

School's Strategy on Flood Disaster Mitigation Endeavor to Students of SMA Negeri 1 Welahan

Septa Mauliyatun Nikmah
Universitas Negeri Semarang
Semarang, Indonesia.
septamauliya054@gmail.com

Eva Banowati
Universitas Negeri Semarang
Semarang, Indonesia.
evabanowati@yahoo.co.id

Erni Suharini
Universitas Negeri Semarang
Semarang, Indonesia
erni.suharsini@gmail.unnes.ac.id

Abstract—The school's strategy in decreasing disaster risk is improving flood disaster mitigation knowledge at SMA Negeri 1 Welahan management policy, planning and school organization is a strategy as a reference to the disaster preparedness school. This article aims to determine the level of students' knowledge in disaster mitigation and school strategy in facing the flood disaster. The data analysis method is test correlation of product moment that used questionnaire, in-depth interviewing, direct observation, and documentation. The population of this study was all of the students that is 876 students by using stratified random sampling. The results of this study are the knowledge of SMA Negeri 1 Welahan students about disaster mitigation in the pre-disaster phase of 79.32%, during disaster is at 66.66% and post-disaster is 63.21% that presentation is in high category whereas based on the correlation test there is a significant positive relationship between the students' knowledge level to flood with the ability to dealing with flood disaster. That relationship is indicated by a correlation result of 0.613 or $p = 0.023$ ($p = 0.023 < 0.05$) high disaster mitigation. In addition, the school's strategy is to elevate the new school building, develop management policy, planning and emergency response organizations and SOP (Standard Operational Procedures) related to flood disaster mitigation, that is done as a school strategy which will be the reference for disaster preparedness schools.

Keywords: flood disaster, mitigation, disaster preparedness schools

I. INTRODUCTION

SMA Negeri 1 Welahan is located on Dukuh Jeruk Wangi, Kalipucang Sub-district Welahan which is one of the sub-districts in Jepara with a relatively large rainfall average. As a school that located in the area of flood prone, disaster mitigation endeavor from SMA Negeri 1 Welahan have to include disaster materials in the school curriculum through geography subject. At the Federal Emergency Management Agency

(FEMA, 2012) divides the responsibilities of disaster mitigation education to the principals, teachers, educators, students and related parties in school preparedness in disaster. This is in accordance with the concept of Disaster Preparedness School which has two main elements, namely: 1) Safe Learning Environment; and 2) the preparedness of a school citizen. Disaster mitigation in schools is crucial to support the implementation of disaster preparedness schools. Disaster mitigation as

mentioned in Law Number 24 of 2007 Article 44 letter c is done to reduce disaster risk for people residing in disaster prone areas that can be done through various ways including the implementation of spatial planning, development arrangements, infrastructure development, building layout, and education implementation, counseling and training in both conventional and modern.

Topographic factors in the location of schools are relatively flat and traversed by the Wulan River which is quite large and its irrigation network makes the area vulnerable to the threat of flood disasters. According to the Region Agency for Disaster Countermeasure of Jepara Regency there were 12,017 people who were displaced in the 2014. This is the biggest disaster for more than 8 years, which caused access to be cut off in Jepara Regency. Flooding is a natural event that can be happened in an area or region that causing loss of school's property, destroying infrastructure buildings and environmental facilities and even damaging the life of the school and causing fatalities (Setyowati, 2008). According to Banowati&Sriyanto (2011) flooding is a natural phenomenon in the form of rising water in that area so that it covers the surface of the area. The high level of flooding risk that can increase the level of anxiety in the schools (Erni&Setyowati, 2015).

As a school of choice for disaster preparedness schools aimed at creating preparedness and a safe culture in the school environment and building the strength of each element of the school for disaster risk reduction (PRB KPB, 2010). Integrating disaster mitigation in these schools needs to be designed creatively and innovatively to build disaster preparedness schools. Disaster education is an endeavor to reduce the risk of disasters and also be able to shape student awareness, so as to improve the spirit of mutual cooperation, social care, love of the surrounding environment (Erni et al., 2015)

Departing from the problems described in this study tries to examine and formulate strategy at SMA Negeri 1 Welahan in improving students' knowledge especially for students that related on flood disaster mitigation.

II. RESEARCH METHODS

The study was conducted with quantitative methods using product moment of correlation analysis. This method was used with the goal of obtaining complete and in-depth information related to the relationship of students' knowledge levels to flood disaster mitigation with the ability to face flood disasters and strategies that applied by school in disaster mitigation in SMA Negeri 1 Welahan. The population of all students of SMA Negeri 1 Welahan is 876 students. The sampling technique used stratified random sampling of 88 students. The data used are secondary data and primary data. Secondary data collection was obtained from the school itself. While the primary data is done by field observation, interviews and questionnaires. Secondary data was form of monographs, SMA Negeri 1 Welahan, whereas the primary data in this study include knowledge of school that is about flood disaster mitigation and the response indicated when there is a disaster warning. In addition, the data on strategies taken by the school towards endeavors to improve flood disaster mitigation knowledge.

III. DISCUSSIONS

Knowledge Level of Flood Disaster Mitigation

One of the efforts made by the school in the disaster mitigation strategy is to increase knowledge of flood disaster mitigation in students which is explained in the following table 1.

Table 1. Knowledge of Flood Disaster to Students of SMA N 1 Welahan

No	Category	Total of Students					
		Pre-disaster		During Disaster		Post-disaster	
		Total of Students	Percentage %	Total of Students	Percentage %	Total of Students	Percentage %
1	High	69	78,41	72	81,81	73	82,95
2	Midle	11	12,5	10	11,38	9	10,24
3	Low	8	9,09	6	6,81	6	6,81

Source: results of data management in 2019

A. *Knowledge of Disaster Mitigation Pre-disaster of Floods*

The knowledge level of students on activities before the floods at high category, it means that students have basic knowledge related to the flood disaster well. The Students' knowledge of pre-disaster is high, this makes students who are in the area together with their families adapt, and increase knowledge independently and added to get knowledge from the school.

B. *Knowledge of Disaster Mitigation During Floods*

Table 1 shows that the students' knowledge in disaster mitigation as the floods are in the high category because the activities improve knowledge of disaster is input on extracurricular activities and integrated with geography subjects. When floods occur, they are immediately fled by always monitoring the height of the place. If the high of water is less than 50 cm they are still living at home, but when it exceeds 50 cm they fled to a place that is safe and have not the impact of floods, to the nearest neighbors and to the place of refuge that has been provided by the related parties.

C. *Knowledge of Disaster Mitigation Post-disaster of Floods*

Post-disaster floods category of knowledge of students in disaster mitigation, students are in the high category because most of the schools already assumed that flood disaster have become a routine habit that occurs during the rainy season, this habit has occurred in a long time so they consider flood disaster to be a subscription disaster on them, flood disaster that frequently happens make students able to adapt. Students also participate in community service that carried out by the school. In post-disaster of flood activities, the amount of knowledge of students in the low category is higher than in the knowledge of the

pre-disaster of flood and during flood disaster, this because of students are still in the recovery stage.

In knowledge of students at SMA Negeri 1 Welahan both pre-disasters, during disaster and post-disaster floods are in the high category, but based on interviews conducted with the headmaster for strategy and application are still in the process of habituation, because schools have not officially conducted disaster mitigation in SOP and MoU with related parties.

Relationship of Disaster Mitigation Knowledge between Disaster Preparedness

Based on product moment of correlation analysis results in a relationship between the knowledge level of disaster mitigation with the ability to deal with flood disasters in students, but not significantly indicated by a correlation of 0.613 or $p = 0.023$ ($p = 0.023 < 0.05$) high disaster mitigation. Many factors affect it among others such as the student's personal experience of the flood disaster, the influence of others, especially family of flood mitigation, or culture in an environment that place students live. Knowledge of flood disaster mitigation is a major factor in preparing to face flood disasters. The experience of disasters that hit Welahan Sub-district has made a meaningful lesson about the importance of disaster knowledge. In addition, knowledge will influence attitudes and concerns related to disasters especially in disaster prone areas. This can be a reference for related parties to decide SMA Negeri 1 Welahan into a disaster preparedness school.

Disaster Mitigation Strategy

As a disaster preparedness school that oriented to protecting children and young people in forming a conducive and safe learning environment from inevitable disasters (Lesmana, 2019). Implementation of mitigation endeavors is based on the urgent need in accordance with the identification (Suharni & Kurniawan, 2019). the knowledge level of high flood disaster mitigation, because the school that has had a strategy that has been applied in accordance with the indicators of flood disaster mitigation as follows:

A. School Buildings

The big flood that occurred in 2015 in Welahan Sub-district, caused a lot of damage to public facilities and infrastructure. The floods also inundated SMA Negeri 1 Welahan, with a height

up to 20 cm in some rooms, even though the impact caused not so much, but from the school itself anticipate this case by designing new buildings that are resistant to floods. The method used is to raise the new building up to 50 cm from the old building and repair the drainage of the school area.

B. Management Policy

The effectiveness of the organization's policy to reduce the vulnerability and increase the recovery of disasters (Paul, 2011). Poor disaster management will lead to a situation that is not conducive (Budiharto, 2014). SMA Negeri 1 Welahan is used as a reference to become a disaster preparedness school, so that it gets direct guidance from the Meteorological, Climatological and Geophysical Agency of Jepara District. The school is making policies and commitments that have been written in the form of cooperation between the parties involved. This policy is in the form of schools' willingness to form emergency responses which are included in the Scouts and Red Cross Teenagers extracurricular activities. This policy is socialized to the activities of the introduction of the school environment. The school also integrates disaster material into geography, which is in accordance with the 2013 curriculum.

C. Planning

A disaster preparedness school is a school's commitment to make school residents feel comfortable and safe in the school environment, so that schools form disaster planning according to needs, so school planning is simple and flexible. Building disaster prepared schools needs strengthening and understanding in handling floods (Isa et al., 2014). The emergency plan cannot stand alone, so in this case the school works closely with the Region Agency for Disaster Countermeasure to plan for preparedness.

D. Emergency Response Organization

Emergency response organization is a mobilization in the emergency response system in SMA Negeri 1 Welahan. Good organizing will help in the emergency response process. Emergency response organizations in schools in the form of warning disaster school that according to the elements and functions in them. Schools form an organization called the group of warning disaster school. The organization of group consists of the chairman and witnesses, who are under the auspices the school principal. The organizational

element consists of teachers and students who are part of it.

E. Emergency Response Procedure

Schools work together with related parties the Region Agency for Disaster Countermeasure of Jepara District starting from the procedure before the flood disaster, starting with the evacuation team giving early warnings by sounding the alarm that has been provided by the school and the evacuation team carrying out to Evacuate and Rescue to helps remind the school community to protect themselves from the consequences flood with order and calm.

Procedures of Post-disaster of flood provided by the evacuation team are; a) anticipate the possibility of flooding aftershocks to always monitor the development of the information from the parties involved; b) the team gives Early Warning by sounding the evacuation warning signs of school residents to a place that has been determined by the relevant parties; c) the rescue evacuation team directs school residents to immediately go to the designated safe place; d) security team do quickly safe action to hazards such as leaking gas and electricity which can be broken; e) first aid team pays attention to injured school members to provide help; f) all of the team pays attention to security and personal safety after disaster happens; g) logistics team help finding and giving basic needs in refugee camps. All of the team do the necessary data collection (data collection on the numbers of residents of the school survivors, the victims who are injured, the logistics needs and others).

IV. CONCLUSIONS

Students' knowledge of SMA Negeri 1 Welahan on disaster mitigation both pre-disasters, during disaster and post-disaster are in the high category. That is because many students are in prone floods area, so they have learned from activities that occur every year. In addition, the school also included flood disaster mitigation material in the school curriculum through the Scouts and Red Cross Teenagers extracurricular activities. The school has also adjusted the building by raising up 50 cm from the old building, that has a management and planning policy in the emergency response procedure, although it has not gone well, the emergency response organization consisting of schools has also become a supporter in the process of flood disaster mitigation. So that there is still a need for

assistance from related parties to succeed SMA Negeri 1 Welahan to disaster preparedness schools.

REFERENCES

- [1] Banowati, Eva dan Sriyanto. 2011. Geografi Pertanian (Minatani). Buku Ajar. Jurusan Geografi. Fakultas Ilmu Sosial. Universitas Negeri Semarang. Semarang.
- [2] BAPENAS(2010) *National Platform for Disaster Risk Reducion (RAN-PRB) 2010-2012*, Jakarta.
- [3] BPBD, D. (2017). Jepara .(2015). *Data kejadian banjir*.
- [4] Budiharto, T., & Marsoyo, I. A. (2014) Evaluasi Manajemen Tanggap Darurat Bencana Banjir Lahar Dingin Di Kawasan Sepanjang Sungai CodeKota Yogyakarta (Doctoral Dissertation, Universitas Gadjah Mada).
- [5] Erni Suharini, Dewi Liesnoor S.,et el. Pembelajaran Kebencanaan Bagi Masyarakat di Daerah Rawan Bencana Banjir DAS Beringin Kota Semarang. In: Forum Ilmu Sosial.2015.p.184-195.
- [6] Febrian, R., Eva, B., & Hariyanto, H. (2019). Pengaruh Rob Terhadap Perubahan Pendapatan Petani Tambak di Kecamatan Tirta Kabupaten Pekalongan. *Geo-Image*, 8(1), 15-21.
- [7] FEMA (2012), *Crisis Response and Disaster Resilience 2030: Forging Strategic action in an age of uncertainty*, Washiongton, DC, Federal Emergency management Agency.
- [8] [8]Gustani,I.,Hadi,T.W.,Hadi,S.,& Renggono, F. (2012). Akurasi prediksi curah hujan harian operasional di Jabodetabek: Perbandingan dengan model WRF. *Jurnal Meteorologi dan geofisika*, 13(2)
- [9] Isa, M.,Wajdi,M. F., Syamsudin, S., & Setyawan, A. A. (2014) Strategi Penguatan Kapasitas Stakeholder Dalam Adaptasi Dan Mitigasi Banjir di Kota Surakarta. *Benefit: Jurnal Manajemen dan Bisnis*, 17 (2) 99-110.
- [10] Jepara, B. P. S. K. (2014). Jepara Dalam Angka 2014. *Badan Pusat Statistik dan BAPPEDA Kabupaten Jepara*.
- [11] Konsorsium Pendidikan Bencana Indonesia, Jakarta, Mei (2011). *Kerangka Kerja Sekolah Siaga Bencana*.

- [12] Lesmana, C., & Purborini, N. (2015). Kesiapsiagaan komunitas Sekolah dalam Menghadapi Bencana di Kabupaten Magelang. *Jurnal Teknik Sipil*, 11(1),15-28
- [13] Setyowati,Dewi Liesnoor. Antisipasi Penduduk dalam Menghadapi Banjir Kali Garang Kota Semarang. In *Forum Ilmu Sosial*. 2008.
- [14] Suharini, E, & Kurniawan, E. (2019). Pelatihan Sistem Peringatan Dini Banjir Berbasis Masyarakat Kelurahan Sampangan Kecamatan Gajahmungkur Kota Semarang Guna Mewujudkan Masyarakat Tanggap Darurat. *JURNAL PANJAR. Pengabdian Bidang Pembelajaran*, 1(2), 114-117.