

**Comparative Study:
School Role in Disaster Mitigation in Junior High School in Indonesia and
Philippines**

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ABSTRACT

Disaster mitigation education is needed for disaster-prone country so that the number of casualties during disasters can be minimized. It can be done effectively and systemically by the school institution. Disaster mitigation education can be done optimally by the school to the students through building the awareness of disaster risks as early as possible, but in the reality, the education of disaster mitigation conducted by the school is not optimal. By doing a comparative study of disaster mitigation education in Indonesia and the Philippines, it can be obtained an empiric picture of students' level of awareness of disaster so that the school can design more contextual education by developing an education of disaster mitigation in accordance with each school.

This research applies two approaches i.e. qualitative and quantitative approach. The quantitative approach uses T-Test to analyze the similarities and differences related to students' awareness on disaster mitigation at secondary school in Bantul, Yogyakarta and Munoz, Philippines. The qualitative approach is used to dig the deeper information about the similarities and differences of the students' awareness on disaster mitigation related to students' awareness on disaster mitigation at those two schools. The researchers chose Indonesia and Philippines as the site of the research because those countries possess the characteristics as the high-risk of disaster country. The schools chosen for this research are also located in the area which have a big risk of disaster, especially flood. They are one school in Munoz Nueva Ecija Philippines and a school in Bantul Indonesia which has ever faced flood and earthquake. The research subject are the students of secondary school in Munoz Philippines and Bantul Indonesia, the researcher took one class as the research subject and three teacher and the head master of each school to give information related to the school policy for disaster mitigation education. Data are collected by using interviews, questionnaires, observation and participation as well as documentation. In analyzing the data, three key activities are carried out: **Notice things, Collect things and Think about things**.

The research result describe that there are differences on the secondary school students' awareness level in Bantul, Indonesia and Munoz, Philippines viewed from ORID analysis based on interpretation test on t-test result. Levene's Test is used to test the varians homogeneity of the groups. From the Levene's test, it is known that $p\text{-value} = 0.134$ bigger than $\alpha = 0.05$, so that it is concluded that the assumption of the two variants could be fulfilled evenly. Therefore, this research used result of *t-test of two independent samples* with the assumption that both variants are same. The result of t-test showed that the value of $t = -7.442$ and $p\text{-value} = 0.00$. It can be concluded that there are differences on the average ORID score of the students of Secondary school in Munoz, The Philippines and Bantul, Indonesia. The average ORID score of students of secondary school in Bantul is mean = 114.0889, better than the average ORID score of students of secondary school in Munoz Philippines; mean = 93.7115. The most dominant differences between those schools laid on the cognitive awareness i.e. students in Munoz are more rational than the students in Bantul on understanding a disaster event. Besides, the students in Munoz are more responsive in facing the disaster than the students in Bantul. On the non-structural dimension of mitigation, the role of school and teacher tends to be similar i.e. has not been intensively socialize the awareness to reduce the risk of disaster to the students. The understanding gained by the students usually derived from their experience in facing the disaster. From the structural dimension of mitigation, schools in Munoz, Philippines tends to anticipate the structure of the school building with the design that is more ready to face hurricane but they did not pay big attention to face flood because based on the demographical structure the location is difficult to avoid the flood sent from other district. The building structure of the secondary schools in Munoz is not designed to avoid flood from the river nearby. However, there have not been any victim resulted from disaster in both schools in Bantul and Munoz.

Keywords : disaster, mitigation education

CHAPTER 1

INTRODUCTION

A. Background

The ratification among 168 countries including Indonesia in Hyogo Framework for Action 2005-2015 (HFA) committed to significant decrease in death and social, economical, and environmental assets caused by disaster in the country. The accomplishment of this plan depends on the political commitment and active involvement of the society including Higher Education Institution as one of the stakeholders of the action plan (Wuryanti, 2007). One of the HFA five priorities is the importance of applying knowledge, innovation, and education to develop a safety and strong culture in every level (It is hoped that in the long term will be able to develop effective, well-prepared response toward disaster in every level).

Mitigation, an effort to reduce disaster risk, consists of 4 conceptual frameworks, i.e.:

- a. Awareness
- b. Knowledge Development
- c. Public Commitment, and
- d. Risk Management

From the Conceptual framework above, Knowledge Development will be the main focus of this research to increase the first point, Awareness.

Disaster Knowledge conceptually and operationally is important; therefore placing the Disaster Risk Reduction in the first line of the HFA becomes the part of risk management which cannot be separated from the sustainable development. It should be understood that there will always be natural disaster in this world and it will be more threatening because of the increasing number of the people which will increase the susceptible condition of the society, the lack of effective and sufficient plan related to housing area especially in the high risk disaster area, bad management, deforestation, and natural ecosystem destruction (Sugeng, 2008).

The threat of the disaster will create psychosocial effect if teacher and student do not aware of their adaptation ability toward internal and external changes from the beginning by understanding their personal and social strength as the protection factor and the weaknesses as the part of their selves and the society which become the risk factor. Therefore, the resiliency ability should be developed as early as possible before the disaster happen, when it happens, and after it happens. It continuously becomes an important study especially the role of the teacher as the educator at school and in the society in general so that the Disaster Risk Reduction becomes effective.

Indonesian Constitution No. 24 Year 2007 about Disaster Management defines that disaster is an event or series of events which threats and disturb the people's life and activities which is caused by natural or non-natural factor and cause victims, environment destruction, material loss, and psychological effects (Pribadi, 2008). The efforts to solve the disaster problems have not been done in systematical and sustainable way so that there is still relatively high number of victims whenever disaster happens. Based on some researches it is said that Disaster Education is indeed needed in Indonesia. The awareness of the Indonesian position in the high-risk area of earthquake needs to be designed creatively and innovatively.

In this context, National Disaster Risk Reduction Action is an action that should be designed in an integrated and well-planned way. It is strengthened by the fact that Indonesian is in the 7th position of the country suffering from disaster in 2005 based on the International Strategy for Disaster Reduction 2006-2009, World Disaster.

Table 1. The Description of the Disaster in Indonesia which Takes Place in 2004-2007

Disaster Event	Date	Number Killed/ House destroyed	Damage & Losses (US \$)
Tsunami Aceh	December 2004	165,708 people killed	4,450 million
Earthquake Yogya- Central Java	May 2006	5,716 people killed/156,662 housings	3,134 million
Tsunami Pangandaran- West Java	July 2006	645 people killed/1,908 housings	138.7 million
Flood Jakarta	February 2007	145,742 housings damaged	967 million (incl. indirect economic losses)

Source: National Action Plan on Disaster Risk Management, BAPPENAS, Yogyakarta, 2007.

The Disaster Risk Management in Indonesia has not been done optimally. There are two main problems i.e. 1) low management system and 2) low awareness on the importance of Disaster Risk Reduction. Those problems become a challenge for Indonesia to seriously design a creative and proactive Disaster Management. A new paradigm is needed in designing programs for the Disaster Management in Indonesia. The new paradigm in Disaster Management nowadays needs some schemes as below:

- a. Disaster Management does not only stress on the emergency perceptive aspect but on whole Risk Management.
- b. Society protection from the disaster threat by government is an implementation of human rights not just as the government obligation.
- c. Disaster management is not only the government responsibility, but also the responsibility of the society.

The paradigm developed by the government becomes the base of Disaster Risk Reduction- platform. There are three design plans of this. They are:

Plan	
Global Platform	<ol style="list-style-type: none"> 1. United Nation Resolution: <ol style="list-style-type: none"> a) To increase the society awareness b) To guarantee the government commitment realization c) To improve the society participation d) To reduce the social and economic loss 2. Yokohama Strategy, focusing on: <ol style="list-style-type: none"> a) Systematical efforts to include DRR in the sustainable development program b) Effort to increase the society endurance capacity building in risk reduction and management. 3. Hyogo Framework for Action, strategic aim: Sustainable development policy
Regional Platform	Beijing Action Plan: <ol style="list-style-type: none"> a) The agreement among Asian countries to arrange Disaster Risk Reduction as the main priority b) The regional cooperation in Asia under UN
National Platform	<ol style="list-style-type: none"> 1. Short term Plan, Program and activities on DRR by related sectors. 2. Government Working Plan Policy Direction year 2008 <ol style="list-style-type: none"> a) Government Working Plan through area mapping plan. b) To improve the readiness of the institution and society in dealing and facing the disaster. Focus: <ol style="list-style-type: none"> a) Development of the institution capability and human resources. b) Implementation of DRR National Action Plan c) Implementation of regional and national mapping based on DRR

Source: DRR National Action Plan Seminar, BAPPENAS, Yogyakarta 24 March 2007

One of the DRR action priorities is the importance of knowledge, innovation, education to build endurance and safety culture in all levels of society. In relation with it, the improvement of the education through DRR integration at school on its curriculum and safety culture is highly needed. The problem is that whether the DRR integration to the school learning material and subject will not disturb and reduce the learning effectiveness of other subjects. Therefore, it is importance to study how the school role in developing disaster mitigation education is.

B. Formulation of the Problems

1. How is the policy of disaster management in Indonesia and Philippines?
2. How is the students' awareness on disaster viewed from ORID perspective?
3. How is the role of the school on disaster mitigation?

C. Aims of the Research

1. To understand the policy of disaster management in Indonesia and Philippines.
2. To understand the role of the school on disaster mitigation.
3. To understand the students' awareness of disaster.

D. Advantages of the Research

1. Understanding the similarities and differences of the disaster management in Indonesia and Philippines.
2. Understanding the similarities and differences of junior high school students' understanding in Indonesia and Philippines on Disaster Mitigation.
3. Understanding the similarities and differences of the school role in the Disaster Mitigation in Indonesia and Philippines.

CHAPTER 2

LITERATURE REVIEW

A. The Concept of Disaster Mitigation

The disaster issue involves various dimensions of life both individually and organizationally, so that in handling the problem, it requires a comprehensive approach and so as building awareness of the disaster. The approach of this research focuses on the structural dimension, based on the consideration that the disaster in general will affect the structure, both structural and non-structural.

Disaster management is the science related to efforts to minimize risks, which include the act of preparation, support, and rebuilding society when disaster strikes. In general, the disaster management is a continuous process undertaken by individuals, groups and communities in managing disaster as an attempt to avoid or reduce the impact of disasters. The actions taken depend on the perception of the risks faced. The effectiveness of disaster management depends on the integration of all elements; both governments and non-government institution. Activities in each hierarchal structure (individual, group, society) bring influence on different levels. The disaster management cycle consists of four stages, namely:

1. Prevention / mitigation
2. Preparedness
3. Emergency Response
4. Rehabilitation and reconstruction of the aftermath level

Mitigation is action taken to reduce the impact caused by the disaster. Mitigation stage focuses on the long-term action to reduce the disaster risk. Implementation of mitigation strategies can be considered as a part of the recovery process if mitigation is done after the disaster. However, despite it is considered as recovery efforts, the action taken to eliminate or reduce the risk of future disaster is categorized as mitigation action (Krishna S. Pribadi, 2008).

Mitigation action consists of mitigation of structural and non structural mitigation. Structural Mitigation is an action taken to reduce or avoid possible impacts of physical disaster, e.g. the construction of earthquake-resistant housing, infrastructure

development, construction of embankments along the river, and so forth. Non-structural mitigation is the action related to policy, development of awareness, knowledge development, public commitment, and implementation of the methods and operation, including participatory mechanisms and dissemination of information, which is done to reduce the risks related to the impact of disasters. Mitigation is the most efficient action to reduce the impact caused by the disaster.

Disaster tends to be difficult to predict, for example earthquake can occur without any prior prediction and is often followed by succeeding disaster, such as:

1. **Tsunami.** If the earthquake is followed by tsunami, more victims and damage will take place. It usually occurs if there is an earthquake with more than 6 degree of richter and takes place in the sea bottom.
2. **Flood.** A strong earthquake sometimes lead the the damage of dam or reservoir so the water will lead to flood which will endanger the people living in the lower area of the dam or of the stream.
3. **Landslide.** It usually happens in the cliff or hills with unstable/ weak land structure, such as clay, sandy soil. But it sometimes also happens in the hard soil, such as karsts, it cannot hold the weight of the structure above it such as karsts because it cannot hold the burden above it when the earthquake takes place.
4. **Fire.** Earthquake can make the electricity post fall down and if there is a shortage on the electricity which leads into a big fire. It could also caused by the pipe or LPG tube which is ruined during the earthquake.
5. **Volcano Eruption.** Strong level of earthquake can influence the activity of the volcano nearby and explode or erupted.
6. **Damage of the social infrastructure.** For example if the house is broken, people will lose their house, telecommunication system, communication network, sanitation, supply of clean water and food will be difficult to handle. Therefore, it can lead into malnutrition problems, endemic viruses, and the economy of that area will be collapsed.

In developing an information infrastructure for disaster management it is important that it be seen in the context the broader community-wide information infrastructure, and that the disaster management process is seen in the broader context of community governance and risk management. Disaster management is not an end in itself, but one end point in the much larger process of community governance. As such it involves a wide range of people and disciplines, not just those designated as ‘disaster managers’. The holistic nature of this broad view of disaster management can be illustrated by reference to the risk.

Management process which is described in AS/NZS 4360:1999 in the following terms:

Management of risk is an integral part of the management process. Risk management is a multifaceted process, appropriate aspects of which are often best carried out by a multi-disciplinary team. It is an iterative process of continual improvement.

(Standards Australia, 1999, p7)

I repeat the words of the Standard, that this is 'a multifaceted process' that should be carried out by 'a multi-disciplinary team. That is to say that the prevention, preparedness, response and recovery (PPRR) components of disaster management requires a multi-disciplinary approach. The medical staff that are involved in treating victims; the agricultural people who monitor crop production; the businessmen that understand the supply and transport of food and other essentials; the Red Cross organizer involved in public awareness programs at the village level; for example, are all 'disaster managers' in their own right. Collectively they are involved in all stages of the PPRR process, even though they may not identify it as such until there is a need to respond to an actual disaster event.

The information that is required to support disaster management is, to a significant extent, the output from a wide range of other processes that are seemingly remote from disaster management. Professional disaster managers should, therefore, not attempt to carry out the whole process by themselves, but they should participate in the various stages so that the information that flows from each stage is understood and appropriate to the needs of disaster managers. If these linkages are established within the information infrastructure, then the process of communication and consultation is greatly enhanced and the disaster management effort is significantly more robust.

B. Theoretical Approach on Disaster

Citizen awareness about disaster mitigation is very important. This is based on the approaches to disaster management in which one of the principles is the development of human capabilities. The rationale of this study is built based on the approach to disaster management that develops "capacity management", which in principle develops two aspects, namely (Ma'arif, 2009:36-37):

1. *Human Resource Capacity*

We must admit that the capacity of disaster management in Indonesia still requires to be strengthened. Strengths and resources that exist within the community must be further identified and developed. Cultural values that are rooted within the community must be explored and cultivated as social capitals that can enhance the resilience of the people against disaster. By utilizing the advance science and technology, we will be able to strengthen our capacity in handling disaster and the number of disaster events, as well as its impacts can be reduced.

2. *Equipment*

Series of disaster that occurred simultaneously within last month has become more aware on the importance of available standard equipment that is normally required during sudden-on-set emergency that threaten the lives of thousands of people with vast impacts. The standard equipment that must be owned or at least made available includes:

- a. Moderate communication system and yet reliable functioning in the affected areas where the regular electricity power and communication line is damaged.*
- b. Transportation means (air, land and sea) available anytime dependable emergency management system.*

Employing knowledge, innovation and education to build a culture of safety and resilience at the school and the community should promote the integration of DRR as an intrinsic element of Sustainable Development (United Nations Decade of Education for Sustainable Development, 2005-2015).

Discourse on disaster is extremely needed because the disaster phenomenon keeps taking place in our society. Even, lately the disaster phenomenon pushes scientist to explore deeper on this issue. For Indonesia society, this last five years the discourse on disaster management begins to be a serious subject of research. To understand the concept of disaster, it depends on the approach towards disaster itself. Generally, there are three approach used to conduct a research on disaster as a paradigm to understand the phenomenon of disaster. (Abdullah, 2009:12-21):

<i>Approach</i>	<i>Description</i>	<i>Focus</i>
<i>Technocratic Approach to Disaster</i>	<i>In social science, the study about disaster which was started in 1950s was begun by long discussion about nature-culture relationship. The interaction model other two raised many new understanding about human dependence and independence with nature and vice versa. The first opinion believes that nature is something separates from human who have undeniable power. Natural environment defines human's identity</i>	<i>Disaster is seen as phenomena which mainly correlated with nature and is separated from human's daily experiences as well as common human activities since disaster is believed to be extra ordinary experience (Anderskov,2004:10) The focus toward the power of nature and supernatural asserts an abnormal condition, unpredictable, unwished, unplanned condition.(Hewitt,</i>

Approach	Description	Focus
	<p>even categories human into “the other” as the result of deterministic differences of environment for human adaptation.</p>	<p>1983:10)</p>
<p><i>Behaviorist Approach to Disaster</i></p>	<p><i>The behaviorist approach highlights the individual and institutional responses, cultural response which questions human existence, political and power response, and economic responses.</i></p> <p><i>Institutional and individual responses can be seen from individual and group’s behavior in the stages of and after the disaster. The study about individual and organizational responses, explain s particularly on religious institution adaptation, technology, economy. Politic, and in the model of cooperation and conflict that may happened after disaster.</i></p>	<p><i>The construction of meaning on the disaster is full interest. Since the voices from various agents involves in shaping the discourse, so meaning itself become an arena of important competitions (Ahima-Putra,1994)</i></p> <p><i>Politic and power responses discuss about how the disaster shapes, maintains, stabilizes, or destroy an organization and political relationship. Disaster in this view is an opportunity as well as the cause of the local politic of socialization and mobilization and at the same time caused the alterationmin its relationship with state (Oliver-Smith,1996:309).</i></p> <p><i>Disaster could become a context to from solidarity, activism, new political agenda and the shaping of new power relation which could change a power structure. Economic response correlates with the notion that disaster always destroys the physical environment and material resources of a community, while causing urgent demand for material needs.</i></p>
<p><i>The Structural Dimension of Disaster</i></p>	<p><i>The above considerations strengthen the opinion which sees the problem of disaster as not on the natural phenomenon however it comes from the unbalance of social structure of the community. This opinion rose on 1980s and was based on the frame of structural Marxism and political economy. This political economy point of view see the natural phenomenon such as storm, earth quake, flood, could be non disastrous. Reminder, protection, knowledge, access, either for the material resources or toward knowledge, network, and the sources of assistance</i></p>	<p><i>The approach that underlines the disaster as a form “social change” tries to comprehend disaster as an important factor in cultural and social change, because all disaster need adaptation and new formation of damaged functions.</i></p> <p><i>Anthropology in this regards pay more attention to the long term implication of changes caused disaster (Oliver-Smith, 1996).</i></p> <p><i>This kind of approach is also unable to explain a structural process which should not be separated from the</i></p>

Approach	Description	Focus
	<p><i>mitigates the impact of natural phenomenon and develop human ability to recover from its impact (Blaikie, 2003:299). This opinion sees the correlation between the disaster vulnerability, chronic malnutrition, low income, and famine potentialities at the same time depict the root of disaster lie on the social factors rather than natural forces (Oliver-Smith, 2001:27; Anderskov, 2004:10; Wisner, 2003:183).</i></p> <p><i>In this modern community, however, this vulnerable still become s a problem. Such as a Katrina case in America, it is obviously seen a difference between the effect the disaster and the ability to overcome the disaster. The higher community easily avoids the disaster by using their private facility and simply recovered by living in their second home. On the other hand, the lower community depends on the delayed and inadequate public facility also stays in evacuation place. The lower community has limited access of mass media that becomes the real source of supporting information and deliverance (Timey, 2006:113).</i></p>	<p><i>disaster when it becomes a global phenomenon, not only a local matter (Illouz, 2003; Kasperson and kasperson, 2001; Oliver-Smith, 2002).</i></p> <p><i>The structural processes that distribute and manage material resources, wealth power, in a community which meant to be precondition of disaster. A good structural process would be open the possibility to the community to avoid, facing successfully and recover from natural phenomenon/ challenges (Blaikie, 2003:300).</i></p> <p><i>Here the emphasis is given to the structural processes that distribute and manage material resources, wealth power, in a community which meant to be precondition of disaster. A good structural process would be open the possibility to the community to avoid, facing successfully and recover from natural phenomenon/ challenges (Blaikie, 2003:300).</i></p>

Based on the explanation above, it can be concluded that the problems of disaster are related to various dimension of life, both individually and organizationally. It means that the management in handling the disaster needs a comprehensive approach, and so is the attempt to raise the awareness of disaster. This research focuses on the structural dimension which lays the fondation of the dynamic society on understanding the disaster phenomenon. This is based on the consideration that the disaster usually influences on the structure, whether it is structurally or non-structurally. Furthermore, disaster mitigation needs to be submitted to people by the policy makers. This is where the values of the level of creativity should always be raised by the community so that they will have a high concern and awareness in dealing with the occurrence, when incurred and completion of these natural disasters occur. Creativity is not just about insight / thoughts

on science, but also creativity in the sense that the process of doing so, and creativity in producing an action and / or behavior that is profitable and is expected in disaster risk reduction efforts. The ability to change the mindset and ability in doing an action of disaster mitigation will be a paradigm in the social life which is expected to integrate gradually in the dynamics of social life so that the aim of reducing disaster risks can be realized.

C. The Role of School on the Disaster Mitigation Process

The importance of education in promoting and enabling Disaster Risk Reduction (DRR) has already been identified by researchers and policy makers. In doing so, there is a renewed focus on disaster risk education in primary and secondary schools. Mainstreaming DRR into school curricula aims to raise awareness and provide a better understanding of disaster management for children, teachers and communities. Accompanying structural changes to improve safety in building schools will not only protect children and their access to education, but will also minimize long term costs. There is increasing evidence that students of all ages can actively study and participate in school safety measures, and also work with teachers and other adults in the community towards minimizing risk before, during and after disaster events. Methods of participatory vulnerability assessment, capacity assessment and hazard mapping have been used with broader communities surrounding schools and other institutions of education and research. Government can effectively reach out to communities and protect them by focusing on schools in DRR initiatives to achieve greater resilience to disasters ([topics/resource-guides/climate-change/key-issues/children/-climate-change-and-disasters/role-of-education-and-schools-in-disaster-risk-reduction](#)).

The role of school on the disaster mitigation is crucial such as in the process of socialisation. School is a formal institution which systematically and sustainably able to transfer knowledge of disaster and develop further the safety culture to the students. The safety culture is an important aspect that should be developed gradually so that the students possess positive and proactive response in facing the disaster event which tends to be difficult to predict. Besides, the school has also the role to develop the alternative paradigm, that 'disaster' is not seen as something that come in a sudden and naturally but it has something to do with some risk that can be handled by human being on the

dimension of their social institution. Historically, it began from a concept known as 'free from flood' to 'living with flood'. That change, just like what had been suffered by the people who live on the bank of Mekong River, Bangladesh-Vietnam, shows that they cannot avoid the threat of 'flood', but to live together with the 'flood' (Piers Blaikie, Ferry C, Ian D, Roulledge; 1994), therefore, the preventive action and attempt to reduce the risk of disaster become a basic need in responding to a disaster event. The consequences of that change push us to understand the disaster in some important aspects, such as (Sudaryono,2008):

- a. The importance of the understanding that 'disaster' cannot be avoided but with a humanism spirit to free people from the disaster with the purpose to manage the threat and reduce the risk.
- b. That understanding teaches the society that any form of nature threat can happen, it is how to develop the thought to reduce the risk towards that threat. For example, the thought on how to prepare the earthquake-proof building and other preparation if the quake occur, etc(Sudaryono,2008).
- c. From the psychological point of view, the comprehensive understanding towards nature threat and to take it as that a disaster has an important meaning because the understanding towards an event depends on the perspective of the society. When the perspective that grows in the society is based on the comprehensive understanding towards disaster, it will be easier to clarify the occurred problems with all the consequences (Sudaryono,2008)

Beside those aspects, the teacher understanding on the concept of basic psychosocial is an important aspect for the school to develop its role in the attempt of disaster risk reduction program. In this case, the school need to strengthen the teachers' role as counselor. Counselor is needed at school both in normal or crisis condition, especially the teacher will guide the student to get through the difficult moment of their life. A counselor teacher is not an easy job because the teacher should perform an effective communication, empathy, and is able to observe the students of his/her class intensively. Based on the data taken from the field, the teachers had tried to be counselor for the students during the post-earthquake period, they had done several actions, such as: 1) tirelessly gave advice and support to the students, 2) should be able to tell a story/ anecdote to cheer up the students, 3) should understand the students' problems and help them to solve it, 4) guide the student towards a positive development, 5) get closer to the students and gave the special attention, 6) show empathy by doing various ways to

understand the students, 7) create good quality of communication, 8) do not easily punish the students (Puskris UI,2006).

The teacher understanding on the basic psychosocial concept pay more attention on the *experiential learning* as the basic concept of of psychosocial. The role of the counselor is in the helping process and helping skill. Based on those two important aspects, teachers should learn more about the understanding and application, because some of the teachers still need psychological counseling as well to boost their working spirit. Therefore, the teacher stated that they had not been able to conduct the helping process optimally because of their internal problems (Dwiningrum,2008).

D. Conceptual Framework

The government policy on the management of disaster risks is needed as the attempt to reduce the disaster risks that take place in the society and school. The government policy on disaster mitigation will be able to reduce the number of victims of a disaster event. In this case, government needs to develop a better disaster mitigation, both structurally and non-structurally. School as a formal educational institution has a strategic role to develop non-structural mitigation. While, on the structural dimension, the school should consider the safe school design in facing a disaster event.

Disaster mitigation education is needed so that the community can respond quickly and proactively to catastrophic events. Socialization of disaster mitigation can be done by providing cognitive knowledge to the disaster-prone communities. In this regard, schools have an important role in providing awareness of the importance of understanding of disaster mitigation. In addition, the disaster mitigation education required students' awareness of disaster events. Therefore, to understand students' awareness from the psychosocial perspective, this research begins with the attempt to understand students' cognitive conditions up to the action / decision to respond to disasters. The mechanisms of thought and disaster response are expected to be an indicator of students' careful and complete understanding in the sense of how the level of awareness of disaster risk mitigation and response become a knowledge and perspective of them.

Wholeness in thinking to understand the disaster or catastrophic risk is through the dynamics of thinking and acting in ORID (Lazan & Mary, 2003). The indicator is expressed by the questions on the recall process of: 1). The extent to which students'

level of sensitivity in responding the disaster through the ability of sensory (O); (2). The extent to which the level of reflective students in living up to their disaster experience or internal reaction to student / perception (compare with conditions before and after the disaster, fear, and possible positive experience of the students (R));(3) The extent to which awareness of the reality experienced by residents, this requires interpretive ability of residents, so that the direct-indirect influence on society, family and the future is important to be told (I); (4)With the stages experienced thoughts and responses on the 1-3 then people will build a commitment to deal with disasters and put up adaptation to a variety of changes experienced by each student as a personal decision (D).

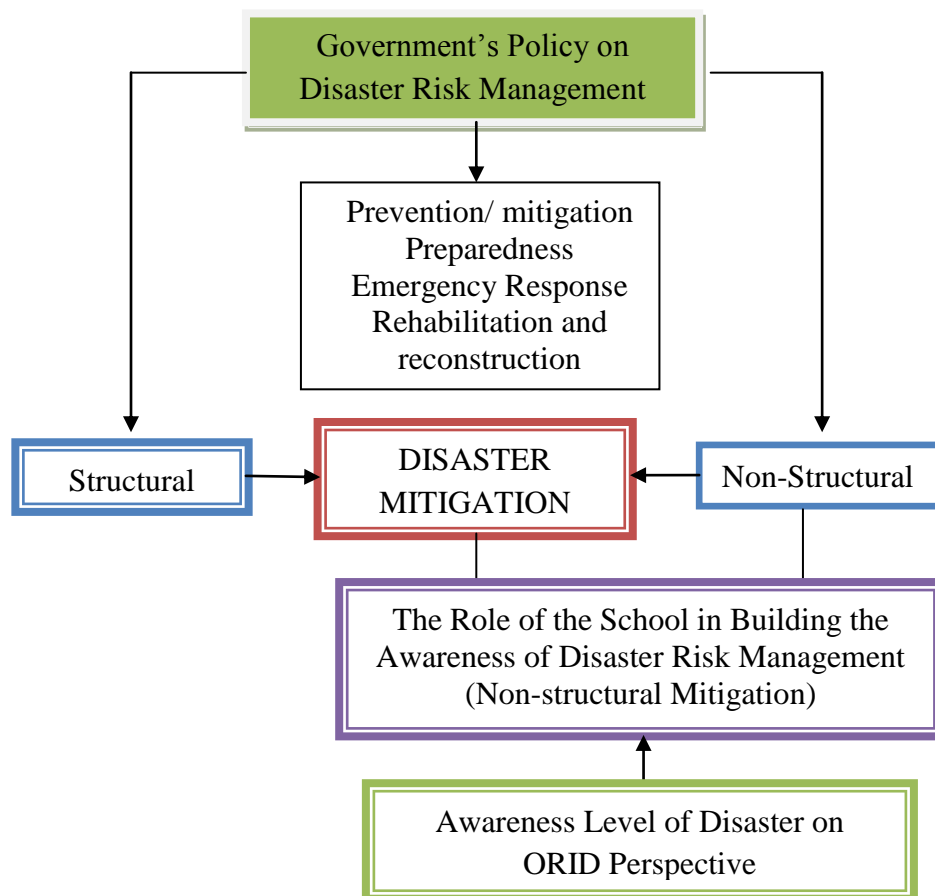


Figure 1. The Research Frame of Thought

CHAPTER 3

RESEARCH METHOD

A. Research Approach

This research applies two approaches i.e. qualitative and quantitative approach. The quantitative approach uses T-Test to analyze the similarities and differences related to students' awareness on disaster mitigation at secondary school in Bantul, Yogyakarta and Munoz, Philippines. The qualitative approach is used to dig the deeper information about the similarities and differences of the students' awareness on disaster mitigation related to students' awareness on disaster mitigation at those two schools.

B. Research Setting

The researchers chose Indonesia and Philippines as the site of the research because those countries possess the characteristics as the high-risk of disaster country. The schools chosen for this research are also located in the area which have a big risk of disaster, especially flood. They are one school in Munoz Nueva Ecija Philippines and a school in Bantul Indonesia which has ever faced flood and earthquake.

C. Research Subject

The research subject are the students of secondary school in Munoz Philippines and Bantul Indonesia, the researcher took one class as the research subject and three teacher and the head master of each school to give information related to the school policy for disaster mitigation education

D. Data Collection Technique

The data collection is conducted in two ways. First of all through questionnaire to know the awareness level of the student in understanding the disaster phenomenon with student questionnaire 1. Student questionnaire 1 is a mean to find out the students' awareness which consist of 50 questions related to indicator O=objective, R=reflective, I=intepretative, D=decision making (attchment 1). Second, the quantitative data is collected trough list of open question related to ORID aspects (attachment 2). From the

psychosocial perspective, the attempt to understand the students cognitive condition to the decision in responding the disaster. The mechanism of the thought and response towards disaster is expected to be the indicator of student understanding assessment level comprehensively and fully, in the meaning that how the level of awareness of disaster risk, response and mitigation have become their knowledge and perspective. The wholeness of thinking in order to understand disaster especially the disaster risk through the dynamics of thinking and action on the ORID (*Objective, Reflective, Interpretatif and Decision*) perspective (Lazan & Maria, 2003) .

Those indicators were unfolded with the questions on the recalling process: (1) How far is the students' sensitivity level in responding the disaster through their sensory ability (O); (2) How far is the students' reflectivity in taking their disaster experience or the students' internal reaction/ perception (comparing the condition before and after the disaster, their fear, and perhaps their positive experience) (R); (3) how far is the students' awareness of reality experienced, it needs the students interpretative ability, so that the direct effect is not to the school, family, and future become important to be told (I); (4) with the levels of thought and response experienced on 1-3, then the students will build a commitment to face the disaster and adapt any changes as their personal decision (D). To understand the teacher's perception related to disaster, the list of question is used (attachment 3)

E. Data Analysis

Quantitative data is analyzed using statistic test (T-test) related to the students awareness on ORID perspective among the secondary school students in Munoz Philippines and Bantul, Indonesia, the result is as follow:

Table 2. Group Statistics

Group	N	Mean	Std. Deviation	Std. Error Mean
Philippines	52	93.7115	15.23198	2.11230
Indonesia	45	114.0889	11.02440	1.64342

The item selection and measurement reliability test are done with single trial administration from the research samples of 97 students (Philippines:52 students, Indonesia:45 students). The item selection is conducted based on the correlation between

distribution score (corrected Item-Total correlation). The correlation score used as the reference is 0,3 ($r \geq 0.3$), therefore, it is said that that item is a good item, while on the contrary, if an item has correlation score less than 0,3 ($r < 0.3$) that item is considered as bad item and cannot be used (Azwar, 2009: 65). All the calculation is done using SPSS software for Windows v. 16.00 Reliability program. The result of ORID scale test showed that 36 item is selected because the correlation score is 0.3 ($r \geq 0.3$).(the result is attached).

Subsequently, the reliability test is done using alpha cronbach technique. The result showed that the reliability index ORID scale with 36 items is 0.92. it shows that the measurement using ORID scale is reliable. The differences or variations exist from that scale reflects 92.% of the variation found on the pure-score of the research subjects group, while 7.6 % of the score differences exist are because of the failure in measurement. The illustration of the reliability can be described as follow

Table 3. Case Processing Summary

		N	%
Cases	Valid	97	77.6
	Excluded ^a	28	22.4
	Total	125	100.0

Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.924	36

Intepretation of test result T-test. To test the variants homogeneity from the two groups uses Levene's test. From the Levene's test, it is known that the p-value = 0.134 is bigger than $\alpha = 0.05$, so that it can be concluded that the assumption of the two variants can be fulfilled evenly. Therefore, this research uses results of T-test two independent sample with the assumption that those two variants are alike. The result score is $t = -7.442$ and $p\text{-value} = 0.00$. it can be concluded that there are differences on the ORID scale average of the students of secondary school in Munoz and Bantul. The average ORID

score of Secondary school students in Bantul is; Mean = 114.0889, better than students in Munoz; Mean = 93.7115.

To find out more detail on the process related to disaster mitigation education is conducted through qualitative data analysis. In qualitative data analysis, data are collected by using interviews, questionnaires, observation and participation as well as documentation. In analyzing the data, three key activities are carried out: ***Notice things, Collect things and Think about things***. First, the Notice things is to find something. This activity can be in the form 'to find something' by observation or data collection: find what is seen, what is heard, what had happened. Notice things, can also be the findings found in the process of coding, reading and find coding. Second, Collect things, after finding the code it is considered necessary to be collected and merged back what has been broken down or divided for the past coding process that has been done. To reunite it is needed to be identified and sorted by comparing one with another, both the existing inter-coding with the concept, to find the similarities and discover the categories. Third, Think about things, i.e., activity that contains three objectives: a) give or find the meaning of each category or set of Things; b) finding patterns and relationships of various categories or collection of Things that exist, and, c) finding or providing a general picture on the theme of the phenomenon at hand.

The above three activities are dynamic, recursive and multi-move. Dynamic means that the activities do not have a standard sequence, but rather move freely and develop in accordance with existing conditions. These steps cannot be determined with certainty, but is strongly influenced by existing conditions and findings. Recursive, the activities between Notice Things, collect things and think about Things are reciprocal and have mutual influencing effects.

CHAPTER 4

FINDINGS AND DISCUSSION

The result of the related data with the information about disaster management policy, students' awareness on disaster and response and attitude of the students about disaster. The data unfold is the result of primer and secunder data analysis gathered based on the interview, observation, and questionnaire.

A. Disaster Management in Indonesia

The vision of disaster risk reduction mainstreaming in schools is *The realization of disaster-awareness culture, preparedness, safety and resilience in schools level to prevent and reduce potentials of losses by natural disasters*. The mission of disaster risk reduction mainstreaming in schools is formulated as follows:

1. Developing a disaster-awareness culture, preparedness, safety and resilience toward disaster trough disaster risk reduction education.
2. Empowering the institutional roles and the capacity of school communities to be able to implement disaster risk reduction mainstreaming practices.
3. Integrating the disaster risk reduction into intra-curricula and extra-curricular activities.
4. Establishing partnership among stake holders to support the implementation of disaster risk education mainstreaming practices at schools.
5. Conducting periodically monitoring and evolution towards the implementation of disaster risk reduction education.
6. Maintaining the sustainability of disaster risk reduction education in schools trough dissemination and replication.
7. Concerning and considering the structural (buildings) factors and non-structural factors when build a safe school for students.

The general objectives of disaster risk reduction in schools is to establish the culture of awareness, preparedness, safety and resilience at school life; to prevent and reduce potentials of loss by natural disasters and cultivate the empathy and friendship

among those affected by the disaster. The specific objectives of disaster risk reduction mainstreaming in schools are follows:

1. Empowering the institutional roles and capacity of school community;
2. Integrating DRR into school curricula (intra-curricula and extra curricula).
3. Establishing partnership with various stakeholders to support the implementation of both structural and non-structural disaster risk reduction in schools.

In developing the strategy for Disaster Risk Reduction at schools , related to the implementation of disaster risk reduction mainstreaming in schools is carried out through disaster risk reduction education is designed through three strategies

1. Empowerment of institutional roles and school community capacity;
2. DRR integration into school curricula;
3. Establishment of partnership and network between various parties to support the implementation of DRR initiatives in schools.

The description of hise strategies are as follows

1. Empowerment of institutional roles and school community capacity. The empowerment is related to the capacity development, by measuring the institutional capacity and school community as well as identifying and establishing local knowledge and wisdom, including best practices and experiences related to disaster risk reduction implementation. The disaster risk reduction education for the school community is carried out by providing life skills (knowledge, attitude and skills) on hazards, vulnerability, capacity and disaster risk as initiative to create the culture of awareness and safety for all teachers and teaching staff, students, supervisors, school committees and student parents.
2. The empowerment of school institutions roles in the context of disaster risk reduction mainstreaming is establish through the strengthening the school-based management (MBS) so that schools could be flexible to determine their own needs in relation to disaster risk reduction education, in the school itself and in the community. Furthermore, the strengthening of school community and school management's commitment to implement disaster risk reduction education in the context of school-based management is absolutely required.

3. The empowerment of school institution's roles in the context of disaster risk reduction is carried out by the Education Agency at provincial and district/municipality levels with the support of Directorate General of Elementary and Secondary Education Management and Curriculum Center of the Ministry of National Education which provides various guidelines for its execution.
4. In relation to the provision of life skills on disaster risk reduction to the school community, the following stages can be carried out: ???

Cooperation with the Local Disaster risk reduction management Agency and related Non-governmental Organization at provincial and district/city levels to formulate modules and conduct of training sessions.

1. Formulation of training modules on disaster risk reduction education for schoolmasters, teachers, and supervisors.
2. Trainings on disaster risk reduction education for schoolmasters, teachers and supervisors.

Increasing the resilience and preparedness of schools toward disaster, both structually and non-structurally.

1. Identification of hazards, vulnerability, capacity and disaster risk to formulate DRR school action plan as an initiatives to reduce disaster risk in school .
2. Facilitation the formulation of criteria standard on school preparedness toward disaster (earthquakes, tsunami, flood, drought, and fire) based on the education national standard through public consultation.
3. Conducting school pilot project on disaster preparedness as a school model.

DRR integration into school curricula is aiming to provide DRR knowledge and skill to the student so then they could obtain deep understanding on DRR knowledge of school subjects related to the topic of learning and its association with their daily lives.

The execution of the integration is carried out at elementary and secondary education level, including education units which give education service for students with special needs through intra-curricula and extra-curricula activities in accordance to the natural disaster condition in surrounding area. Schools are given the freedom to choose

their own school subjects, learning activities and extra-curricula activities as a basis for integrating disaster risk reduction according to the local disaster characteristic. The integration of DRR learning materials into the curricula can be carried out through the following model:

1. The integration of DRR education materials into the main school subjects in accordance to the local disaster characteristics.
 - a. Analysis of competence on every school subject in the content standards and graduation competence standards related to the disaster risk reduction material/knowledge.
 - b. Formulate the syllabus and teaching and learning plan which integrate DRR material/knowledge.
 - c. Teaching and learning session which integrate disaster risk reduction into the main school subjects and involve students to be active and participated during the learning process.
 - d. Formulate procedure and assessment techniques related to disaster risk reduction materials.
2. Integration of DRR education materials into local content subjects in accordance to the local disaster characteristics.
 - a. Formulation of competence standards and basic competence and disaster risk reduction which will be integrated into the local content.
 - b. Formulate the syllabus and teaching and execution plan which integrated DRR into the local content.
 - c. Teaching and learning session which integrated disaster risk reduction into local content and encourages the students to be active and participative during the learning process.
3. Integration of DRR education materials into the extra-curricula activities in accordance to the local disaster characteristic .

This initiative is made by performing the principals of disaster risk reduction into various extra-curricula activities.

To support the process of integrating DPR materials into curricula the following pre-requisites must be done:

1. Formulation of training modules for school masters, teachers and supervisors on the integration of disaster risk reduction into various intra and extra curricula activities.
2. Formulation of training modules for teachers in the development of disaster-related teaching materials which can be used by the students in their learning.
3. The execution of training for schoolmasters, teachers and supervisors on the integration of disaster risk reduction into various intra and extra-curricula activities and for teachers in the development of disaster-related teaching materials which can be used by the students in their learning.

Establishment of Partnership and Network between various parties to support the implementation of DPR initiatives in schools. The establishment of partnership and network is an effort to strengthen the cooperation and to disseminate information on various disaster risk reduction activities carried out by schools independently or with technical support from the Ministry of National Education, which provide various implementation guidelines.

The strategy is expected to enable the establishment of solid partnership and network between various parties, which can support the implementation of disaster-risk reduction education in schools:

1. Information sharing among schools on the implementation of disaster-risk reduction education.
2. Cooperation between and/or among schools to increase the quality of disaster-risk reduction education in each school.
3. Providing data and information of disaster education that could be accessible by school to support disaster-risk reduction education in schools.
4. Documenting the results of research on disaster which can support disaster risk reduction learning process.
5. Conducting various researches to improve the quality of disaster risk reduction education.
6. Dissemination data and information on disaster risk reduction initiatives in various forms and methods of communication.
7. Building partnership and information network with Local Disaster Management Agency and NHGOs at provincial and district/city level.

B. Disaster Management in The Philippines

Disasters, whether natural or human-made, affect everyone, especially the poor, children, women and the elderly who have the least capability to deal with disasters. From 1994 to 2003, some 2.5 billion people were affected by natural disasters alone worldwide, which is an increase of 60% over the past decade. More than 478,000 people were killed during this period.

Floods and earthquakes are the deadliest accounting for more than half of the total casualties. Asia is the continent most affected, accounting for more than half of the casualties, and more than 90% of those injured, homeless and needing assistance. Past disaster events worldwide would indicate that the impact of disasters is most felt by developing and underdeveloped countries, particularly the poorest segments of society.

While governments are primarily responsible for disaster management, however, everybody is equally responsible to undertake disaster preparedness, mitigation, response and rehabilitation activities to ensure one's survival and safety during emergency situations. Located within the Circum-Pacific belt of fires and along typhoon path, the Philippines becomes exposed to natural perils like earthquakes, volcanic eruptions, typhoons and their resultant effects like tsunami, landslides, floods and flashfloods. As an archipelago with 7,107 islands, the threat of tsunami affecting the country's coastal areas is not far-fetched. The Moro Gulf Earthquake with 7.6 intensity triggered a tsunami which affected Southern Philippines and resulted to the death of around 3,800 persons and destruction of properties.

Yearly, the country experiences an average of twenty (20) typhoons, half of these are destructive; is a host to 300 volcanoes, twenty-two (22) of which are active, as well as active faults and trenches that are potential sources of earthquakes. The country has also its episodes of human-made disasters such as urban fires, air, land and sea mishaps, and complex emergency, mostly in Southern Philippines because of the secessionist movement, coupled with its vulnerability to floods and other natural hazards. From 1970 to 2000, the Philippines incurred an average annual damage of PHP 15 Billion or US\$ 300 Million due to disasters which have caused major setback in the country's socio-economic development.

In 2004, the country experienced twenty-five (25) weather disturbances, four of these occurring successively in November and first week of December and brought

massive landslides and flooding in Southern and Central Luzon. And also last year, RP ranked number 4 worldwide in terms of frequency (25) and death toll .

The Philippine Disaster Management System (PDMS) is carried out at various political subdivisions and administrative regions of the country through the National Disaster Coordinating Council (NDCC), 80 Provincial Disaster Coordinating Councils, 113 City Disaster Coordinating Councils, 1,496 Municipal Disaster Coordinating Councils, and 41,956 Barangay Disaster Coordinating Councils, and 17 Regional Disaster Coordinating Councils, respectively. The NDCC is the highest policy-making body for emergency management programs in the Philippines, with the Office of Civil Defense as its operating arm.

The Government of the Philippines adopts an all-hazard, comprehensive, interagency/multi-sectoral, community-based approach in the context of poverty alleviation, environmental sustainability and sustainable development. The government pursues a comprehensive disaster management framework that encompasses disaster risk reduction/mitigation and preparedness in the pre-event, and disaster response and rehabilitation/recovery in the post-event. It is within this framework that all stakeholders in DM at all levels are expected to carry out their roles and responsibilities in a unified and coordinated way to achieve maximum results in ensuring a safe population and a safe nation.

In a study by the World Bank looking at the Comprehensive Disaster Risk Management for East Asia and the Pacific. Region, particularly for the Philippines, the following issues were identified, namely:

1. Disasters are being dealt within manners that are ad-hoc and response-oriented.
2. Information on disaster risk is lacking and measurement of socio- economic impact of disasters is inadequate.
3. NDCC members and LGUs have limited risk reduction capacities.
4. Efforts by donors, multilateral and civil society are poorly coordinated and generated little effects, and
5. The Government bears majority of the cost of disasters.

The main recommendation that emerged from this study was that the Government of the Philippines should develop a national framework for a comprehensive disaster

risk management that should – provide for political leadership and policy support at the highest levels, while facilitating the active engagements and implementation of all relevant stakeholders at the national, local, and household levels, and - incorporate the three essential steps of integrated risk management, which include risk identification, risk reduction and risk sharing.

The policy applied in Philippines is based on no 10121 related to AN ACT STRENGTHENING THE PHILIPPINE DISASTER RISK REDUCTION AND MANAGEMENT SYSTEM, PROVIDING FOR THE NATIONAL DISASTER RISK REDUCTION AND MANAGEMENT FRAMEWORK AND INSTITUTIONALIZING THE NATIONAL DISASTER RISK REDUCTION AND MANAGEMENT PLAN, APPROPRIATING FUNDS THEREFORE AND FOR OTHER PURPOSES. *it enacted by the Senate and House of Representatives of the Philippines in Congress assembled:*

Section 1. *Title.* - This Act shall be known as the "*Philippine Disaster Risk Reduction and Management Act of 2010*".

Section 2. *Declaration of Policy.* - It shall be the policy of the State to:

- (a) Uphold the people's constitutional rights to life and property by addressing the root causes of vulnerabilities to disasters, strengthening the country's institutional capacity for disaster risk reduction and management and building the resilience of local communities to disasters including climate change impacts;
- (b) Adhere to and adopt the universal norms, principles and standards of humanitarian assistance and the global effort on risk reduction as concrete expression of the country's commitment to overcome human sufferings due to recurring disasters;
- (c) Incorporate internationally accepted principles of disaster risk management in the creation and implementation of national, regional and local sustainable development and poverty reduction strategies, policies, plans and budgets;
- (d) Adopt a disaster risk reduction and management approach that is holistic, comprehensive, integrated, and proactive in lessening the socioeconomic and environmental impacts of disasters including climate change, and promote the involvement and participation of all sectors and all stakeholders concerned, at all levels, especially the local community;
- (e) Develop, promote, and implement a comprehensive National Disaster Risk Reduction and Management Plan (NDRRMP) that aims to strengthen the capacity of the national government and the local government units (LGUs), together with partner stakeholders, to build the disaster resilience of communities, and' to institutionalize arrangements and measures for reducing disaster risks, including projected climate risks, and enhancing disaster preparedness and response capabilities at all levels;
- (f) Adopt and implement a coherent, comprehensive, integrated, efficient and responsive disaster risk reduction program incorporated in the development plan at various levels of government adhering to the principles of good governance such as

transparency and accountability within the context of poverty alleviation and environmental protection;

- (g) Mainstream disaster risk reduction and climate change in development processes such as policy formulation, socioeconomic development planning, budgeting, and governance, particularly in the areas of environment, agriculture, water, energy, health, education, poverty reduction, land-use and urban planning, and public infrastructure and housing, among others;
- (h) Institutionalize the policies, structures, coordination mechanisms and programs with continuing budget appropriation on disaster risk reduction from national down to local levels towards building a disaster-resilient nation and communities;
- (i) Mainstream disaster risk reduction into the peace process and conflict resolution approaches in order to minimize loss of lives and damage to property, and ensure that communities in conflict zones can immediately go back to their normal lives during periods of intermittent conflicts;
- (j) Ensure that disaster risk reduction and climate change measures are gender responsive, sensitive to indigenous know ledge systems, and respectful of human rights;
- (k) Recognize the local risk patterns across the country and strengthen the capacity of LGUs for disaster risk reduction and management through decentralized powers, responsibilities, and resources at the regional and local levels;
- (l) Recognize and strengthen the capacities of LGUs and communities in mitigating and preparing for, responding to, and recovering from the impact of disasters;
- (m) Engage the participation of civil society organizations (CSOs), the private sector and volunteers in the government's disaster risk reduction programs towards complementation of resources and effective delivery of services to the Citizenry;
- (n) Develop and strengthen the capacities of vulnerable and marginalized groups to mitigate, prepare for, respond to, and recover from the effects of disasters;
- (o) Enhance and implement a program where humanitarian aid workers, communities, health professionals, government aid agencies, donors, and the media are educated and trained on how they can actively support breastfeeding before and during a disaster and/or an emergency; and
- (p) Provide maximum care, assistance and services to individuals and families affected by disaster, implement emergency rehabilitation projects to lessen the impact of disaster, and facilitate resumption of normal social and economic activities.

Section 3. *Definition of Terms.* - For purposes of this Act, the following shall refer to:

- (a) "*Adaptation*" - the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.
- (b) "*Capacity*" - a combination of all strengths and resources available within a community, society or organization that can reduce the level of risk, or effects of a disaster. Capacity may include infrastructure and physical means, institutions, societal coping abilities, as well as human knowledge, skills and collective attributes

such as social relationships, leadership and management. Capacity may also be described as capability.

- (c) "*Civil Society Organizations*" Or "*CSOs*" - non-state actors whose aims are neither to generate profits nor to seek governing power. CSOs unite people to advance shared goals and interests. They have a presence in public life, expressing the interests and values of their members or others, and are based on ethical, cultural, scientific, religious or philanthropic considerations. CSOs include nongovernment organizations (NGOs), professional associations, foundations, independent research institutes, community-based organizations (CBOs), faith-based organizations, people's organizations, social movements, and labor unions.
- (d) "*Climate Change*" - a change in climate that can' be identified by changes in the mean and/or variability of its properties and that persists for an extended period typically decades or longer, whether due to natural variability or as a result of human activity.
- (e) "*Community-Based Disaster Risk Reduction and Management*" or "*CBDRRM*" - a process of disaster risk reduction and management in which at risk communities are actively engaged in the identification, analysis, treatment, monitoring and evaluation of disaster risks in order to reduce their vulnerabilities and enhance their capacities, and where the people are at the heart of decision-making and implementation of disaster risk reduction and management activities.
- (f) "*Complex Emergency*" - a form of human-induced emergency in which the cause of the emergency as well as the assistance to the afflicted IS complicated by intense level of political considerations.
- (g) "*Contingency Planning*" - a management process that analyzes specific potential events or emerging situations that might threaten society or the environment and establishes arrangements in advance to enable timely, effective and appropriate responses to such events and situations.
- (h) "Disaster" - a serious disruption of the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources. Disasters are often described as a result of the combination of: the exposure to a hazard; the conditions of vulnerability that are present; and insufficient capacity or measures to reduce or cope with the potential negative consequences, Disaster impacts may include loss of life, injury, disease and other negative effects on human, physical, mental and social well-being, together with damage to property, destruction of assets, loss of services, Social and economic disruption and environmental degradation.*Iavvphil*
- (i) "*Disaster Mitigation*" - the lessening or limitation of the adverse impacts of hazards and related disasters. Mitigation measures encompass engineering techniques and hazard-resistant construction as well as improved environmental policies and public awareness.
- (j) "*Disaster Preparedness*" - the knowledge and capacities developed by governments, professional response and recovery organizations, communities and individuals to effectively anticipate, respond to, and recover from, the Impacts of likely, imminent or current hazard events or conditions. Preparedness action is carried out within the

context of disaster risk reduction and management and aims to build the capacities needed to efficiently manage all types of emergencies and achieve orderly transitions from response to sustained recovery. Preparedness is based on a sound analysis of disaster risk and good linkages with early warning systems, and includes such activities as contingency planning, stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information, and associated training and field exercises. These must be supported by formal institutional, legal and budgetary capacities.

- (k) "*Disaster Prevention*" - the outright avoidance of adverse impacts of hazards and related disasters. It expresses the concept and intention to completely avoid potential adverse impacts through action taken in advance such as construction of dams or embankments that eliminate flood risks, land-use regulations that do not permit any settlement in high-risk zones, and seismic engineering designs that ensure the survival and function of a critical building in any likely earthquake.
- (l) "*Disaster Response*" - the provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected. Disaster response is predominantly focused on immediate and short-term needs and is sometimes called "disaster relief".
- (m) "*Disaster Risk*" - the potential disaster losses in lives, health status, livelihood, assets and services, which could occur to a particular community or a Society over some specified future time period.
- (n) "*Disaster Risk Reduction*" - the concept and practice of reducing disaster risks through systematic efforts to analyze and manage the causal factors of disasters, including through reduced exposures to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.
- (o) "*Disaster Risk Reduction and Management*" - the systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster. Prospective disaster risk reduction and management refers to risk reduction and management activities that address and seek to avoid the development of new or increased disaster risks, especially if risk reduction policies are not put in place.
- (p) "*Disaster Risk Reduction and Management Information System*" - a specialized database which contains, among others, information on disasters and their human material, economic and environmental impact, risk assessment and mapping and vulnerable groups.
- (q) "*Early Warning System*" - the set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss. A people-centered early warning system necessarily comprises four (4) key elements: knowledge of the risks; monitoring, analysis and forecasting of the hazards; communication or dissemination of alerts and warnings; and local capabilities to respond to the warnings received. The

expression "end-to-end warning system" is also used to emphasize that warning systems need to span all steps from hazard detection to community response.

- (r) "*Emergency*" - unforeseen or sudden occurrence, especially danger, demanding immediate action.
- (s) "*Emergency Management*" - the organization and management of resources and responsibilities for addressing all aspects of emergencies, in particular preparedness, response and initial recovery steps.
- (t) "*Exposure*" - the degree to which the elements at risk are likely to experience hazard events of different magnitudes.
- (u) "*Geographic Information System*" - a database which contains, among others, geo-hazard assessments, information on climate change, and climate risk reduction and management.
- (v) "*Hazard*" - a dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihood and services, social and economic disruption, or environmental damage.
- (w) "*Land-Use Planning*" - the process undertaken by public authorities to identify, evaluate and decide on different options for the use of land, including consideration of long-term economic, social and environmental objectives and the implications for different communities and interest groups, and the subsequent formulation and promulgation of plans that describe the permitted or acceptable uses.
- (x) "*Mitigation*" - structural and non-structural measures undertaken to limit the adverse impact of natural hazards, environmental degradation, and technological hazards and to ensure the ability of at-risk communities to address vulnerabilities aimed at minimizing the impact of disasters. Such measures include, but are not limited to, hazard-resistant construction and engineering works, the formulation and implementation of plans, programs, projects and activities, awareness raising, knowledge management, policies on land-use and resource management, as well as the enforcement of comprehensive land-use planning, building and safety standards, and legislation.
- (y) "*National Disaster Risk Reduction and Management Framework*" or "*NDRRMF*" - provides for comprehensive, all hazards, multi-sectoral, inter-agency and community-based approach to disaster risk reduction and management.
- (z) "*National Disaster Risk Reduction and Management Plan*" or "*NDRRMP*" - the document to be formulated and implemented by the Office of Civil Defense (OCD) that sets out goals and specific objectives for reducing disaster risks together with related actions to accomplish these objectives.

The NDRRMP shall provide for the identification of hazards, vulnerabilities and risks to be managed at the national level; disaster risk reduction and management approaches and strategies to be applied in managing said hazards and risks; agency roles, responsibilities and lines of authority at all government levels; and vertical and horizontal coordination of disaster risk reduction and management in the pre-disaster and post-disaster phases. It shall be in conformity with the NDRRMF.

- (aa) "*Post-Disaster Recovery*" - the restoration and improvement where appropriate, of facilities, livelihood and living conditions. of disaster-affected communities, including efforts to reduce disaster risk factors, in accordance with the principles of "build back better".
- (bb) "*Preparedness*" - pre-disaster actions and measures being undertaken within the context of disaster risk reduction and management and are based on sound risk analysis as well as pre-disaster activities to avert or minimize loss of life and property such as, but not limited to, community organizing, training, planning, equipping, stockpiling, hazard mapping, insuring of assets, and public information and education initiatives. This also includes the development/enhancement of an overall preparedness strategy, policy, institutional structure, warning and forecasting capabilities, and plans that define measures geared to help at-risk communities safeguard their lives and assets by being alert to hazards and taking appropriate action in the face of an Imminent threat or an actual disaster.
- (cc) "*Private Sector*" - the key actor in the realm of the economy where the central social concern and process are the mutually beneficial production and distribution of goods and services to meet the physical needs of human beings. The private sector comprises private corporations, households and nonprofit institutions serving households.
- (dd) "*Public Sector Employees*" - all persons in the civil service.
- (ee) "*Rehabilitation*" - measures that ensure the ability of affected communities/areas to restore their normal level of functioning by rebuilding livelihood and damaged infrastructures and increasing the communities' organizational capacity.
- (ff) "*Resilience*" - the ability of a system, community or society exposed to hazards to resist, absorb, accommodate and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.
- (gg) "*Response*" - any concerted effort by two (2) or more agencies, public or private, to provide assistance or intervention during or immediately after a disaster to meet the life preservation and basic subsistence needs of those people affected and in the restoration of essential public activities and facilities.
- (hh) "*Risk*" - the combination of the probability of an event and its negative consequences.
- (ii) "*Risk Assessment*" - a methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property, services, livelihood and the environment on which they depend. Risk assessments with associated risk mapping include: a review of the technical characteristics of hazards such as their location, intensity, frequency and probability; the analysis of exposure and vulnerability including the physical, social, health, economic and environmental dimensions; and the evaluation of the effectiveness of prevailing and alternative coping capacities in respect to likely risk scenarios.
- (jj) "*Risk Management*" - the systematic approach and practice of managing uncertainty to minimize potential harm and loss. It comprises risk assessment and analysis, and

the implementation of strategies and specific actions to control, reduce and transfer risks. It is widely practiced by organizations to minimize risk in investment decisions and to address operational risks such as those of business disruption, production failure, environmental damage, social impacts and damage from fire and natural hazards.

- (kk) "*Risk Transfer*" - the process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party.
- (ll) "*State of Calamity*" - a condition involving mass casualty and/or major damages to property, disruption of means of livelihoods, roads and normal way of life of people in the affected areas as a result of the occurrence of natural or human-induced hazard.
- (mm) "*Sustainable Development*" - development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two (2) key concepts: (1) the concept of "needs", in particular, the essential needs of the world's poor, to which overriding priority should be given; and (2) the idea of limitations imposed by the state of technology and social organizations on the environment's ability to meet present and future needs. It is the harmonious integration of a sound and viable economy, responsible governance, social cohesion and harmony, and ecological integrity to ensure that human development now and through future generations is a life-enhancing process.
- (nn) "*Vulnerability*" - the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. Vulnerability may arise from various physical, social, economic, and environmental factors such as poor design and construction of buildings, inadequate protection of assets, lack of public information and awareness, limited official recognition of risks and preparedness measures, and disregard for wise environmental management.
- (oo) "*Vulnerable and Marginalized Groups*" - those that face higher exposure to disaster risk and poverty including, but not limited to, women, children, elderly, differently-abled people, and ethnic minorities.

Section 4. *Scope*. - This Act provides for the development of policies and plans and the implementation of actions and measures pertaining to all aspects of disaster risk reduction and management, including good governance, risk assessment and early warning, knowledge building and awareness raising, reducing underlying risk factors, and preparedness for effective response and early recovery.

Section 5. *National Disaster Risk Reduction and Management Council*. - The present National Disaster Coordinating Council or NDCC shall henceforth be known as the National Disaster Risk Reduction and Management Council, hereinafter referred to as the NDRRMC or the National Council.

The National Council shall be headed by the Secretary of the Department of National Defense (DND) as Chairperson with the Secretary of the Department of the Interior and Local Government (DILG) as Vice Chairperson for Disaster Preparedness, the Secretary of the Department of Social

Welfare and Development (DSWD) as Vice Chairperson for Disaster Response, the Secretary of the Department of Science and Technology (DOST) as Vice Chairperson for Disaster Prevention and Mitigation, and the Director-General of the National Economic and Development Authority (NEDA) as Vice Chairperson for Disaster Rehabilitation and Recovery.

The representatives from the CSOs and the private sector shall be selected from among their respective ranks based on the criteria and mechanisms to be set for this purpose by the National Council.

Section 6. *Powers and Functions of the NDRRMC.* - The National Council, being empowered with policy-making, coordination, integration, supervision, monitoring and evaluation functions, shall have the following responsibilities:

- (a) Develop a NDRRMF which shall provide for a comprehensive, all-hazard, multi-sectoral, inter-agency and community-based approach to disaster risk reduction and management. The Framework shall serve as the principal guide to disaster risk reduction and management efforts in the country and shall be reviewed on a five(5)-year interval, or as may be deemed necessary, in order to ensure its relevance to the times;
- (b) Ensure that the NDRRMP is consistent with the NDRRMF;
- (c) Advise the President on the status of disaster preparedness, prevention, mitigation, response and rehabilitation operations being undertaken by the government, CSOs, private sector, and volunteers; recommend to the President the declaration of a state of calamity in areas extensively damaged; and submit proposals to restore normalcy in the affected areas, to include calamity fund allocation;
- (d) Ensure a multi-stakeholder participation in the development, updating, and sharing of a Disaster Risk Reduction and Management Information System and Geographic Information System-based national risk map as policy, planning and decision-making tools;
- (e) Establish a national early warning and emergency alert system to provide accurate and timely advice to national or local emergency response organizations and to the general public through diverse mass media to include digital and analog broadcast, cable, satellite television and radio, wireless communications, and landline communications;
- (f) Develop appropriate risk transfer mechanisms that shall guarantee social and economic protection and increase resiliency in the face of disaster;
- (g) Monitor the development and enforcement by agencies and organizations of the various laws, guidelines, codes or technical standards required by this Act;
- (h) Manage and mobilize resources for disaster risk reduction and management including the National Disaster Risk Reduction and Management Fund;
- (i) Monitor and provide the necessary guidelines and procedures. on the Local Disaster Risk Reduction and Management Fund (LDRRMF) releases as well as utilization, accounting and auditing thereof;

- (j) Develop assessment tools on the existing and potential hazards and risks brought about by climate change to vulnerable areas and ecosystems in coordination with the Climate Change Commission;
- (k) Develop vertical and horizontal coordination mechanisms for a more coherent implementation of disaster risk reduction and management policies and programs by sectoral agencies and LGUs;
- (l) Formulate a national institutional capability building program for disaster risk reduction and management to address the specific weaknesses of various government agencies and LGUs, based on the results of a biennial baseline assessment and studies;
- (m) Formulate, harmonize, and translate into policies a national agenda for research and technology development on disaster risk reduction and management;
- (n) In coordination with the Climate Change Commission, formulate and implement a framework for climate change adaptation and disaster risk reduction and management from which all policies, programs, and projects shall be based;
- (o) Constitute a technical management group composed of representatives of the abovementioned departments, offices, and organizations, that shall coordinate and meet as often as necessary to effectively manage and sustain national efforts on disaster risk reduction and management;
- (p) Task the OCD to conduct periodic assessment and performance monitoring of the member-agencies of the NDRRMC, and the Regional Disaster Risk Reduction and Management Councils (RDRRMCs), as defined in the NDRRMP; and
- (q) Coordinate or oversee the Implementation of the country's obligations with disaster management treaties to which it IS a party and see to It that the country's disaster management treaty obligations be incorporated in its disaster risk reduction and management frameworks, policies, plans, programs and projects.

Section 7. *Authority of the NDRRMC Chairperson.* - The Chairperson of the NDRRMC may call upon other instrumentalities or entities of the government and nongovernment and civic organizations for assistance In terms of the use of their facilities and resources for the protection and preservation of life and properties in the whole range of disaster risk reduction and management. This authority includes the power to call on the reserve force as defined in Republic Act No. 7077 to assist in relief and rescue during disasters or calamities.

Section 8. *The Office of Civil Defense.* - The Office of Civil Defense (OCD) shall have the primary mission of administering a comprehensive national civil defense and disaster risk reduction and management program by providing leadership in the continuous development of strategic and systematic approaches as well as measures to reduce the vulnerabilities and risks to hazards and manage the consequences of disasters.

The Administrator of the OCD shall also serve as Executive Director of the National Council and, as such, shall have the same duties and privileges of a department undersecretary. All appointees shall be universally acknowledged experts in the field of disaster preparedness and management and of proven honesty and integrity. The National Council shall utilize the services and facilities of the OCD as the secretariat of the National Council.

Section 9. *Powers and Functions of the OCD.* - The OCD shall have the following powers and functions:

- (a) Advise the National Council on matters relating to disaster risk reduction and management consistent with the policies and scope as defined in this Act;
- (b) Formulate and implement the NDRRMP and ensure that the physical framework, social, economic and environmental plans of communities, cities, municipalities and provinces are consistent with such plan. The National Council shall approve the NDRRMP;
- (c) Identify, assess and prioritize hazards and risks in consultation with key stakeholders;
- (d) Develop and ensure the implementation of national standards in carrying out disaster risk reduction programs including preparedness, mitigation, prevention, response and rehabilitation works, from data collection and analysis, planning, implementation, monitoring and evaluation;
- (e) Review and evaluate the Local Disaster risk Reduction and Management Plans (LDRRMPs) to facilitate the integration of disaster risk reduction measures into the local Comprehensive Development Plan (CDP) and Comprehensive Land-Use Plan (CLUP);
- (f) Ensure that the LGUs, through the Local Disaster Risk Reduction and Management Offices (LDRRMOs) are properly informed and adhere to the national standards and programs;
- (g) Formulate standard operating procedures for the deployment of rapid assessment teams, information sharing among different government agencies, and coordination before and after disasters at all levels;
- (h) Establish standard operating procedures on the communication system among provincial, city, municipal, and barangay disaster risk reduction and management councils, for purposes of warning and alerting them and for gathering information on disaster areas before, during and after disasters;
- (i) Establish Disaster Risk Reduction and Management Training Institutes in such suitable location as may be deemed appropriate to train public and private individuals, both local and national, in such subject as disaster risk reduction and management among others. The Institute shall consolidate and prepare training materials and publications of disaster risk reduction and management books and manuals to assist disaster risk reduction and management workers in the planning and implementation of this program and projects. The Institute shall conduct research programs to upgrade knowledge and skills and document best practices on disaster risk reduction and management. The Institute is also mandated to conduct periodic awareness and education programs to accommodate new elective officials and members of the LDRRMCs;
- (j) Ensure that all disaster risk reduction programs, projects and activities requiring regional and international support shall be in accordance with duly established national policies and aligned with international agreements;
- (k) Ensure that government agencies and LGUs give top priority and take adequate and appropriate measures in disaster risk reduction and management;

- (l) Create an enabling environment for substantial and sustainable participation of CSOs, private groups, volunteers and communities, and recognize their contributions in the government's disaster risk reduction efforts;
- (m) Conduct early recovery and post-disaster needs assessment institutionalizing gender analysis as part of it;
- (n) Establish an operating facility to be known as the National Disaster Risk Reduction and Management Operations Center (NDRRMOC) that shall be operated and staffed on a twenty-four (24) hour basis;
- (o) Prepare the criteria and procedure for the enlistment of accredited community disaster volunteers (ACDVs). It shall include a manual of operations for the volunteers which shall be developed by the OCD in consultation with various stakeholders;
- (p) Provide advice and technical assistance and assist in mobilizing necessary resources to increase the overall capacity of LGUs, specifically the low income and in high-risk areas;
- (q) Create the necessary offices to perform its mandate as provided under this Act; and
- (r) Perform such other functions as may be necessary for effective operations and implementation of this Act.

Section 10. *Disaster Risk Reduction and Management Organization at the Regional Level.* - The current Regional Disaster Coordinating Councils shall henceforth be known as the Regional Disaster Risk Reduction and Management Councils (RDRRMCs) which shall coordinate, integrate, supervise, and evaluate the activities of the LDRRMCs. The RDRRMC shall be responsible in ensuring disaster sensitive regional development plans, and in case of emergencies shall convene the different regional line agencies and concerned institutions and authorities.

The RDRRMCs shall establish an operating facility to be known as the Regional Disaster Risk Reduction and Management Operations Center (RDRRMOC) whenever necessary.

The civil defense officers of the OCD who are or may be designated as Regional Directors of the OCD shall serve as chairpersons of the RDRRMCs. Its Vice Chairpersons shall be the Regional Directors of the DSWD, the DILG, the DOST, and the NEDA. In the case of the Autonomous Region in Muslim Mindanao (ARMM), the Regional Governor shall be the RDRRMC Chairperson. The existing regional offices of the OCD shall serve as secretariat of the RDRRMCs. The RDRRMCs shall be composed of the executives of regional offices and field stations at the regional level of the government agencies.

Section 11. *Organization at the Local Government Level.* - The existing Provincial, City, and Municipal Disaster Coordinating Councils shall henceforth be known as the Provincial, City, and Municipal Disaster Risk Reduction and Management Councils. The Barangay Disaster Coordinating Councils shall cease to exist and its powers and functions shall henceforth be assumed by the existing Barangay Development Councils (BDCs) which shall serve as the LDRRMCs in every barangay.

- (a) Composition: The LDRRMC shall be composed of, but not limited to, the following:
 - (1) The Local Chief Executives, Chairperson;

- (2) The Local Planning and Development Officer, member;
- (3) The Head of the LDRRMO, member;
- (4) The Head of the Local Social Welfare and Development Office, member;
- (5) The Head of the Local Health Office, member;
- (6) The Head of the Local Agriculture Office, member;
- (7) The Head of the Gender and Development Office, member;
- (8) The Head of the Local Engineering Office, member;
- (9) The Head of the Local Veterinary Office, member;
- (10) The Head of the Local Budget Office, member;
- (11) The Division Head/Superintendent of Schools of the DepED, member;
- (12) The highest-ranking officer of the Armed Forces of the Philippines (AFP) assigned in the area, member;
- (13) The Provincial Director/City/Municipal Chief of the Philippine National Police (PNP), member;
- (14) The Provincial Director/City/ Municipal Fire Marshall of the Bureau of Fire Protection (BFP), member;
- (15) The President of the Association of Barangay Captains (ABC), member;
- (16) The Philippine National Red Cross (PNRC), member;
- (17) Four (4) accredited CSOs, members; and
- (18) One (1) private sector representative, member.

(b) The LDRRMCs shall have the following functions:

- (1) Approve, monitor and evaluate the implementation of the LDRRMPs and regularly review and test the plan consistent with other national and local planning programs;
- (2) Ensure the integration of disaster risk reduction and climate change adaptation into local development plans, programs and budgets as a strategy in sustainable development and poverty reduction;
- (3) Recommend the implementation of forced or preemptive evacuation of local residents, if necessary; and
- (4) Convene the local council once every three (3) months or as necessary.

Section 12. *Local Disaster Risk Reduction and Management Office (LDRRMO).*

- (a) There shall be established an LDRRMO in every province, city and municipality, and a Barangay Disaster Risk Reduction and Management Committee (BDRRMC) in every barangay which shall be responsible for setting the direction, development, implementation and coordination of disaster risk management programs within their territorial jurisdiction.
- (b) The LDRRMO shall be under the office of the governor, city or municipal mayor, and the punong barangay in case of the BDRRMC. The LDRRMOs shall be initially

organized and composed of a DRRMO to be assisted by three (3) staff responsible for:

- (1) administration and training;
 - (2) research and planning; and
 - (3) operations and warning. The LDRRMOs and the BDRRMCs shall organize, train and directly supervise the local emergency response teams and the ACDVs.
- (c) The provincial, city and municipal DRRMOs or BDRRMCs shall perform the following functions with impartiality given the emerging challenges brought by disasters of our times:
- (1) Design, program, and coordinate disaster risk reduction and management activities consistent with the National Council's standards and guidelines;
 - (2) Facilitate and support risk assessments and contingency planning activities at the local level;
 - (3) Consolidate local disaster risk information which includes natural hazards, vulnerabilities, and climate change risks, and maintain a local risk map;
 - (4) Organize and conduct training, orientation, and knowledge management activities on disaster risk reduction and management at the local level;
 - (5) Operate a multi-hazard early warning system, linked to disaster risk reduction to provide accurate and timely advice to national or local emergency response organizations and to the general public, through diverse mass media, particularly radio, landline communications, and technologies for communication within rural communities;
 - (6) Formulate and implement a comprehensive and - integrated LDRRMP in accordance with the national, regional and provincial framework, and policies on disaster risk reduction in close coordination with the local development councils (LDCs);
 - (7) Prepare and submit to the local sanggunian through the LDRRMC and the LDC the annual LDRRMO Plan and budget, the proposed programming of the LDRRMF, other dedicated disaster risk reduction and management resources, and other regular funding source/s and budgetary support of the LDRRMO/BDRRMC;
 - (8) Conduct continuous disaster monitoring and mobilize instrumentalities and entities of the LGUs, CSOs, private groups and organized volunteers, to utilize their facilities and resources for the protection and preservation of life and properties during emergencies in accordance with existing policies and procedures;
 - (9) Identify, assess and manage the hazards vulnerabilities and risks that may occur in their locality;
 - (10) Disseminate information and raise public awareness about those hazards. vulnerabilities and risks, their nature, effects, early warning signs and counter-measures;
 - (11) Identify and implement cost-effective risk reduction measures/strategies;

- (12) Maintain a database of human resource, equipment, directories, and location of critical infrastructures and their capacities such as hospitals and evacuation centers;
 - (13) Develop, strengthen and operationalize mechanisms for partnership or networking with the private sector, CSOs, and volunteer groups;
 - (14) Take all necessary steps on a continuing basis to maintain, provide, or arrange the provision of, or to otherwise make available, suitably-trained and competent personnel for effective civil defense and disaster risk reduction and management in its area;
 - (15) Organize, train, equip and supervise the local emergency response teams and the ACDV s, ensuring that humanitarian aid workers are equipped with basic skills to assist mothers to breastfeed;
 - (16) Respond to and manage the adverse effects of emergencies and carry out recovery activities in the affected area, ensuring that there is an efficient mechanism for immediate delivery of food, shelter and medical supplies for women and children, endeavor to create a special place where internally-displaced mothers can find help with breastfeeding, feed and care for their babies and give support to each other;
 - (17) Within its area, promote and raise public awareness of and compliance with this Act and legislative provisions relevant to the purpose of this Act;
 - (18) Serve as the secretariat and executive arm of the LDRRMC;
 - (19) Coordinate other disaster risk reduction and management activities;
 - (20) Establish linkage/network with other LGUs for disaster risk reduction and emergency response purposes;
 - (21) Recommend through the LDRRMC the enactment of local ordinances consistent with the requirements of this Act;
 - (22) Implement policies, approved plans and programs of the LDRRMC consistent with the policies and guidelines laid down in this Act;
 - (23) Establish a Provincial/City/Municipal/Barangay Disaster Risk Reduction and Management Operations Center;
 - (24) Prepare and submit, through the LDRRMC and the LDC, the report on the utilization of the LDRRMF and other dedicated disaster risk reduction and management resources to the local Commission on Audit (COA), copy furnished the regional director of the OCD and the Local Government Operations Officer of the DILG; and
 - (25) Act on other matters that may be authorized by the LDRRMC.
- (d) The BDRRMC shall be a regular committee of the existing BDC and shall be subject thereto. The punong barangay shall facilitate and ensure the participation of at least two (2) CSO representatives from existing and active community-based people's organizations representing the most vulnerable and marginalized groups in the barangay.

Section 13. *Accreditation, Mobilization, and Protection of Disaster Volunteers and National Service Reserve Corps, CSOs and the Private Sector.* - The government agencies, CSOs, private sector and LGUs may mobilize individuals or organized volunteers to augment their respective personnel complement and logistical requirements in the delivery of disaster risk reduction programs and activities. The agencies, CSOs, private sector, and LGUs concerned shall take full responsibility for the enhancement, welfare and protection of volunteers, and shall submit the list of volunteers to the OCD, through the LDRRMOs, for accreditation and inclusion in the database of community disaster volunteers. A national roster of ACDVs, National Service Reserve Corps, CSOs and the private sector shall be maintained by the OCD through the LDRRMOs. Accreditation shall be done at the municipal or city level.

Mobilization of volunteers shall be in accordance with the guidelines to be formulated by the NDRRMC consistent with the provisions of this Act. Any volunteer who incurs death or injury while engaged in any of the activities defined under this Act shall be entitled to compensatory benefits and individual personnel accident insurance as may be defined under the guidelines.

Section 14. *Integration of Disaster Risk Reduction Education into the School Curricula and Sangguniang Kabataan (SK) Program and Mandatory Training for the Public Sector Employees.* - The DepED, the CHED, the Technical Education and Skills Development Authority (TESDA), in coordination with the OCD, the National Youth Commission (NYC), the DOST, the DENR, the DILG-BFP, the DOH, the DSWD and other relevant agencies, shall integrate disaster risk reduction and management education in the school curricula of secondary and tertiary level of education, including the National Service Training Program (NSTP), whether private or public, including formal and nonformal, technical-vocational, indigenous learning, and out-of-school youth courses and programs.

The NDRRMC, the RDRRMCs, the LDRRMCs, the LDRRMOs, the BDRRMCs and the SK councils shall encourage community, specifically the youth, participation in disaster risk reduction and management activities, such as organizing quick response groups, particularly in identified disaster-prone areas, as well as the inclusion of disaster risk reduction and management programs as part of the SK programs and projects.

The public sector employees shall be trained in emergency response and preparedness. The training is mandatory for such employees to comply with the provisions of this Act.

Section 15. *Coordination During Emergencies.* - The LDRRMCs shall take the lead in preparing for, responding to, and recovering from the effects of any disaster based on the following criteria:

- (a) The BDC, if a barangay is affected;
- (b) The city/municipal DRRMCs, If two (2) or more barangays are affected;
- (c) The provincial DRRMC, if two (2) or more cities/municipalities are affected;
- (d) The regional DRRMC, if two (2) or more provinces are affected; and
- (e) The NDRRMC, if two (2) or more regions are affected.

The NDRRMC and intermediary LDRRMCs shall always act as support to LGUs which have the primary responsibility as first disaster responders. Private sector and

civil society groups shall work in accordance with the coordination mechanism and policies set by the NDRRMC and concerned LDRRMCs.

Section 16. *Declaration of State of Calamity.* - The National Council shall recommend to the President of the Philippines the declaration of a cluster of barangays, municipalities, cities, provinces, and regions under a state of calamity, and the lifting thereof, based on the criteria set by the National Council. The President's declaration may warrant international humanitarian assistance as deemed necessary.

The declaration and lifting of the state of calamity may also be issued by the local sanggunian, upon the recommendation of the LDRRMC, based on the results of the damage assessment and needs analysis.

Section 17. *Remedial Measures.* - The declaration of a state of calamity shall make mandatory the Immediate undertaking of the following remedial measures by the member-agencies concerned as defined in this Act:

- (a) Imposition of price ceiling on basic necessities and prime commodities by the President upon the recommendation of the implementing agency as provided for under Republic Act No. 7581, otherwise known as the "Price Act", or the National Price Coordinating Council;
- (b) Monitoring, prevention and control by the Local Price Coordination Council of overpricing/profitteering and hoarding of prime commodities, medicines and petroleum products;
- (c) Programming/reprogramming of funds for the repair and safety upgrading of public infrastructures and facilities; and
- (d) Granting of no-interest loans by government financing or lending institutions to the most affected section of the population through their cooperatives or people's organizations.

Section 18. *Mechanism for International Humanitarian Assistance.* - (a) The importation and donation of food, clothing, medicine and equipment for relief and recovery and other disaster management and recovery-related supplies is hereby authorized in accordance with Section 105 of the Tariff and Customs Code of the Philippines, as amended, and the prevailing provisions of the General Appropriations Act covering national internal revenue taxes and import duties of national and local government agencies; and (b) Importations and donations under this section shall be considered as importation by and/or donation to the NDRRMC, subject to the approval of the Office of the President.

Section 19. *Prohibited Acts.* - Any person, group or corporation who commits any of the following prohibited acts shall be held liable and be subjected to the penalties as prescribed in Section 20 of this Act:

- (a) Dereliction of duties which leads to destruction, loss of lives, critical damage of facilities and misuse of funds;
- (b) Preventing the entry and distribution of relief goods in disaster-stricken areas, including appropriate technology, tools, equipment, accessories, disaster teams/experts;

- (c) Buying, for consumption or resale, from disaster relief agencies any relief goods, equipment or other and commodities which are intended for distribution to disaster affected communities;
- (d) Buying, for consumption or resale, from the recipient disaster affected persons any relief goods, equipment or other aid commodities received by them;
- (e) Selling of relief goods, equipment or other aid commodities which are intended for distribution to disaster victims;
- (f) Forcibly seizing relief goods, equipment or other aid commodities intended for or consigned to a specific group of victims or relief agency;
- (g) Diverting or misdelivery of relief goods, equipment or other aid commodities to persons other than the rightful recipient or consignee;
- (h) Accepting, possessing, using or disposing relief goods, equipment or other aid commodities not intended for nor consigned to him/her;
- (i) Misrepresenting the source of relief goods, equipment or other aid commodities by:
 - (1) Either covering, replacing or defacing the labels of the containers to make it appear that the goods, equipment or other aid commodities came from another agency or persons;
 - (2) Repacking the goods, equipment or other aid commodities into containers with different markings to make it appear that the goods came from another agency or persons or was released upon the instance of a particular agency or persons;
 - (3) Making false verbal claim that the goods, equipment or other and commodity in its untampered original containers actually came from another agency or persons or was released upon the instance of a particular agency or persons;
- (j) Substituting or replacing relief goods, equipment or other aid commodities with the same items or inferior/cheaper quality;
- (k) Illegal solicitations by persons or organizations representing others as defined in the standards and guidelines set by the NDRRMC;
- (l) Deliberate use of false or inflated data in support of the request for funding, relief goods, equipment or other aid commodities for emergency assistance or livelihood projects; and
- (m) Tampering with or stealing hazard monitoring and disaster preparedness equipment and paraphernalia.

Section 20. *Penal Clause.* - Any individual, corporation, partnership, association, or other juridical entity that commits any of the prohibited acts provided for in Section 19 of this Act shall be prosecuted and upon conviction shall suffer a fine of not less than Fifty thousand pesos (Php50,000.00) or any amount not to exceed Five hundred thousand pesos (php500,000.00) or imprisonment of not less than six (6) years and one (1) day or more than twelve (12) years, or both, at the discretion of the court, including perpetual disqualification from public office if the offender IS a public officer, and confiscation or forfeiture in favor of the government of the objects and the instrumentalities used in committing any of herein prohibited acts.

If the offender is a corporation, partnership or association, or other juridical entity, the penalty shall be imposed upon the officer or officers of the corporation, partnership, association or entity responsible for the violation without prejudice to the cancellation or revocation of these entities license or accreditation issued to them by any licensing or accredited body of the government. If such offender is an alien, he or she shall, in addition to the penalties prescribed in this Act, be deported without further proceedings after service of the sentence.

However, the prosecution for offenses set forth in Section 19 of this Act shall be without prejudice to any liability for violation of Republic Act No. 3185, as amended, otherwise known as the Revised Penal Code, and other civil liabilities.

Section 21. *Local Disaster Risk" Reduction and Management Fund (LDRRMF)*. - The present Local Calamity Fund shall henceforth be known as the Local Disaster Risk Reduction and Management Fund (LDRRMF). Not less than five percent (5%) of the estimated revenue from regular sources shall be set aside as the LDRRMF to support disaster risk management activities such as, but not limited to, pre-disaster preparedness programs including training, purchasing life-saving rescue equipment, supplies and medicines, for post-disaster activities, and for the payment of premiums on calamity insurance. The LDRRMC shall monitor and evaluate the use and disbursement of the LDRRMF based on the LDRRMP as incorporated in the local development plans and annual work and financial plan. Upon the recommendation of the LDRRMO and approval of the sanggunian concerned, the LDRRMC may transfer the said fund to support disaster risk reduction work of other LDRRMCs which are declared under state of calamity.

Of the amount appropriated for LDRRMF, thirty percent (30%) shall be allocated as Quick Response Fund (QRF) or stand-by fund for relief and recovery programs in order that situation and living conditions of people In communities or areas stricken by disasters, calamities, epidemics, or complex emergencies, may be normalized as quickly as possible.

Unexpended LDRRMF shall accrue to a special trust fund solely for the purpose of supporting disaster risk reduction and management activities of the LDRRMCs within the next five (5) years. Any such amount still not fully utilized after five (5) years shall revert back to the general fund and will be available for other social services to be identified by the local sanggunian.

Section 22. *National Disaster Risk" Reduction and Management Fund*.

- (a) The present Calamity Fund appropriated under the annual General Appropriations Act shall henceforth be known as the National Disaster Risk Reduction and Management Fund (NDRRM Fund) and it shall be used for disaster risk reduction or mitigation, prevention and preparedness activities such as but not limited to training of personnel, procurement of equipment, and capital expenditures. It can also be utilized for relief, recovery, reconstruction and other work or services in connection with natural or human induced calamities which may occur during the budget year or those that occurred in the past two (2) years from the budget year;
- (b) The specific amount of the NDRRM Fund and the appropriate recipient agencies and/or LGUs shall be determined upon approval of the President of the Philippines in accordance with the favorable recommendation of the NDRRMC;

- (c) Of the amount appropriated for the NDRRM Fund, thirty percent (30%) shall be allocated as Quick Response Fund (QRF) or stand-by fund for relief and recovery programs in order that situation and living conditions of people in communities or areas stricken by disasters, calamities, epidemics, or complex emergencies, may be normalized as quickly as possible;
- (d) All departments/agencies and LGUs that are allocated with DRRM fund shall submit to the NDRRMC their monthly statements on the utilization of DRRM funds and make an accounting thereof in accordance with existing accounting and auditing rules;
- (e) All departments, bureaus, offices and agencies of the government are hereby authorized to use a portion of their appropriations to implement projects designed to address DRRM activities in accordance with the guidelines to be issued by the NDRRMC in coordination with the DBM.

Section 23. *Funding of the OCD.* - As lead agency to carry out the provisions of this Act, the OCD shall be allocated a budget of One billion pesos (Php1,000,000,000.00) revolving fund starting from the effectivity of this Act.

Section 24. *Annual Report.* - The National Council, through the OCD, shall submit to the Office of the President, the Senate and the House of Representatives, within the first quarter of the succeeding year, an annual report relating to the progress of the implementation of the NDRRMP.

Section 25. *Implementing Rules and Regulations.* - The NDRRMC, through its Chairperson, shall issue the necessary rules and regulations for the effective implementation of this Act within ninety (90) days after approval of this Act. The OCD, in consultation with key stakeholders, shall take the lead in the preparation of the implementing rules and regulations with the active involvement of the technical management group of the NDRRMC.

Section 26. *Congressional Oversight Committee.* - There is hereby created a Congressional Oversight Committee to monitor and oversee the implementation of the provisions of this Act. The Committee shall be composed of six (6) members from the Senate and six (6) members from the House of Representatives with the Chairpersons of the Committees on National Defense and Security of both the Senate and the House of Representatives as joint Chairpersons of this Committee. The five (5) other members from each Chamber are to be designated by the Senate President and the Speaker of the House of Representatives, respectively. The minority shall be entitled to pro rata representation but shall have at least two (2) representatives from each Chamber.

Section 27. *Sunset Review.* - Within five (5) years after the effectivity of this Act, or as the need arises, the Congressional Oversight Committee shall conduct a sunset review. For purposes of this Act, the term "sunset review" shall mean a systematic evaluation by the Congressional Oversight Committee of the accomplishments and impact of this Act, as well as the performance and organizational structure of its implementing agencies, for purposes of determining remedial legislation.

Section 28. *Repealing Clause.* - Presidential Decree No. 1566 and all other laws, decrees, executive orders, proclamations and other executive issuance's which are inconsistent with or contrary to the provisions of this Act are hereby amended or repealed accordingly.

Section 29. *Separability Clause.* - If any provision of this Act shall be held unconstitutional or invalid, the other provisions not otherwise affected shall remain in full force and effect.

Section 30. *Effectivity Clause.* - This Act shall take effect fifteen (15) days following its complete publication in the Official Gazette or in two (2) national newspapers of general circulation. (http://www.lawphil.net/statutes/repacts/ra2010/ra_10121_2010.html)

C. Profile of Secondary School in Bantul Indonesia and Secondary School in Munoz Indonesia

Both schools generally have similar characteristics i.e. have ever experienced directly a disaster event namely flood and earthquake. However, the earthquake experienced by the students in Bantul Indonesia is more unforgettable than the flood. But both schools have ever experienced flood.

Both schools are located at village so that the social background tends to be similar i.e. farming. It means that seen from the demographic point of view those areas are similar. They lie not far from the riverbank, so that physically they are vulnerable from the flood threat. However, culturally they are different related to social norms and values of the society. Most of the Philippines students are Christians while students in Indonesia are Moslems.

D. The Role of the School and Teacher in the Disaster Mitigation Education

School as an educational institution has an important role in the disaster management both in the structural dimension and non structural dimension. Structurally, there is a tendency that the secondary schools in Bantul and Munoz have not been optimally facilitated the attempt to reduce disaster risk. It is seen from the structure of the building has not been designed in a way that it could avoid flood that can happen anytime. In particular the school in Bantul which has just experienced earthquake has not reconstructed the building in a safe standard from earthquake and also its position which is near a river has not anticipated yet avoiding the flood. While the school building in Munoz has been designed to be safe from hurricane but not from flood. It is because the school realized that the disaster event does not happen every year and even when it is happen, it can be handled by fixing the damaged building. Besides, the cost to rebuild the school with strong structure is expensive, while those two schools are located in the

village which have low level of economy and it will be hard for them to rebuild the school independently.

The role of the teacher in the disaster mitigation education has not been optimally conducted on the secondary school in Bantul and Munoz. It is noted that there have not been any special program related to the ways to overcome the disaster risk. There is a tendency that the teacher has realized that the disaster is a part of the social live process but generally they still act apathetically towards disaster but tend to be rational if the disaster that had happened is faced with some activity response related to the disaster recovery process. There is a tendency in both schools that the recovery process is still a stronger part related to the disaster event compared to the attempt to reduce the disaster risk.

The school response is different towards the government policy related to Disaster Risk Reduce that has become the government program to support Hyogo frame Work still facing problems in the credit system at schoo in Bantul and Munoz. There is a similar tendency that the government of Philippines and Indonesia keep trying the attempt to socialize the importance of DRR principle as the understanding process needed by all the people living in the area with high risk of disaster, just like in Indonesia and Philippines.

School still needs enough socialization to develop the disaster mitigation education as part of the learning process at class. Teacher tends to respond the disaster when it take place but there is a tendency that the teachers in secondary school in Bantul and Munoz has not intensively transfer the knowledge of attempt to reduce disaster risk in the subject taught. The teachers have helped the students in facing problems. However, they have not taught the preparation in facing the disaster in focus and designed it comprehensively in the process of learning at class. In this case, the student reaction towards disaster tends to be gained and strengthened by the disaster event they faced directly.

E. The Students' Awareness Level of Disaster on ORID Analysis

The quantitative data are analyzed with the statistic test of T-test related to the students' awareness on the perspective of ORID among the students in Bantul and Munoz. Based on the interpretation of the result of t-test to test the homogeneity of the variants from both groups, the Levene's Test is used. From the Levene's test, it is known that the *p-value* = 0.bigger than $\alpha = 0.05$, so that it can be concluded that the assumption

of both variants can be fulfilled evenly. Therefore, this research applied t-test two independent sample with the assumption that both variants is the same. The result of t-test can be concluded that there are differences on the average score of ORID taken from the secondary school in Bantul and Munoz. The average score of the secondary students in Bantul Indonesia; Mean =114.0889, better than students in Munoz, Mean = 93.7115.

To illustrate the differences of the ORID awareness level between the students in Bantul and Munoz, it can be explain by four aspects: (1) How far is the students' sensitivity level in responding the disaster through their sensory ability (O); (2) How far is the students' reflectivity in taking their disaster experience or the students' internal reaction/ perception (comparing the condition before and after the disaster, their fear, and perhaps their positive experience) (R); (3) how far is the students' awareness of reality experienced, it needs the students interpretative ability, so that the direct effect is not to the school, family, and future become important to be told (I); (4) with the levels of thought and response experienced on 1-3, then the students will build a commitment to face the disaster and adapt any changes as their personal decision (D). Based on the data analysis from the student questionnaire 1 about disaster mitigation aimed to unfold the students' awareness on disaster on the ORID perspective,it can be described as follow:

Table 4. Objective Awareness Level

STATEMENT	1		2		3		4		%
	P	I	P	I	P	I	P	I	
1. The continuous rainfall causes flood.	34.3	7.5	11.4	3.8	50.0	56.6	4.3	32.1	100.0
2. The water level in the river is increased before the flood.	32.9	5.6	28.6	7.4	0	55.6	5.7	31.5	100.0
3. Many people have to flee their house because of flood.	15.7	1.9	20.0	11.3	42.9	58.5	21.4	28.3	100.0
4. Flood paralyzes any school activities.	20.6	5.6	20.6	18.5	41.2	57.4	17.6	18.5	100.0
5. Flood causes slum environment.	29.0	1.9	23.2		31.9	51.9	15.9	46.3	100.0
6. Flood causes diseases as well.	19.4	1.9	19.4	19.2	43.3	59.6	17.9	19.2	100.0
7. People cooperate helping each other to cope with this disaster.	17.1	5.6	14.3	29.6	58.6	51.9	10.0	13.0	100.0

STATEMENT	1		2		3		4		%
	P	I	P	I	P	I	P	I	
8. People tend to be more religious after the flood. They often pray to God.	20.0	3.7	10.0	3.7	48.6	53.7	21.4	38.9	100.0

Prime data source: students questionnaire 1

The answering criteria:

- 1 : inappropriate
- 2 : less appropriate
- 3 : appropriate
- 4 : quite appropriate

Based on the data above it can be concluded that from 8 aspects related to objective awareness aspect, there is a tendency that the condition of the students in Bantul and Munoz is not similar. This phenomenon is based on the fact that their answer reflected two different things i.e. because the answer for statement 1 and showing different percentage. This phenomenon happens as well for the statement 6. It means that on statement 1 and 6 describe different awareness on each student, while the answer of students in Bantul and Munoz related to different answer is on statement 6,7,8. Based on that tendency, it can be noted that the objective awareness of the students are different. Those differences can be assumed that the objective understanding of the students tends to be different if it is related to disaster phenomenon. Especially the phenomenon of flood, because flood is categorized into two categorizations i.e. the sent flood from other area or flood because of the difference on geographical and demographical condition. The students in Munoz experienced the flood sent from other area while students in Bantul because of the intense rain.

Based on the data above it can be concluded that in general the objective awareness tends to be different. Because of the differences on certain aspects from the students' awareness related to student sensitivity level in responding the disaster through their sensory ability, as shown by the question of "The continuous rainfall causes flood, The water level in the river is increased before the flood, People tend to be more religious after the flood. They often pray to God". Those differences particularly is because of the rain in Bantul area tends to occur gradually because of the intensity and the flood from the river, but in Munoz it is because of the flood sent from other area because of its geographical condition. Related to the students' response towards the disaster event push

the students in Munoz to think rationally, while in Bantul, it tends to motivate them to be more religious and humanist.

The students' objective experience on disaster directly and indirectly will develop the level of reflective awareness, especially related to the students attempt to consider their disaster experience or internal reaction form, namely student perception, particularly in comparing the condition before and after the disaster.

Based on the data analysis from the questionnaire on the reflective awareness among the students in Bantul and Munoz, it can be described as below: Based on the data above there is a tendency that between the students in Munoz and Bantul, especially for the answer of statement 3, 4 tends to be different. This phenomenon reflects that there are differences in responding the disaster between those schools. It is normal because the student internal reaction depends on the damage level of the disaster. Besides, the different student reactions are determined by the student's knowledge on disaster. In another words, if there are differences on the response towards disaster event can be understood that the understanding of the concept of disaster is needed by the students, in this case the disaster mitigation education needs to be socialize intensively to all students.

The reality awareness experienced by the students needs the student's interpretative ability so that the direct influence not to the school, family, and future become important to be unfold. Based on the data related to interpretative awareness among the students in Bantul and Munoz is described as below.

Tabel 5. Interpretative Awareness Level

STATEMENT	1		2		3		4		%
	P	I	P	I	P	I	P	I	
1. I turn to be an independent person after undergoing flood.	30.0	9.4	15.7	11.3	40.0	67.9	14.3	11.3	100.0
2. I realize that Allah S.W.T. warns me through the flood.	15.7	1.9	14.3		52.9	20.8	17.1	77.4	100.0
3. We are reminded to care about the importance of preserving our environment.	14.5	1.9	26.1		47.8	28.3	11.6	67.9	100.0
4. The flood also has reminded us to support the green campaign.	20.3	0	11.6	5.7	50.7	26.4	17.4	67.9	100.0
5. The flood has reminded us to the fact that we had to litter in appropriate places.	18.8	1.9	21.7		39.1	20.8	20.3	77.4	100.0

STATEMENT	1		2		3		4		%
	P	I	P	I	P	I	P	I	
6. The flood reminds us of the greatness of Allah.	18.6	1.9	22.9	3.8	44.3	22.6	14.3	71.7	100.0

Prime data source: students questionnaire 3

The answering criteria:

- 1 : inappropriate
- 2 : less appropriate
- 3 : appropriate
- 4 : quite appropriate

Based on the data from the table it can be concluded that in understanding the disaster among the students in Bantul and Munoz, there is a different tendency especially on the statements 3, 4, and 7. Particularly, the difference on the statement no 3 shows that students in Bantul basically relate every disaster with God. There is a strong tendency to believe the existence of God in every disaster than the student in Munoz. It is supported by the statement no 4 that students in Munoz tend to relate the disaster to rational awareness to protect the environment. These two tendencies are the crucial differences between the students in Bantul and Munoz in responding the disaster. This frame of thought develops in the dynamic human thought on disaster. Therefore, development of disaster education needs a clear program for those two perspectives, because those two basic of thought is needed to overcome the effect or unpredictable disaster.

Based on the thought development levels and students' response experienced by the students on the objective, interpretative, and reflective awareness level, the students' needs to be motivated to develop the disaster commitment and adaptation towards any changes experienced by the students as their own personal decision (D).

Table 6. Decision Awareness Level

STATEMENT	1		2		3		4		%
	P	I	P	I	P	I	P	I	
1. I help rescuing other people during the flood.	18.8	11.3	29.0	30.2	47.8	52.8	4.3	5.7	100.0
2. I take part in rescuing any important belongings during the flooding.	18.6	15.1	27.1	30.2	50.0	47.2	4.3	7.5	100.0
3. I involve a lot in charity programs.	11.4	13.5	34.3	34.6	44.3	40.4	10.0	11.5	100.0
4. I help the surrounding people in reforestation	20.3	7.5	14.5	11.3	50.7	64.2	14.5	17.0	100.0

STATEMENT	1		2		3		4		%
	P	I	P	I	P	I	P	I	
activity.									
5. I also take part to prevent the clogging of water channels.	14.3	1.9	34.3	5.7	42.9	58.5	8.6	34.0	100.0
6. Disaster education should be given immediately.	27.5	0	18.8	5.9	39.1	52.9	14.5	41.2	100.0
7. Residents should hold communal work once in a month.	20.0	3.8	27.1	25.0	38.6	44.2	14.3	26.9	100.0
8. An immediate evacuation is required to be done especially to them who live close to levees.	19.4	1.9	11.9	5.7	47.8	56.6	20.9	35.8	100.0
9. Levees reparation should be held soon.	17.1		20.0		44.3	54.7	18.6	45.3	100.0
10. People should leave soon when they hear alarm.	20.3	1.9	31.9	1.9	33.3	45.3	14.5	50.9	100.0
11. I tend to live in disaster prone areas due to my birthplace.	35.7	60.4	21.4	28.3	30.0	5.7	12.9	5.7	100.0
12. During the flood, all of the residents should follow the instruction of the authorities.	23.2	7.5	14.5	17.0	43.5	49.1	18.8	26.4	100.0

Prime data source: student questionnaire 2

The answering criteria:

- 1 : inappropriate
- 2 : less appropriate
- 3 : appropriate
- 4 : quite appropriate

Based on the table above it can be concluded that the last level tends to be similar between the students in Bantul and in Munoz. It means that generally they can make a decision when facing a disaster. In this case, the decision made by the students depends on the form and the scale of the disaster. This reality is interested to be analyzed because the differences on the awareness level on stage 1,2,3 are not always followed by the differences of the awareness level on stage 4. It means that generally students will learn related to the right decision to do in facing and overcoming the disaster. This awareness principal is important to be directed so that the victims of the disaster can be minimized according to the aim of life.

F. Students' Response and Attitude towards the Disaster Event

Based on qualitative analysis to the students' answers related to various aspects related to the event and disaster mitigation, it can be drawn interesting data to be analyzed related to the attempt to design a contextual disaster mitigation education process. The analysis towards qualitative data will focus on the four crucial aspects, that are (1) sensitivity in responding the disaster, (2) students' reflectivity towards disaster, (3) students' interpretative ability, (4) action in handling the disaster.

The first aspect, the students' sensitivity in responding the disaster through the sensory ability is one of the aspects that illustrates the cognitive dimension of the students about a disaster event, particularly in illustrating the process of disaster event of the students in Bantul about the occurrence of the flood with the thundering voice of the falling things while the students in Munoz by explaining the heavy rain with storm which led to landslide. Based on the illustration above, it can be conclude that the students of both schools remember strongly about the disaster event. It means that the disaster event is a an event which objectively draw a strong impression on people.

Further, the students portrayed that in describing the disaster event, the expression of sentence raise when the disaster happened tends to be described as follow:

Table 7. Utterance Expressed when the Disaster Occurred

Student	Description
Secondary School in Bantul Indonesia	God, forgive me! Allahu Akbar ! Allahu Akbar! Help! I'm scared! I'm sad!
Secondary School in Munoz Philippines	Watch out! Oh God, save me! Where should I go? What should I do? What will happen to us? I'm scared! Help us!

Source : QIM 1, no 2

Based on the data above, it can be analyzed that everybody still remembers the remarkable utterance when the disaster occurred. Everyone will express the utterance that

can make them calm when facing the disaster event. Everyone has their own way is picking the utterances when facing the disaster.

The similarity of the students in Bantul and Munoz is that they mentioned God’s name when the disaster happened and asking for help. This describes that the spiritual dimension arise when a disaster event, while the main differences is that the students in Munoz actively thinks about the evacuation action personally by asking “where to go?”. It means that students in Munoz are more proactive in dealing with the disaster than the students in Indonesia. It can be understood because the flood and hurricane occurred in Philippines are the phenomenon that happen almost every year, so that the society is more ready with the disaster event. While for Indonesia students, the flood was not as big as in Philippines. It is the earthquake which the students in Indonesia remember strongly. While the earthquake is not an annual phenomenon, even it is difficult to predict although the people aware that they are in the vulnerable area. However, the utterance expressed in every disaster event is an objective reality experienced by the people in the high-risk area and when the disaster occurred. With this objective reality the knowledge on the disaster event can be used as the starting foundation to build the objective awareness to the students so that the knowledge on disaster became the part of the students’ understanding. From the students’ answer it can be drawn that the utterance tends to have locus of external on students in Bantul and locus internal on students in Munoz. It is showed by the tendency that the students in Munoz are more responsive in facing the disaster than the students in Bantul who tends to not directly asking what to do.

The sensitivity towards the disaster can be analyzed from the students’ answer related to their memory on the voice when the disaster occurred as follows:

Table 8. Students’ Memory of Voice when the Disaster Occured

Student	Description
Secondary School in Bantul Indonesia	Voice of ruins! Voice of people asking for help! Voice of people praising God to ask for help! Voice of cries and screams! Voice asking protection from God!
Secondary School in Munoz Philippines	Voice of anxiety from the polple around Voice of strong wind Voice of stream

Student	Description
	Voice of neighbors' cry asking for help Voice of the water entering the house

Source: QIM 1, no3

Based on the table above it can be drawn that disaster event left a strong memory of 'voice'. In this context, voice does not always mean as sound but has certain meaning as well to a person. Even voice can mean as positive or negative things based on the experience of each person. For someone who ever experienced disaster event, voice is considered as negative thing will remain stronger on their memory and difficult to forget. However, there is a similar tendency that the utterance possessed the awareness of God in the form of praise and the awareness that the creature needs God when the disaster taken place becomes a part of students' memory. This phenomenon describe that the voice to God in prayers becomes a remarkable

In the context of disaster mitigation that the meaning of voice can be used as part of the objective awareness possessed by the students so that it become the part of knowledge which is needed to develop the awareness of reducing the disaster risk i.e. can be noted with the understanding on the signs of disaster.

Beside voice, the students' sensitivity towards disaster is also related to strong 'smell' when the disaster occurred. It tends that there is no differences between the students in Munoz and in Bantul because the described that there was a rotten and bad smell when the disaster occurred which come from the dad animal and drugs. Based on the research data, the students still remember the smell when the disaster occurred. In this context, smell is not only considered as something that disturbed the smelling sensory but also possesses a meaning of events so that anyone will keep remembering the smell as part of the disaster. There is a tendency that the students in Bantul and students in Munoz remember a bad smell from the disaster event. In the context of disaster mitigation that the meaning of smell can be used as part of the objective awareness owned by the students so that it becomes the part of knowledge which is needed to develop the awareness of reducing the disaster risks by the understanding of disaster signs.

The second aspect related to the students reflective in considering their disaster experience or students' internal reaction/ perspective in Munoz and Bantul tends to be different, as showed on the table below:

Tabel 9. Special Experience which is Still Remembered when the Disaster Occurred

Student	Description
Secondary School in Bantul Indonesia	Pulled when sleeping to evacuate himself and knocked down his head Saw people were in fear but I lied my fate to God I feel sad and thinking about the condition the people I love
Secondary School in Munoz Philippines	People helping each other Evacuation process Being with the family when the disaster occurred Leaving the house to be evacuated

Source : QIM 1, no 5

Based on the data above it can be drawn that there is similar tendency in every events remain a remarkable events for the students. The special experienced become part of experiential learning which develop knowledge and awareness that cannot be forget by the students. It means that the experience of evacuating themselves from the disaster become a universal experience that experienced by almost all students in the high-risk area. Besides, the social experience which is built from the disaster event becomes a part of the experience which is also remembered by the students. It means that the disaster does not only mean as destructive eventbut also as a part of the learning process about building empathy for the personal growth.

The thing that is related to the experience reflection about the disaster event generally still becomes remarkable part on the students' memory, especially feeling of fear. The illustration of the fear of the students in Bantul and Munoz can be described as below:

Table 10. Expression of Fear after the Disaster Event

Students	Description
Secondary School in Bantul Indonesia	Seeing a lot of victims (of the earthquake) Protecting himself, afraid that the disaster will happen again The tsunami issue
Secondary School in Munoz Philippines	Being in the house after the disaster On the recovery process When there is heavy rain, afraid that the flood will happen again Things get wet and poultry died. When the house was swept away by the flood Seeing a lot of victims on TV

Source : QIM 1, no 6

Based on the data above it can be drawn that fear is a remarkable part of everyone. Even, fear is a psychological condition that is still experienced by the students in Munoz and Bantul. The fear comes from the feeling of losing the belongings become a phenomenon that is experienced by everyone in the disaster situation and tends to be a memory that difficult to erase. The lost of family member and possession become one of the occurrence of the students in Munoz and Bantul. For the recovery process, most of the students still experience the inconvenience process; it is because many students feel uncomfortable on doing the recovery process that should be done on the evacuation.

Fear in this process happen because the process takes place in the sudden situation and time so they were not ready mentally. The unpreparedness to be moved from the house become an unpleasant experience and even scary because they are suddenly cut from their house, although only for a moment.

In the context of disaster mitigation that feeling of fear is an aspect of the ability to interpret the disaster event. The interpretative ability is needed to build the awareness of the disasterevent. With fear, the students have a capital to change the attitude in responding the disaster event.

The reflection of fear in the students' selves about the disaster event is not easy to erase by time. There is a tendency that the students can still remember the certain disaster event on the certain moments as described by the students below:

Table 11. The Expression of Fear in the Dimension of Time on the Disaster Event

Student	Description
Secondary School in Bantul Indonesia	When seeing many victims of the disaster When seeing news on TV about the victims When thinking that the disaster will happen again
Secondary School in Munoz Philippines	When the family lost the belongings When seeing mother's crying When seeing the rescue team evacuate the victims When feeling sad because cannot go out from the house because of the flood

Source : QIM 1, no 7

Based on the table above it can be drawn that fear is a psychological effect of that remains in the students' memory and also everyone who was there when the disaster occurred. There is a tendency that the students' memory about the people in fear remains strongly. The similarity between the students in Bantul and Munoz in expressing the fear is on the fear of losing possessions and family. While the main difference is that the

students in Munoz are more sensitive towards the personal condition of the people living with them, for example “when seeing his mother crying because the field was damaged”. That expression shows that there is a process of sympathy and empathy that arise in the child’s self seeing his mother suffered.

The fear arose in the child’s self is not only because losing possession such as damaged field, but it is more on the fear of seeing his mother suffered and cried. For the child, losing the field does not only mean as losing possession but as part of losing the opportunity to get something needed i.e. feeling of secure to succeed the harvest which has filling his thought.

Fear as something remarkable psychologically, in positive way is needed to change the attitude. The change of attitude can occur if the experience of someone changes him to be better. There is a tendency that people experience fear because he does not what to do because the lack of knowledge. In the other hand, the fear becomes less if the person in more confident in facing the disaster event. In this case, the confidence can be grown by having sufficient knowledge on the disaster issue.

The fear and sorrow are psychological phenomena which often occur when the students facing the disaster event. This also described in the students’ personality as below:

Table 12. Expression of Sorrow in the Dimension of Time after the Disaster Event

Student	Description
Secondary School in Bantul Indonesia	When there is a news that there will be a disaster When there’s many victim felt so sad when and after the disaster occurred
Secondary School in Munoz Philippines	Nightmare Dream about the disaster event When the clothes swept away by the flood Many people and animal become victims

Source : QIM 1, no 8

Based o the data above, it can be drawn that the students in Bantul an Munoz still feel the sorrow if they remember the disaster event although it had past a long time ago. The sorrow is also felt when they remember the victims caused by the disaster. It means that losing something that is loved or owned tends to leave sorrow that is difficult to erase. The differences that exist in the students in Munoz and Bantul is that for the

students in Bantul any news on TV about the disaster creates sorrow because it reminds them about the disaster they have experienced before. This condition can be taken that there is a traumatic process experienced by the students before and after the disaster.

The traumatic phenomenon describes that the psychological condition of the students when the disaster happen is that they were not ready. It means that the internal reaction occurred on the students still reflect the shock because of the disaster although not all the students feel the sorrow, but those data show that there is a similar condition between the students in Bantul and Munoz in reflecting the disaster event.

The disaster event is still considered as regretful event. However, the students in Munoz and Bantul have the ability to to remember the disaster only as a suffering, because some of the students try not to be sad all the time. However the feeling of happiness felt by the students is shown below.

Table 13. Expression of Happiness

Student	Description
Secondary School in Bantul Indonesia	Seeing other people's happiness When the disaster is over and no more news about the disaster event When the loved ones save from the disaster When gather around with the family again When the family is safe from the disaster
Secondary School in Munoz Philippines	When the disaster is over When seeing people helping each other When the family is safe from the disaster Can travel after the disaster

Source : QIM 1, no 9

Based on the data above it can be drawn that the students in Bantul and Munoz are still able to feel happiness in spite of the disaster event. It shows that happiness is a psychological aspect needed to build optimism in living the life. It correlates with the need of development of the student. Happiness expressed in relation to the existence of the other people proves that social supporting is needed by every student in Bantul and Munoz. Being together with the loved ones when the disaster occurred could reduce the traumatic phenomenon. There is a similar tendency that students feel happy when the disaster ended.

The expression of happiness stated by the students in Bantul and Munoz means that the internal reaction related to the disaster does not always felt as a negative thing but could also be felt as a social strength built on the unpleasant event. In the dimension of disaster mitigation, it is important to build as the part of social capital needed to help to overcome the traumatic event of the students.

The presence of other people in facing the disaster is very important. It is showed from the expression of the students about other people on the disaster event as below:

Table 14. Expression towards Other People when the Disaster Event Occured

Student	Description
Secondary School in Bantul Indonesia	Sad and gloomy Pray to God asking for mercy and protection People are panic
Secondary School in Munoz Philippines	Sad and worried Many people had to go to the hospital People were afraid to lose their belonging and animal People think whether they can survive Diving when the disaster occurred Seeking for food and new place to live

Source : QIM 1, no 10

Based on the data above, it can be drawn that the students in Bantul and Munoz have similar social sensitivity towards other people by memorizing the people's expression and attitude when the disaster occurred. The differences between the students in Bantul and Munoz are seen more on the internal reaction problem on the students which tends to be different. The different internal reaction towards environment is related to the different experience of the students and their environment.

The students' ability in understanding the environment is a capital for the disaster mitigation because the disaster mitigation education needs the students' awareness in responding the changes occurred because of the disaster event by doing reflective action based on the environment change on the post-disaster.

The third aspect related to the awareness of the disaster event is the awareness of the reality experienced by the students. To build the awareness needs the interpretative ability of the students, especially in understanding the direct influence not to the school, family and future.

The pre-interpretation explained by the students related to the disaster event is in giving the meaning of disaster between the students in Munoz and Bantul tends to be different, as described below:

Tabel 15. The Meaning of Disaster

Student	Description
Secondary School in Bantul Indonesia	Disaster is trial from God Disaster is difficult to predict Disaster is something painful Disaster is fate from God as a warning for the people Disaster is something bad
Secondary School in Munoz Philippines	Disaster is phenomenon which make the people suffered Disaster is many victims of animal and belongings Disaster is a phenomenon because the effect of the weather Disaster is an event which destroy the nature Disaster is a natural phenomenon which is difficult to predict Disaster is an event which destroy everything Disaster is a problem in my country Disaster is an event which make the people suffered Disaster is like a monster which make the people suffered

Source : QIM 1, no 11

Based on the table above, it can be drawn that an event can have various meaning. Disaster is considered as an event which has positive and negative meaning by the students in Bantul and Munoz. For the students in Bantul, disaster means more as an event comes from God because of the human fault. While the students in Munoz consider the disaster more as an event which bring suffer to the human kind. The remarkable difference in giving meaning to the disaster is that the students in Munoz are more rational than the students in Bantul. They tend to see the disaster from the physical dimension while the students in Bantul see that as events with spiritual value.

In the context of mitigation that the awareness of the reality, it is similar between the stunts in Bantul and Munoz but in giving the meaning of the reality of the disaster the main difference is the values that the students in Munoz are more rational than the students in Bantul. The stronger rationality in the students' mind set in facing the disaster tends to be more pragmatic.

“Mind-set” is not easy to change in the learning process. Even to change people mind set, it will need a relatively long time. So it is in changing people mind set to realize that living in the high-risk area is not easy. However, the disaster event has a tendency to become media of learning, particularly, in managing the post-disaster life. The data taken from the students in Bantul and Munoz is described below:

Table 16. Lesson from the Disaster

Student	Description
Secondary School in Bantul Indonesia	Do not despair in facing the disaster Tougher in facing the disaster More alert More aware to keep the environment More religious More patient in facing trial Remarkable experience
Secondary School in Munoz Philippines	More alert on disaster event Ready to face the disaster whenever, wherever Be more ready to be safe More aware to protect the environment Love the forest and country more Be calm and not panic when the disaster occurred

Source : QIM 1, no 12

Based on the data above, it can be drawn that through a disaster event the students in Bantul and Munoz learn many lesson of life, such as about loving the Creator, loving the environment, loving the family and become more patient in facing problems of life. The lessons learned through the life experience will give strength to the students to form a tough personality in facing the disaster positively.

The lesson gained by finding out the important values in every event of life become resilience capital needed to overcome the traumatic problems because of disaster events. In this case, the resilience empowerment through lessons learned from the disaster event is needed in the disaster mitigation education. The interpretative awareness is needed for the disaster mitigation because the students will have the ability to analyze the influence occurred in every disaster event so that they can do the action related to the reducing the disaster risk quickly and precisely.

The interpretative awareness of the students need to be developed so that they are able to overcome the problems related to the disaster. The students in Bantul and Munoz

try to draw meaning from the disaster by understanding the opinion of people around them. Some of the opinions can be described as follows:

Table 17. The Opinions of Friend, Family, and Society about the Disaster

Student	Description
Secondary School in Bantul Indonesia	Disaster is a horrible event Disaster is a trial for God for human being Disaster is a sad and distressing event but bring some wisdom Disaster is a painful and unforgettable event
Secondary School in Munoz Philippines	Disaster is very dangerous for all creatures Disaster change the environment Disaster has power of destruction Disaster is a dangerous event Disaster make the people shocked and scared Disaster kills people

Source : QIM 1, no 13

Based on the data above it can be drawn that based on the students' opinion about disaster basically have similar meaning i.e.as a saddened event and ruining life. However, based on the opinion of the students in Bantul, there is another meaning that the disaster comes from God so that the dependence and putting the fate to God are stronger than the opinion stated by the students in Munoz. Although it is realized that it is a trial that has to be faced. This reality shows that the dimension of dependence to God taken place in the society in Bantul is stronger than in Munoz. On the other hand, based on the opinion of the students in Munoz about the relation between disaster and environment damage is stronger than the students in Bantul. It means that the students in Munoz have more understanding on the awareness of environment than the students in Bantul.

The fourth aspect related to the stages of thought and response experienced in 1-3 i.e. the ability to build commitment to face the disaster and adaptation towards various changes experienced by each student as their personal decision. The awareness tends to be different sociologically and influence the decision to design the different program. It is also related to the difference in interpreting disaster mitigation education, particularly in doing the right action responding the disaster. From the research data, it is found that

there is a tendency that the actions taken when the disaster occurred are various. Based on the qualitative data analysis, it can be explained as follows:

Table 18. Action Taken when the Disaster Occurred

Student	Description
Secondary School in Bantul Indonesia	More ready and prepared in facing the disaster Helping the victims Laying the fate to God Conducting evacuation Helping by giving food and cloth for the victims
Secondary School in Munoz Philippines	Keep alert toward disaster Should be prepared with food and simple tools when in journey Preparing to seek for place to evacuate Helping the family during the recovery process Cleaning the house Helping the victims Identifying the stuffs that still can be used Conducting evacuation Coping the problems independently fixing the damaged house

Source : QIM 1, no 14

Based on the data above, it can be drawn that the students in Bantul and Munoz generally have similar strong awareness to do action when the disaster occurred. The cautiousness becomes the main aspect when the disaster occurred. The decision to do evacuation is the action taken by the students. The preparation for tools and objects identification after the disaster is the awareness possessed by the students as well as helping to fix the house as the rational action owned by the students.

Disaster is an instrument for the students to learn to be more responsive to the environment. There is a tendency that students from both counties plan the post-disaster actions as below:

Table 19. Post-Disaster Action Plan

Student	Description
Secondary School in Bantul Indonesia	Repairing the environment Making the evacuation line Strengthening the 'gotong-royong'/cooperation system every Sunday Constructing representative shelther for refugee

Student	Description
Secondary School in Munoz Philippines	Doing activity that does not harm the environment Avoiding doing harmful thing when the disaster occurred Proposing the family to help each other Realizing that disaster can occur anytime so that everyone should be prepared

Source : QIM 1, no 15

Based on the table above, it can be drawn that the opinion of the students in Bantul and Munoz similarly consider that disaster is part of their life so that the plan to be done mainly to organize the environment better and to fix the facility that can be used when the disaster probably occurred.

The awareness describe that students in Bantul and Munoz already have high awareness on the effect of a disaster event which tends to harm the life so that the students suggest to re-strengthened the values of the society needed for the mitigation with the cooperation and teamwork spirit. For the students, the realization of the post-disaster action plan is needed to reduce the risk if the disaster occurred again. The students' thoughts related to the realization of the post-disaster action plan are as follows:

Table 20. The Realization of the Post-Disaster Action Plan

Student	Description
Secondary School in Bantul Indonesia	Making evacuation line with clear sign Conducting socialization about disaster Supporting the care program in the society Planting trees in the surrounding
Secondary School in Munoz Philippines	Supporting the spirit in the family Trying to keep the environment better Designing something useful to the society

Source : QIM 1, no 15

Based on the data above, it can be drawn that the students in Bantul and Munoz have positive thought about the action should be prepared in facing the disaster. The difference between the students in Bantul and Munoz lies on the focus of the action. The students in Bantul support more on the government program while the students in Munoz emphasis more on the individual initiative. It means that in the awareness to act, the students in Munoz are more independent than the student in Bantul who depend on the government.

CHAPTER 5 CONCLUSION

Specifically, this research concludes that:

1. From the government policy related to disaster risk management, Indonesia and Philippines already have strong basic conceptually in handling the problems of disaster risk reducing in the framework of disaster risk management based on the Hyogo Frame Work. However, from the applicative point of view, the government has not been working optimally in conducting a good coordination with other related elements with the disaster management in every level of area.
2. The implementation at school has similar tendency i.e the role of the school has not been done optimally in designing the disaster management education as the part of integrated part of the disaster process. Non-structurally, the program developed has not been running optimally so that the safety culture towards disaster has not become the school culture. It is as well as in the context of structural mitigation. The school has not designed the building in detail but still in the level of attempt to face the design with minimum design. On the other hand, the role of the teacher tends to be not optimal in developing the ability to be a counselor teacher if the disaster occur and has not design disaster mitigation education in an integrated way in the teaching learning process.
3. The research result described that there are two differences in the student awareness level in the secondary school student in Bantul Indonesia and Munoz Philippines viewed from ORID analysis based on interpretation test, the result of t-test can be concluded that there are differences on the average score of ORID taken from the secondary school in Bantul and Munoz. The average score of the secondary students in Bantul Indonesia; Mean =114.0889, better than students in Munoz, Mean = 93.7115. the most dominant aspect is on the cognitive aspect, student in Munoz are more rational compared to the students in Bantul in understanding the disaster event. Besides, the students in Munoz are more responsive in handling the action to face the disaster event than the students in Bantul Indonesia. On the dimension of non structural mitigation, the role of the teacher and school tends to be the same i.e

there has not socialize the understanding on the disaster risk reduce to the students. The students' understanding tends understand it from their experience facing disaster event. From the dimension of structural mitigation, the school in Munoz tends to anticipate the structure of the school building with the more ready design to overcome the tornado disaster but not for flood disaster because the school seen from demographical aspect difficult to avoid the flood sent by the other area. Furthermore the school in Munoz which is located near from the river has also not designed to face flood. However, both school have not been lost any member of the school become the victim of the disaster

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