

Disaster Mitigation Curriculum-Based on Local Wisdom to Support Sustainable Development Programs

Zainal Musthofa
Graduate School
Universitas Negeri Yogyakarta
 Yogyakarta, Indonesia
 zainalmusthofa.2017@student.uny.ac.id

Setyabudi Indartono
Management,
Universitas Negeri Yogyakarta
 Yogyakarta, Indonesia
 setyabudi_indartono@uny.ac.id

Abstract- The writing of this article was conducted to provide an overview of disaster mitigation curricula based on local wisdom to support sustainable development programs. Disaster mitigation is needed as an effort to minimize damage caused by disasters. Indonesia is a country that has great potential for disasters, therefore it is necessary to implement a disaster mitigation curriculum in educational institutions so that students have knowledge and insight about disasters. Through the integration of disaster mitigation in the curriculum, students are expected to be able to think and act quickly, accurately and accurately when facing disasters. Natural disasters that occur in each region also vary because each region has different characteristics. Disaster mitigation needs to be included in the learning curriculum based on local wisdom, as an effort to provide appropriate education in dealing with disasters that occur in each region.

Keywords: *disaster, mitigation, curriculum, local wisdom, sustainable development*

I. INTRODUCTION

Indonesia is a country that is vulnerable to natural disasters. Based on its physical location and condition, Indonesia has a high risk of disasters caused by geologically located at the meeting of the Eurasian, Indo-Australian and Pacific plates. Suggested that the Eurasian, Indo-Australian and Pacific plates form the mountainous circuits of the Mediterranean Circumference and the Pacific Circum which meet in Indonesia [1]. Disasters in Indonesia are mostly directly related to geological processes such as earthquakes and volcanism, hydro-meteorological processes such as droughts, fires, landslides, abrasion, flood erosion and others.

Indonesia as a natural disaster-prone area needs to improve the ability of the community to manage and reduce the risk of natural disasters. Efforts to improve community capacity are clearly mentioned in one of the disaster management targets in the Third Medium Term Development Plan (2015-2019), namely reducing the risk of loss of life, potential damage and loss through increasing and understanding public awareness and building a culture of awareness and safety in community in the face of disaster [2]. The school is a place for children to learn, they are parties that must be protected at the same time need to increase their knowledge related to natural disaster mitigation. Therefore, the learning of natural disaster mitigation in school-age children is very strategic to implement. This is due to the knowledge of natural disaster mitigation taught from the beginning to increase the ability of these children to be vigilant before natural disasters, rescue themselves in the event of a natural

disaster, and know what activities may and should not be done after a natural disaster.

The establishment of a disaster conscious and safe culture can be done through disaster education, including learning disaster mitigation. Awareness and learning about the risks of natural disasters and threats that can threaten, must begin in education from the beginning, and be carried out continuously [3]. Aware of natural disasters means students have knowledge and understanding of natural disasters. Preparedness means students must care about the surrounding environmental conditions that have the potential for natural disasters. Through awareness and preparedness, students are expected to be able to reduce threats or avoid natural disasters. To achieve the learning objectives of natural disaster mitigation, teachers are not only expected to develop cognitive aspects, but also must develop students' affective and psychomotor aspects.

Disasters have become a development issue, because the development results that have been pioneered for tens or even hundreds of years can be destroyed or damaged immediately by the disaster, the economy of the community and the state has suffered a lot of deterioration, many infrastructure, economic, social and cultural facilities are damaged. Disaster mitigation is a series of efforts to reduce disaster risk, both through physical development and awareness and capacity building to face disaster threats [4]. In this regard, the learning of disaster mitigation is part of an effort to improve the ability of the community to understand the characteristics of hazards, change behavior so that the quality of natural resources does not decline, and increase the ability to face the threat of danger from nature.

Based on various incidents of natural disasters in the country, the ability to mitigate natural disasters should be taught from an early age, through education at school. In order to reduce the risk of natural disasters, the important thing in disaster mitigation efforts is the knowledge and understanding of natural disasters and preparedness for natural disasters. Both can be taught to students by entering knowledge about disaster into several subjects. Suggests that disaster education can be inserted in the subjects of Natural Sciences, Social Sciences, Indonesian Language, Mathematics, Religion or other subjects in order to provide an overview and reference in disaster preparedness learning processes [1]. Through this education students are expected to be able to think and act quickly, precisely, and accurately when facing disasters.

The natural disaster curriculum is important in disaster-prone countries including Indonesia so that children can be given knowledge of disasters from an early age. This is naturally what we need, namely people who already understand, especially in areas that are vulnerable to disasters in order to minimize the fall of victims, either material or casualties. In several disaster cases, some members of the community, due to their psychological conditions and panic, did not take the initiative to take actions that could save and help victims. Some don't help because they don't know what to do [5]. There are also members of the community who are trying to help victims, but because of ignorance, instead increasing the burden of the victims. When lifting a fractured victim, for example, because he did not know he was a mistaken person, the condition of the victim became worse. Therefore, the community needs to get simple technical skills in order to provide first aid and evacuate victims.

Community participation is very important in disaster management. Communities in disaster-prone areas, together with the authorities, are subject or perpetrators. In the context of disaster mitigation, awareness of all parties and actions that are holistic are needed in order to minimize losses caused by disasters [6]. One form of participation in the smallest scope is individual and family preparedness, while in a wider environment includes communities or community groups. Therefore, disaster mitigation education needs to be included in the curriculum in schools to provide basic knowledge to students so that they can form disaster preparedness behavior in the surrounding community. Schools are considered as effective institutions in changing people's mindset and behavior, by providing education on disaster mitigation [7]. This means that schools or educational institutions play a role in supporting national disaster mitigation programs.

This paper examines the disaster mitigation curriculum based on local wisdom to support sustainable development programs. Early child empowerment to understand disaster mitigation is the first step So that when a disaster occurs, the community is no longer confused and panicked because it has understood how to reduce disaster risk. Children are expected to bring the knowledge they get from school and become "agents" who can build a culture of disaster awareness in their environment, to realize a resilient society in the face of disasters.

II. LITERATURE REVIEW

According to UU No.24 / 2007 regarding Disaster Management, a disaster is an occurrence or series of events that threaten and disrupt people's lives and livelihoods caused by each natural factor and or non-natural factors moreover as human factors leading to human deaths, environmental harm, losses property, and psychological impact. Understanding disasters consistent with the International Strategy for Disaster Reduction (ISDR): a significant disruption to the functioning of a society, inflicting widespread hurt to human life in terms of fabric, economic or environmental and on the far side the flexibility of the individuals involved to beat mistreatment their own resources.

A. Disaster Mitigation Curriculum

Disaster mitigation is a form of behaving in the face of a disaster, both during disaster prevention, when a disaster occurs, and after a disaster. Providing knowledge about disasters in disaster education programs is not a very heavy task [8]. The challenge is how disaster education programs can encourage people to update information, increase risk perceptions, maintain awareness, and conduct and renew appropriate preparation for future disasters. As a follow-up, it is necessary to develop a variety of teaching and learning approaches that will be able to achieve the main objectives of disaster risk reduction: make people have a culture of disaster preparedness. The lecture method in the learning approach will be less effective unless supported by different methods including game simulations, field trips, experiments and routine disaster training.

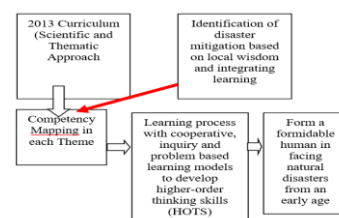
Disaster Risk Reduction Education is a long-term activity and part of sustainable development. Through education it is expected that disaster risk reduction efforts can achieve broader targets and can be introduced earlier to all students, and ultimately contribute to individual and community preparedness for disasters [6]. Stated that Disaster Risk Prevention and Reduction Education was designed to build a safe culture and a resilient society [9]. Argued that education is one of the effective means to reduce disaster risk by including subject matter on natural disasters as a mandatory lesson for every student at all levels, especially in schools in disaster risk areas [10]. Curriculum based on local wisdom, are expected to be accepted and can be easily understood by students.

B. Disaster Mitigation Education based on Local Wisdom

Local knowledge manifested within the type of adaptational behavior to the surroundings has a crucial role in disaster risk reduction. native knowledge that applies during a society encompasses a positive impact on the community in facing and responding to the disaster that comes. native knowledge is extraction from varied experiences that area unit hereditary from ancestors or previous those that have practiced a disaster [10].

Disaster education that can be implemented in schools is disaster mitigation by utilizing local local wisdom. Mitigation is defined as: "Efforts aimed at reducing the impact of disasters both natural disasters, human-made disasters and a combination of both in a country or community (Permendagri No. 33 of 2006). Mitigation that is applied in learning in primary schools is how students recognize the potential of disasters and prevent natural disasters by using local wisdom where the students are located. The following is a scheme or chart of a disaster-based disaster mitigation education model according to [10].

Fig.1. Disaster mitigation education model based on local wisdom



Study, there are many approaches to desegregation natural disasters into the course of study, namely: 1) The textbook-driven 2) The trial approach; 3) The centralized competency-based approach; 4) The centrally developed special subject (dedicated space) approach; 5) The approach and symbiosis; 6) The special event approach. The course of study that applies in state is that the 2013 course of study [11]. within the 2013 course of study there are four core competencies, namely: 1) religious perspective (accepting and concluding the faith he adheres to); 2) social attitudes (having honest, disciplined, accountable, polite, caring and assured in interacting with family, friends and teachers); 3) information (understanding factual information by perceptive, hearing, seeing, reading and asking supported curiosity regarding himself, God's creatures and activities, and also the objects he encounters reception, college and playground); and 4) skills (presenting factual information in clear and logical language, in aesthetic work, in an exceedingly movement that reflects the child's trustworthy and noble behavior).

Integrating local wisdom in disaster mitigation in the 2013 curriculum, can form a high spiritual attitude about the greatness of God Almighty. This is related to the findings of Adiyoso and Kanegae, the number of answers greater than school children to the causes of the tsunami shows that the role of religion in understanding natural phenomena is very important [8]. In developing materials related to disaster risk reduction in Muslim-majority countries such as Indonesia, the belief that disasters are caused by God's punishment must be given more attention. However, these beliefs will not significantly influence effective disaster risk reduction if people have the will to build appropriate preparedness. It is very important to develop disaster knowledge based on a religious perspective.

C. Sustainable Development

The emergence of the term sustainable development is the result of growing awareness of globalization [12]. States that sustainable development is the way for experts to understand the world and a method for resolving the problems of the world that originated from the tightness of the earth due to world population growth which has reached nine times more than the human population that lived in the era of the industrial revolution [13]. Education is one of the important components in the process of sustainable development, especially human-related development.

Stating that education for sustainable development is not enough if the goal is only to develop children's cognitive and brain growth in toddlers because what is needed by human development in sustainable development is the development of human character who loves and protects nature and the environment for the sustainability of his life as an individual as well as groups as citizens [14]. Therefore, education must be able to ensure that learning carried out in education also builds caring and sustainable character in human beings that is supported by cognitive abilities to enhance their creative and innovative power in natural resource management and the environment.

States that education can form an urge from within each individual to conduct pro-environmental behaviors [15]. The drive from within these individuals autonomously forms environmentally friendly characters and characters to make decisions and act that protect and maintain environmental sustainability. Human development is a vital part of the investment needed in economic development because it is an investment path prepared for children as the next generation who will continue to improve the economy both individually for their families and in groups for their communities (including development interests in the country).

III. DISCUSSION

According to UU No. 24 2007 regarding disaster management, disasters are events or series of events that threaten and disrupt people's lives and livelihoods, that are caused by each natural and non-natural factor, still as human factors, leading to human deaths, environmental harm, loss of property, and psychological impact. Understanding this disaster shows that the high and low risk of disaster impacts depends on the vulnerability of each component affected. Revealed three main systems that suffered losses due to disasters, namely the physical environment, social demography, and built environment [16]. The characteristics of these three systems determine the degree or level of loss from a natural disaster.

Disaster management is a series of efforts which include the establishment of development policies that risk the onset of disasters, disaster prevention activities, emergency response and rehabilitation. Suggests that disaster management aims to: (1) provide protection to the community from the threat of disasters, (2) harmonize the existing laws and regulations, (3) ensure the planned, integrated, coordinated and comprehensive disaster management (4) respecting local culture, (5) building public and private participation and partnerships, (6) encouraging mutual cooperation, solidarity and generosity, and (7) creating peace in the life of society, nation and state [1].

Disaster mitigation is an activity that acts as an action to reduce the impact of a disaster, or efforts are made to reduce casualties when a disaster occurs, both loss of life and property. In carrying out disaster mitigation actions, the first step we must do is to conduct a disaster risk assessment of the area. In calculating disaster risk for an area, we must know the danger, vulnerability and capacity of an area based on the characteristics of the physical condition and the area. According to the Decree of the Minister of Home Affairs No. 131 of 2003 concerning Guidelines for Disaster Management and Refugee Handling in Regions, disaster mitigation is the obligation of various parties, the government, experts and the public. The introduction and understanding of disasters, their processes, and assessments are the tasks of experts. Knowledge, understanding and preparedness need to be socialized to the public in order to anticipate, overcome, and minimize losses.

Disaster mitigation activities should be routine and sustainable. According to Desfandi mitigation activities should have been carried out in a long period before the

occurrence of a disaster, which often comes faster than the estimated time, and even has a greater intensity than originally thought [1]. In addition, the government should also actively provide various appropriate and sustainable directives in dealing with disaster events or in other words can adapt to the risk of potential natural disasters that exist. In the context of disaster risk reduction, disaster mitigation is also understood as an effort to increase the capacity of communities in disaster-prone areas to eliminate or reduce the consequences of threats and disaster levels. The education sector is a determinant in disaster risk reduction.

Disaster learning that has been carried out now is only in the form of themes prepared in other subjects, so the results are still not optimal. As a country that has a huge potential for disasters, Indonesia needs to implement a disaster curriculum in educational institutions so that students have the knowledge and insight about potential disasters that are very vulnerable to occur in the country. The importance of the disaster curriculum is how students can be directly involved in disaster management. This effort should be carried out early through formal education ranging from elementary schools to universities, namely by preparing a curriculum based on its concepts and implementation, as well as a curriculum based on its structure and subject matter. fostering awareness of important disaster preparedness carried out from an early age to instill in the minds of children how to maintain their own minimum safety from the effects of disasters. It will be more effective if carried out continuously through the school curriculum. [17].

An important natural disaster curriculum in disaster-prone countries including Indonesia so that children are given knowledge of disasters early on, disaster curricula are more effectively remembered in primary and secondary school education curricula than practices that are easily forgotten [1]. This is naturally what we need for people who already understand, especially in areas prone to earthquakes. Indonesia is prone to earthquakes and tsunamis and volcanic eruptions. Maps prone to tsunamis and volcanoes have been issued by the government, so education is needed. Therefore, since school, all Indonesian people can realize the potential for disasters in their respective regions and can immediately avoid the disaster. If it is ingrained in knowledge of disaster, our hopes of disaster can be minimized.

To get a meaningful disaster curriculum, the curriculum must be developed considering the right principles. There are several curriculum development principles, including the principles of relevance, effectiveness, efficiency and flexibility. The principle of relevance means that a curriculum must be relevant to the development of science and technology (science and technology), relevant to the needs and characteristics of students, and relevant to the needs and characteristics of society [1]. The curriculum is said to be good if it can facilitate and stimulate the potential of students so that they become competencies that can be used to build their environment in the global era. A curriculum that can produce students who are creative and innovative, is able to elevate students' self-potential and their area into something of added value. A curriculum that is able to

educate students to face the challenges of globalization and manage it in such a way that it becomes an opportunity to get great benefits from these conditions.

Besides to develop students' potential into competence, education must also be able to educate and prepare students to become human beings who are able to take part in their community. For this reason, every individual must have adequate knowledge about the intricacies of the area of origin and surroundings, so that they know well the history, needs and characteristics of their region. If we associate with disasters, each region has different characteristics, the patterns and variety of natural disasters that are faced also vary. According to Desfandi the disaster curriculum must accommodate the existing local wisdom because almost all regions of Indonesia are disaster-prone, as an effort to provide the right education about facing and dealing with disasters [1]. During technological limitations in disaster mitigation, local wisdom can be an alternative in disaster risk reduction efforts.

Each region has diverse and different forms of knowledge and local wisdom. Although the terms used are different and the ways that have become a tradition are not the same, all of this is the potential in building disaster mitigation based on the potential of local wisdom. Local wisdom can be used to anticipate disaster early. Local wisdom is one step that can be used as a disaster anticipation. According to Nasution & Gunawijaya local wisdom functions and is meaningful in society both in the preservation of natural and human resources, the preservation of customs and culture, and beneficial for life [18]. Education about disaster will seep faster if done through community leaders. The legacy of the legacy of local wisdom from the previous generation is very wise if it continues to the next generation. Local wisdom is a comprehensive lesson in detecting disasters in an area. By learning like that, we are more familiar with disasters that often occur in the region where we are. Therefore, mitigation activities that have a mitigation and preparedness dimension that touches access to local wisdom need to be developed.

Mitigation culture based on local wisdom needs to be built early in every element of society to realize a empowered society so as to minimize the impact caused by disasters. In this case, mitigation is built not only as an early warning system, but it becomes a culture in people's behavior. Effective steps that can be taken include debriefing the community through education in school and training for the general public. Argues that education is basically an effort to improve the ability of human resources so that they can become independent human beings and can contribute to their society and nation [19]. Education in faculties for college students is incredibly strategic to instill data regarding disaster from Associate in Nursing early age and socialization of native knowledge that's closely-held by the realm. faculties area unit an efficient suggests that, wherever the role of academics to students will encourage the institution of a culture of mitigation among the scope of colleges and families.

Stated that the goal of disaster education programs is to build a safety culture in the context of the community, school community, government, and other stakeholders

[20]. The resilience of the community in facing the disaster was obtained from a thorough understanding of the wisdom in their area. community resilience in dealing with the disaster was obtained from a thorough understanding of wisdom in the area. So, in the context of disaster risk reduction mitigation, the existence of a local wisdom-based curriculum will be able to explain human relations with nature and culture. Because a community that is resilient to disaster is a society that is tolerant of nature and understands the nature it occupies.

Stated that native knowledge is a casual establishment that regulates the link of process resources in an exceedingly society [21]. native knowledge includes a strategic role within the method of learning the way to manage nature, so harmony is established not solely within the style of economic however additionally socio-cultural edges. this will be explained that the tradition (invented tradition) implements sure values and norms of behavior mechanically implies the existence of continuity with the past that is related to the expansion of property development. Another role of native knowledge in supporting property development is to enhance the welfare of the community by avoiding the exploitation of natural resources too on the far side the flexibility of it carrying capability.

Argues that sustainable development is a human effort to improve the quality of life while still trying not to go beyond the ecosystem that supports life [22]. In the concept of sustainable development. Sustainable development also requires the fulfillment of basic needs for the community and a wide opportunity for citizens to pursue the aspiration of a better life without sacrificing future generations. Development of the concept of sustainable development needs to consider socially and culturally reasonable needs, disseminate values that create different consumption standards within the limits of environmental capabilities, and naturally all people can aspire to it. However, there is a tendency that meeting these needs will depend on the need to realize economic growth or production needs on a maximum scale.

Sustainable development clearly requires economic growth in places where its main needs cannot be consistent with economic growth, provided that the contents of growth reflect the principles of sustainability. But high production activities can occur together with widespread poverty. This condition can endanger the environment. So sustainable development requires people to fulfill their needs by increasing their production potential and at the same time ensuring environmental sustainability is maintained in the future. [23]. This concept of sustainability contains at least two dimensions: First is the dimension of time because sustainability is nothing but what will happen in the future. Second is the dimension of interaction between economic systems and natural and environmental resource systems. Fulfillment of sustainable development requires a reorientation of the curriculum, especially at the level of education by emphasizing one of the standards of graduate competence in understanding the way of sustainable living.

Education for sustainable development also emphasizes the skills, perspectives and values that guide

and motivate people to seek sustainable livelihoods, participate in a democratic society, and live in a sustainable way. [12]. Education for sustainability focuses on key social, economic and environmental components that threaten the planet's sustainability. Development for sustainability must provide practical skills that allow people to learn continuously even after leaving school. Humans in meeting their wants would like natural resources, within the sort of land, water and air and different natural resources that square measure enclosed in renewable and non-renewable natural resources. However, it should be realized that the mandatory natural resources have limitations in many ways, particularly the constraints on handiness in step with amount and quality. bound natural resources even have limitations in step with time and house. Therefore, sensible and wise management of natural resources is required.

IV. CONCLUSION

Geologically, geomorphologically and geographically, the State of Indonesia is a cross country against disasters, especially geological and hydrometeorological disasters. Identification of characteristics and potential disasters both in Indonesia and the surrounding environment is needed as a knowledge of disaster risk reduction. In addition, community participation to reduce and avoid disaster risks is important by increasing awareness and capacity of the community. The importance of the disaster curriculum is how students can be directly involved in disaster management. This effort should be carried out early through formal education ranging from elementary to tertiary institutions, namely by preparing a curriculum based on the concepts and implementation, as well as a curriculum based on the structure and subject matter. as an effort to provide the right education about facing and dealing with disasters while supporting sustainable development programs.

REFERENCES

- [1] Desfandi, Mirza. Urgensi kurikulum pendidikan kebencanaan berbasis kearifan lokal di Indonesia. *SOSIO-DIDAKTIKA: Social Science Education Journal*. Vol. 1. No. (2), pp. 191-198, 2014.
- [2] [Bappenas]Badan Perencanaan Pembangunan Nasional. *Buku Pegangan Pembangunan Daerah 2015: Membangun Ketangguhan Bangsa Melalui Upaya Pengurangan Risiko Bencana*. Jakarta: Bappenas. Hlm: 266, 2014.
- [3] Dewi, Indarti Komala & Sukmanasa. Mitigasi Bencana Sebagai Bahan Pembelajaran IPA dan IPS pada Kurikulum 2013 untuk Jenjang Pendidikan Dasar Kelas 5. *Jurnal Pedagogia*. Vol. 8. No. 1. Hlm: 322-329, 2016.
- [4] Triutomo S., Widjaja, B. W., Amri, M. R. (eds). *Pengenalan Karakteristik Bencana Dan Upaya Mitigasinya Di Indonesia*. edisi II. Jakarta: Pelaksana Harian Badan Koordinasi Nasional Penanganan Bencana, 2007.
- [5] Hidayati, Deny. 2008 Kesiapsiagaan Masyarakat: Paradigma Baru Pengelolaan Bencana Alam di Indonesia. *Jurnal: Kependudukan Indonesia*. Vol 3 N0 1. Hlm: 69-84, 2008.
- [6] Rahma, Aldila. Implementasi Program Pengurangan Risiko Bencana (PRB) Melalui Pendidikan Formal. *Jurnal VARIDIKA*. Vol. 30. No. 1. Hlm: 1-11, 2018.
- [7] Astuti, Siti Irene., & Sudaryono. Peran Sekolah dalam Pembelajaran Mitigasi Bencana. *Jurnal Dialog Penanggulangan Bencana*. vol. 1, no. 1, hlm. 30-42, 2010.
- [8] Adiyoso, W., & Kanegae, H. Efektifitas Dampak Penerapan Pendidikan Kebencanaan di Sekolah terhadap Kesiapsiagaan Siswa Menghadapi Bencana Tsunami Di Aceh. *Indonesia*. Indd. Vol. 29. Hlm: 58-66, 2013.

- [9] Suharwoto, dkk., "Modul 3. Pilar 3 – Pendidikan Pencegahan dan Pengurangan Risiko Bencana". Jakarta: Biro Perencanaan dan Kerjasama Luar Negeri Sekretariat Jenderal Kemendikbud, 2015.
- [10] Suarmika, Putu Eka., & Utama, Erdi Guna. 2018. Pendidikan Mitigasi Bencana di Sekolah Dasar. *Jurnal Pendidikan Dasar Indonesia*. Vol 2 No 2. Hlm:18-24, 2017.
- [11] Selby, David & Kagawa, Fumiyo. *Disaster Risk Reduction in School Curricula: Case Studies from Thirty Countries*. Switzerland: the United Nations Children Fund, 2012.
- [12] Gunamantha, I Made. Pendidikan untuk Pembangunan Berkelanjutan: Mengapa, Apa dan Bagaimana. *Jurnal Pendidikan dan Pengajaran*. Jilid 43, No 3. 215-221, 2010.
- [13] Sachs, J. D., *The Age of Sustainable Development*. Columbia University Press, 2015
- [14] Simanjuntak, Familina Novita, Pendidikan untuk Pembangunan Berkelanjutan. *Jurnal Dinamika Pendidikan*, 10(2), 169-195, 2018
- [15] Marshall, G. R., D. W. Hine, and M. J. East, Can community-based governance strengthen citizenship in support of climate change adaptation? Testing insights from Self-Determination Theory. *Environmental Science and Policy*, Vol. 72. Pg. 1 – 9, 2017
- [16] Mileti, D. S., & Peek-Gottschlich, L., Hazards and sustainable development in the United States. *Journal of Risk Management*, 3(1), 61-70, 2001
- [17] Dwiningrum, Siti Irene Astuti dan Sudaryono. Peran Sekolah Dalam Pembelajaran Mitigasi Bencana. *Jurnal Dialog Penanggulangan Bencana*. Volume 1 No. 1. 30-42, 2010.
- [18] Nasution, Isman Pratama & Gunawijaya, Jajang. Kearifan Lokal Tentang Mitigasi Bencana pada Masyarakat Baduy. *Jurnal Makara Sosial Humaniora*. Bol 15. No 1. 67-76, 2011.
- [19] Fajarini, Ulfah. Peran Kearifan Lokal dalam Pendidikan Karakter. *Jurnal Sosio Didaktika*. Vol 1 No 2. 123-130, 2014.
- [20] Maknum, Johar. Pembelajaran Mitigasi Bencana Berorientasi Kearifan Lokal pada Pelajaran IPA di Sekolah Menengah Kejuruan. *Jurnal Kajian Pendidikan*. Vol: 5 No. 2. 143-156, 2015.
- [21] Mawardi. Ikhwanuddin. Pemberdayaan Kearifan Lokal dalam Prekspektif Pembangunan Berkelanjutan. *Jurnal Rekayasa Lingkungan*. Vol 8. No 1. 1-10, 2012.
- [22] Jaya, Askar. *Konsep Pembangunan Berkelanjutan (Sustainable Development)*. Tugast Individu Semester Ganjil, 2004.
- [23] Fauzi.A. *Ekonomi Sumber Daya Alam dan Lingkungan, Teori dan Aplikasi*. Jakarta: Pustaka Utama, 2004.