KNOWLEDGE AND PARTICIPATION OF STUDENT ON FLOOD MITIGATION AS EFFORT FOR DISASTER RISK REDUCTION

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Abstract— Flood disaster is very common in some region in Indonesia. Knowledge and participation on flood mitigation to become necessary to done by the student that one of the most vulnerable in the society during a disaster. As we know, disaster mitigation is one of the efforts in disaster risk reduction and become global concern currently. The aim of this research was to determine student's level of knowledge on the mitigation of floods disaster. In addition to knowing the form of mitigation undertaken by students as well as the percentage of the level of participation in the mitigation. The data analysis of this research use quantitave descriptive method. Data were analyzed using excel. Classification based on school unit that t prone area and not prone to flood disaster by the distance to the nearest river. The number of respondents are 667 students from 6 junior high schools in surakarta, sukoharjo and klaten residency, Indonesia. The result shows; 1) the average level of student knowledge on flood mitigation included in the category of very understand, 2) the average level of student who attend school in prone area to flood disaster are included in category of very understand and mitigation action by student in their environment. Therefore, level of student who attend school in not prone area to flood are included in category understand and students do not participate in mitigation action in their environment.Disaster education for student is one of disaster risk reduction effort and has been taught in Indonesia through the social studies subject. But, there are several problematic in implementation of disaster mitigation education on field. The participation of all parties of nationality, government, local are indispensable for better disaster education for Indonesia in the future.

Keywords— Flood, Mitigation Knowledge, Mitigation Participation and Student.

I. INTRODUCTION

Disaster risk reduction has become global concern currently. Member states also emphasized particularly in light of an insufficient focus on risk reduction and resilience in the original Millennium Development Goals (MDG) and disaster risk reduction and climate change adaption also needed when setting the Sustainable Development Goals (SDG). In 2015, global sustainable development process aimed for long-term agreements for disaster risk reduction. On March 18, 2015 Sendai Framework for Disaster Risk Reduction for 2015-2030 was adopted at the Third UN World Conference in Sendai, Japan. The aid out a voluntary pathway for the next 15 years of disaster risk reduction, following on from the 10 years of the Hyogo Framework for Action for 2005–2015 (UNISDR2005) [1].

According Sendai Framework have four priority areas, are; i) understanding disaster risk, ii) strengthening disaster risk governance to manage disaster risk, iii) investing in disaster risk reduction for resilience, iv) enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction [2]. The priority of action include across sectors by States at local, national, regional and global levels.This study focuses on disaster mitigation is one of the efforts for disaster risk reduction. The discussion on disaster mitigation include in first priority and second priority at Sendai Framework. In first priority, mitigation can be leverage by knowledge for understanding of disaster risk in all its dimensions of vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment. In second priority, strengthening disaster risk governance for mitigation is necessary and fosters collaboration and partnership across mechanisms and institutions for the implementation of instruments relevant to disaster risk reduction and sustainable development [2].

In the first and second priority on the Sendai Framework contains about increased knowledge about disaster mitigation and strengthening disaster risk reduction and mitigation. Mitigation knowledge must be put into mitigation action order to disaster risks can be reduced. Therefore, the participation of all parties of nationality, government, local are indispensable. Community also have important part in the implementation of disaster mitigation. Strengthening to become disaster resilient public and private investments measures in critical facilities in particular schools and hospitals and physical infrastructures. School community is one of venerable part in community in facing disaster.

It is widely acknowledged that school plays an important role in improve awareness among students, teachers and parents [3]. Youth and children (student) have the capacity to educate, innovate, and reach out to community and support training and awareness that turn could reduce the risk of future disasters [3]. The importance of disaster risk reduction education at school is increasing because, i) children are one of the most vulnerable in the society during a disaster, ii) they represent the future generation iii) school serves as a community's central location for meetings and group activities and iv) children education about disaster can be transferred to parents and their community [4]. Therefore, students must participate in disaster mitigationas efforts for disaster risk

reduction. It begins with increased knowledge and understanding of disaster mitigation then embodied in the implementation of mitigation environment. Schools play an important role in involving students in the process of disaster mitigation in school so it can become a habit that students do at home, and the surrounding environment.

Flood disasteris frequent disaster events in Indonesia. according to National Disaster Management Agency of Indonesia(BNPB) about comparison of disaster eventsand victims since 1815-2015 that happened 6.200 of flood events with casualties of 18.927 [5]. This research was conducted in Surakarta, Sukoharjo and Klaten, Central Java Province which is the province's most vulnerable to disasters in Indonesia. Solo region covers Surakarta and Klaten, Sukoharjo that have been recognized as vulnerable areas for flood [6].

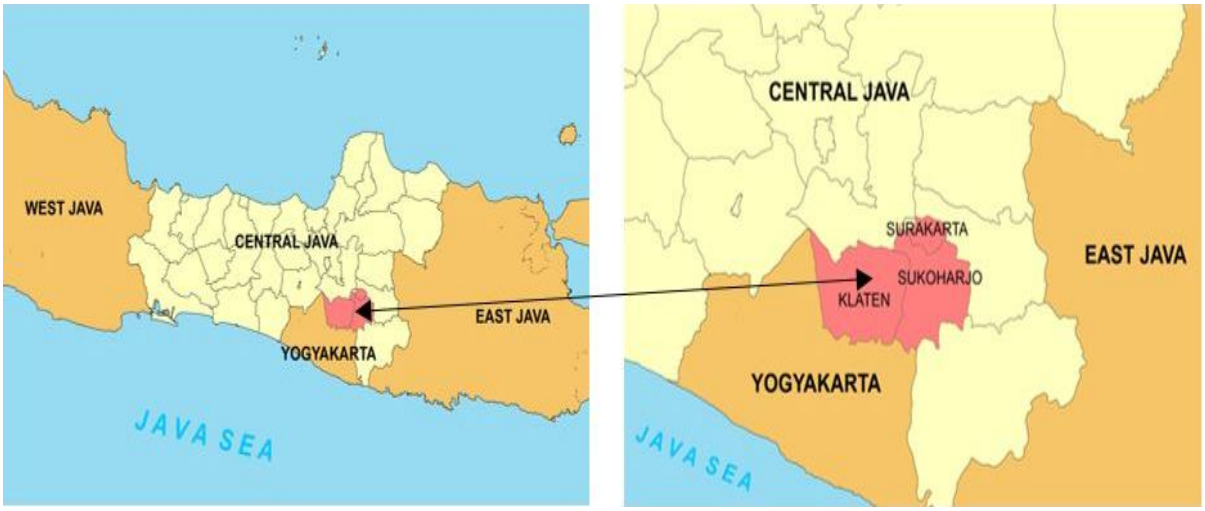


Fig 1.Location of study area, Indonesia

Surakarta is one of the city passed by the Solo River, the longest river on Java island. History has recorded the floods in 1966, 2007, 2009 and 2010 that inundated partially the city of Surakarta [7]. Based on the hazard index of the National Disaster Management Agency of Indonesia, Surakarta including flood prone areas with a percentage of 38% [7]. Floods is very prone to occur in Surakarta, Sukoharjo and Klaten. Therefore, knowledge mitigation and mitigation action become very should possess and implemented primarily by children as one of the most vulnerable for face disaster. Therefore, students should have knowledge and participate in disaster mitigation as efforts in disaster risk reduction. Implementation of disaster mitigation can be done at home, school and student environment.

Disaster mitigation knowledge and could be learned from school and Also the phenomenon surrounding the student. The purpose of this study was to determine the level of knowledge on the mitigation of floods disaster. In addition to knowing the form of mitigation undertaken by students as well as the percentage of the level of participation in the mitigation.

II. METHOD

This research was taking students as respondent that separate into 6 schools at Surakarta, Sukoharjo, and Klaten Residency. The data come from secondary data obtained through research in 2013-2014. The data analysis of this research use quantitave descriptive method.Data were analyzed using Excel. Classification of the vulnerability an area to flood disaster by the distance to the nearest river according "Mapping ofProne Areas to Flood Disaster by using Geographical Information Systems" [8]. In classification distance a region with the river is divided into four classes: very prone area (0-25 meters), prone area (>25-100 meters), rather prone (>100-250 meters), and not prone area (>250 meters).

Table 1. School name and number of respondents

Name of School	Categories	Number of respondents
SMP Muh 4 Surakarta	Prone area	97
SMP Negeri 12 Laweyan, Surakarta	Prone area	125
MTs Negeri 10 Wedi, Klaten	Not Prone area	30
SMP Negeri 23 Surakarta	Not Prone area	56
SMP Negeri 3 Mojolaban, Sukoharjo	Not Prone area	90
SMA Negeri 1 Tawangsari, Sukoharjo	Not Prone area	269
TOTAL		667

Table 1 shows the name of school and the distribution of respondents according the category of vulnerability to flood disaster. The number of respondent are 667 students from six junior high schools. From 667 students that had been asked for flood mitigation knowledge and flood mitigation action, there are 222 students in prone area to flood disaster with distance 25-100 meters to nearby river and 445 studentsin not prone area to flood disaster with distance >250 meters to nearby river. According reference [9], the classification level of mitigation knowledge is divided into three categories. Level of

mitigation knowledge in facing disaster category as follow:

Table 2. Classification on Mitigation Knowledge

Index Value	Category
67-100	Very Understand
33-66	Understand
0-33	Not Understand

III. RESULT AND DISCUSSION

1. The Average Level of Student Mitigation Knowledge Who Attend School in Prone Area to Flood Disaster

There were 222 students that had been asked. The results showed that schools with distance of 25-100 meters from the nearest river and included in prone area to flood disaster has the average level of mitigation knowledge is 76%. The level of students mitigation knowledge included in the category very understand. The form of student involvement in mitigation action is done by removing the waste in place, creating and clean up the gutter line, green movement by tree planting in the home, school and on the river banks, increase flood mitigation knowledge especially from social media. Disaster education and participation on mitigation action for very import for student in areas prone to disaster.

2. The Average Level of Student Mitigation Who Attend School in Not Prone Area to Flood Disaster

There were 445 students that had been asked about flood mitigation knowledge and the participation on mitigation action. The results showed that schools with distance of >250 meters from the nearest river and included innot prone area to flood disaster has level of mitigation knowledge is 62.7%. The level of students mitigation knowledge included in the category understand. This result is different with the schools located in prone areas to flood disaster. This result is different from the schools located in areas prone to flood disaster area. Experience in facing flood disaster become important factor in this case. Schools that are not located in prone area to flood disaster there are not mitigation action participating by the student.

3. Level of Student Knowledge on Flood Mitigation

There were 667 students that had been asked about their knowledge in flood mitigation. The average level of students knowledge is 69.3% included in the category of very understand on flood mitigation. In other study about students preparednessagainst flood disaster included in category of less prepared [6]. The level of less preparedagainst flood shows that students do not take fully into the environmental conditions and interactions that exist between their around. Some research findings indicate that level of student knowledge is not necessarily show the practical ability. The school curriculum across Asia in highly disaster prone countries should include disaster management as a compulsory subject for junior high school students [4].

Disaster education of students is one of disaster risk reduction efforts and has been taught in Indonesia through the social studies subject in school. But, there are several problematic in implementation of disaster mitigation education on field, are: i) disaster mitigation has not integrated in disaster risk reduction efforts on the social studies subject curriculum especially on basic competence 1.1, ii) reference books on disaster mitigation are limited only using three learning methods are problem solving, discussions and disaster simulation, iii) some schools don't have policy on disaster mitigation activities in social studies subject that concern directly to the environment both in the curriculum and plan of learning program by teacher.

Contribution and cooperation of several stakeholder such as agencies that focus on disaster risk reduction is indispensable. Participation on disaster risk reduction is meant to integrate multiple stakeholders [10], including the nationality, local, government, international NGOs, UN agencies, academia, media, business sector, faith-based organizations, and community based organizations [11].

Compared with the Disaster Education System in Yunlin County, Taiwan, there are significant difference. Majority of the schools (98%) in Taiwan have included some form of disaster risk reduction information into the school curricula [4]. Regular school publications (ex. newsletter) could serve as an information source for students for incorporating disaster risk reduction into the school curricula. The improvements on disaster risk reduction are required in areas such as funding allocation, early warning system, dissemination of information, disaster recovery planning and preparation for emergency response are necessary[4].The increase and improvement in education system for disaster risk reduction, particularly on disaster mitigation is essential to better disaster education of Indonesia in the future.

CONCLUTION

In summary of this study, schools with distance of 25-100 meters from the nearest river and included in prone area to flood disaster has the average level of mitigation knowledge is 76% included in the category of very understand and student do mitigation action in their environment. Therefore, level of student who attend school in not prone area to flood is 62,7% and included in category understand and students do not participate in mitigation action in their environment. The average level of student knowledge on flood mitigation is 69.3% included in the category of very understand.

Mitigation knowledge is the foundationof mitigation measures in daily life. Schools have an important role in transfer knowledge of disaster mitigation and application of mitigation in the environmental. Disaster education for student is one of disaster risk

reduction effort and has been taught in Indonesia through the social studies subject. But, there are several problematic in implementation of disaster mitigation education on field. The participation of all parties of nationality, government, local are indispensable for better disaster education for Indonesia in the future.

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REFERENCES

[1] K. Ilan, "Climate Change and the Sendai Framework for Disaster Risk Reduction", International Journal of Disaster Risk Science, vol. 6, issue 2, pp. 117-127, June 2015.

[2] UNISDR (United Nations International Strategy for Disaster Reduction), "Sendai Framework for Disaster Risk Reduction 2015 – 2030", http://www.preventionweb.net/files/43291_ sendaiframeworkfordrren.pdf, 2015.

[3] C. Ranit, Koichi Shiwaku, Rajarshi Das Gupta, Genta Nakano, Rajib Shaw, "Bangkok to Sendai and Beyond: Implications for Disaster Risk Reduction in Asia", International Journal of Disaster Risk Science, vol. 6, issue 2, pp. 177–188, June 2015.

[4] G. Qiru, Yukiko Takeuchi, Jet Chau Wen and Rajib Shaw, "Disaster Education System in Yunlin County, Taiwan", Asian Journal of Environment and Disaster Management Vol. 3, No. 2, pp. 189–203F, 2011.

[5] National Disaster Management Agency of Indonesia (BNPB), "Disaster Events in the Period of 1815-2015", www.dibi.bnpb.go.id, 2015.

[6] S. Muhammad Amin, and Nanda Khoirunisa, "Disaster Preparation Knowledge of Urban and Rural Students at Solo Region", Proceeding on The 2nd International Conference Planning in the Era of Uncertainty: Sustainable Development in Malang, Indonesia, March 2015.

[7] F. Linta, "Level of Student Knowledge Class X in Flood Mitigation at SMA Islam 1 Surakarta", Surakarta: Universitas Muhammadiyah Surakarta, 2014.

[8] P. Asep, "Mapping ofProne Areas to Flood Disaster by using Geographical Information Systems", Bogor:Bogor Agricultural Institute, 2008.

[9] K. Asep, "Guide for Monitoring and Evaluation of Disaster Preparedness School", Jakarta: LIPI Press, 2012.

[10] M. Pelling, "Learning from Others: The Scope and Challenges for Participatory Disaster Risk Assessment", Disasters, vol.4, pp. 373–385, 2007.

[11] F. Glenn and Rajib Shaw, "Youth Council Participation in Disaster Risk Reduction in Infant and Makati, Philippines: A Policy Review", International Journal of Disaster Risk Science, vol.3, pp. 126–136, April 2013.

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