to keep your children physically close to you. Hug them and verbally reassure them you are all together and safe, 4) be honest with your kids; in accordance with their ages, communicate to your children the facts of the situation both during and after disaster, 5) give them control, any amount of control you can give them only adds to feelings of security, 6) read children books or telling story with them, 7) let them help, allow and encourage children to participate in the physical recovery process in age-appropriate ways, 8) reassure children that you are all together and safe and listen to their concerns and feelings, 9) still use a support network to buoy up you and your children, including friends, family, your kids' teachers, and other community members.

The impact of the child and adult catastrophe needs to be resolved; some are easy and some take a long time. There are things that have to be handled individually and that need to be done with groups and this method seems to be more likely. This is appropriate as stated by Math (2008) that only a few of those who survived in disaster needed intensive and individual psychiatric interventions, but the majority of them needed community-based group intervention such as art (painting/drawing) therapy, informal education, group discussions, drama, storytelling, games and sports.

### **The Role of Educational Institutions**

Children usually learn something related to disasters or endanger them if they have experienced on it, and not enough by prohibiting them what to do and not to do. By their experience and feeling unsafe and dangerous, children start to avoid unpleasant situations. Communities throughout the world believe that children are the hope for the future and

they believe schools have a direct impact on this young generation now and in the future, and they need to instill cultural values and various knowledge and skill including disaster risk management. Education on primary and secondary schools greatly helps children to play an important role in saving lives and protecting community members. The implementation of disaster risk education into the school curriculum is very helpful in building awareness on disasters and knowledge on how to handle disasters themselves.

Kurniawan (2019), director of Community Development, the National Disaster Management Agency in Jakarta said that learning process on disaster and mitigation in the schools does not meet the standards yet since they have no fixed syllabus or curriculum. Rather, most educational institutions teach disaster and mitigation is only cursory based on what material is in the textbook with a focus on reading and answering questions so that there is no trace to children. Students are rarely trained to act in the form of drills or simulations to face disasters.

Honesti (2012) mentions for disaster preparedness schools there are several teaching materials which need to be considered such as: 1) providing knowledge of school residents about disasters such as tsunamis and earthquakes, 2) clarifying human behavior that damages ecosystems, 3) showing events that can disrupt natural livelihoods , 4) needing to have simulation on resource mobilizations in disaster preparedness, 5) more understanding of disasters due to social, cultural and political crises, 6) promoting the role of institutions and abilities of the school community, 7) integrating Disaster Risk Reduction (PRB) into the unit of formal curriculum or extra-curricular, 8) building partnerships and networks between parties to support PRB implementation in schools.

What activities need to be carried out by the school related to the earthquake, for example, are exemplified by Russell (2016 ): 1) consider the buildings is made of earthquake resistance for a certain scale and this is known by architects, 2) Secure furniture; infrastructure used in walls or elsewhere is safe and may fall, 3) create a cache of emergency supplies, food for emergency, 4) students are familiar with safety procedures, 5) hold earthquake drills, 6) practice evacuation plans, 7) be prepared for search and rescue; students should make sure that they are going to put themselves in danger.

## **RESEARCH METHOD**

This study was designed as qualitative research which was aimed at exploring the mitigation programs at state primary school SDN 48 Banda Aceh which is located in a devastating tsunami affected area (Deah Geulempang village), Banda Aceh, Aceh – Indonesia. The data was obtained by interviewing 16 students from levels 3 to 6, 4 teachers (including the coordinator of the program), and the school principal. Studying the documents such as students' works, media used and disaster laboratory was also part of the research method.

In implementing this study, the researchers used research instruments in the form of interview guide to talk with all respondents and a check list to see the availability of media and other resources to support the mitigation programs. To validate the data and information, the researchers conducted the Focus Group Discussion (FGD) by involving teachers, school principal, and instructor in charge of mitigation program.

## **FINDINGS AND DISCUSSION**

The principal of state primary school (SDN 48) that used to be SDN 91 mentioned that the school is chosen to be one of the disaster response schools in Banda Aceh City is because it is close to the sea or about 300 meters from the coast of Ulee Lheu which was severely damaged during the tsunami, and it was estimated more than 80% of the total students (230) were killed in the tragedy. The principal added that SDN 48 was rebuilt by NGO "Education International (EI)" about one year after the tsunami. At the time, there were not many people living around the school and the number of students ranged from only 7 to 15 per class. Over time, people coming from outside of the area continue to arrive and live around the area and the number of students continues to grow. In 2019 there are 160 students studying in this school with 9 teachers.

The school principal also mentioned that considering the huge number of casualties that have befallen to the community around this school, including children, it is reasonable that SDN 48 is designated as a disaster response school, and also the school is not so far

from the four-floor Escape Building built by a foreign donor. This means that children and teachers need to be prepared to go to the building if a similar disaster such as a tsunami occurs.

To achieve this goal, the school received technical assistance and training from the TMDC of Syiah Kuala University including the model of mitigation programs, and arranging one class to be a disaster laboratory where children learn and practice. The program includes 1) understanding various natural disasters and human-caused disasters and why they happened, 2) practicing by writing what students think of the consequences of disasters to them, friends, and family, 3) discussion to find steps that need to be taken when and after a disaster occurs. At the end of the interview, the principal said "Children need to be prepared and accustomed from the beginning in the face of disasters and need to build awareness to help fellow humans anywhere else if there is a disaster". The principal acknowledged that the mitigation program in his school is still weak and needs improvement. However, he admitted that the existing programs are far better than other schools around Banda Aceh that have been designated as disaster response schools. He has an intention to develop better disaster learning programs and to share success with other schools.

Children who were interviewed were between the ages of 10 and 13 and had not been born at the time of the tsunami in Aceh occurring, and their parents were also average from outside the tsunami area and came and settled in this location two or three year after the tragedy. Thus, when they were asked about tsunami, they could tell very little. Two students in the fourth grade, for example, they could not explain much about the tsunami, and this could be because their parents rarely explained what it was, except something that had been explained by the teachers at school. R (grade five student) also understood not much, but she felt frightened when she was told the tragedy since she had watched it on videos. While N (grade five student) knew more about what happened to the village where he lives now since the parents share a lot about the tragedy.

When asked: "What would you do if there was another tsunami come to this area?", student B said that she would run to the escape building nearby as told by teachers. While S (Class IV), when asked: "What would you do if an earthquake happened?", he quickly

answered that he would find a safe place such as a table. When the researcher tried to comment, “Why not jumping from the 2<sup>nd</sup> floor to save yourself”, J (grade five) immediate answered: “According to our teachers jumping could break our legs, hands or could hurt our body, and we should walk down through the stairs”, he added.

The learning process about risk disasters was usually carried out every Saturday in the school hall other than those given in class. When the students were asked what they had learned, M (grade three) said that she learnt about disaster through group discussion by writing the opinion about disaster on a paper. When asked what she wrote on paper, M said it was about a disaster that killed a lot of people, including students from this primary school. When the researcher showed one of the students’ writing borrowed from the teacher, L (grade five) read the last line: "I inform my friends to run to escape building and stay there until the tide was lower”. Meaning that she knows what to be done if the tsunami comes again.

When asked what else was learned by students in the school regarding disasters, three students said it was "drill", where students are made as if they were facing natural disasters, and hurry up to evacuate to the escape building which is located approximately 300 m from this school. Usually this drill is carried out every December 26, and sometimes on the same date but different months. Especially for December 26, the alarm on the shore of the sea was sounded by officers, and the public was informed earlier that this one was an exercise to avoid panic. The community around the beach, especially students were asked to participate in this exercise. Some children felt frightened, and some other enjoyed this exercise. This was done as a learning experience from the past when many people did not believe that the sea water rose to land and then killed many people.

Based on the interviews with students, it can be concluded that not all of them exactly know what they should and should not do if the earthquake or tsunami occurs. Independent and confident students (60%) easily said they would follow the instructions given in studies; 25% said they would wait for the teachers’ instruction; and the rest 15% gave no answers. From the answers, it could be said that the principal's opinion was correct that students need to be taught and trained the mitigation programs continuously in dealing with natural disasters that could come at any time.

When the students were interviewed and asked about their impression of the Risk Disaster Program at their school, most of them said they enjoyed the activities and felt that it was very useful to face disaster that might happen someday. According to the students, the activities were presented in a fun way like watching videos and discussion afterwards. When asked if they had ever entered the tsunami museum located in the middle of the city of Banda Aceh, 6 out of 16 students said they had been there with their parents, while the others had never been inside the museum yet, and they expected one day their teacher would take them in. This tsunami museum is good to visit as media of learning about disaster since it keeps various documents such as pictures, photos, home materials, and videos as evidence of the ferocious tsunami that hit Aceh, especially the City of Banda Aceh.

All teachers who teach at this school strongly support the disaster programs applied in the school. They realize that everyone who lives in a school environment including themselves really needs disaster knowledge. When asked to several teachers, "What is the importance of disaster programs taught to students?", one teacher said that the program was not only beneficial to students but also to the people who lived around the school. Another teacher commented, "It is almost certain that the people of Banda Aceh City never knew about the tsunami, so when it was said that sea water rose far to land, they were ignorant and even considered it was nonsense". Another teacher said that it was considered one of the causes of the many fatalities in this city compared to people on Sinabang island which was close to the source epicenter of the earthquake, but the number of victims was very low since they knew the tsunami called *Sumong*, the information of which has been passed from generation to generation.

One teacher said that a program should be improved by involving students' parents because during an earthquake or tsunami the children could be at home and their parents would decide what to do. There was a possibility that the parents would use their feeling, and it was not based on knowledge as taught to their children. Parents' involvement in this program is not as frequent as students, but they need to know what to be done if there is an earthquake, tsunami, and other disasters happen to their environment. The School

Committee, according to the teachers, could be an intermediary so that the program could be implemented for the parents of students.

The principal of the school and program coordinator said that it needed serious support from the government to increase the motivation of teachers and students to learn about natural disasters such as the tsunami. What needs to be done according to him includes: 1) training teachers regularly about disaster, 2) providing a variety of complete teaching aids such as pictures and videos of disaster, 3) providing books or other references in the library, 4) getting continuous support from government and universities, and 5) facilitating teachers to conduct comparative studies in regions or countries such as Japan that are frequently affected by earthquakes and tsunamis.

## **CONCLUSIONS AND RECOMENDATION**

The study can be concluded that disasters are not far from our life, whether natural disasters or disasters as a result of human actions. The occurrence of some natural disasters such as landslides and floods is inseparable from human behavior as well. Thus, the efforts are needed through education to maintain the sustainability of nature. On the other hand, for natural disasters outside human intervention such as earthquakes and tsunamis, education should be provided in order to reduce the impact of the disaster.

The elementary school SDN 48 has taken the initiative to teach disaster education to students through the Disaster Education Program. The students are taught through discussions and journal writing on disasters weekly in two hours for each meeting, and they are drilled or do field exercise twice a year. For teachers, they are trained through workshops by preparing them to be ready to support this Disaster Education Program.

This Disaster Education Program is a good start at this school, and it has a positive impact on children and teachers. Children, for example, no longer throw litter, and schools look clean, beautiful and healthy. In addition, more than 80% of students have realized the consequences of a disaster and know what to do in case of natural disasters such as earthquakes and tsunamis.

Disaster programs that already exist in this school are not a perfect one, but it needs to be improved such as by involving parents in it. Otherwise, when a disaster occurs a child is more likely to follow the instructions or directions given by his or her parents even if it is wrong. Besides that, teaching media in the disaster laboratory need to be added and improved based on the development of science and technology and need more drill or exercise so that children are better prepared for disasters.

The researchers recommends that the Disaster Education Programs need to be taught at a very early age, the focus of which is not only to protect the environment but also to anticipate or reduce the risk of any disaster. It will be great if environmental material is taught independently, but if it is not possible, it can be conveyed through other lessons such as science, social science, and religion. The authors also recommend the activities should accommodate the involvement of parents who knows when there is a disaster the child is at home and the parents know what to do or at least they listen to their children's advice.

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