QALAMUNA
JURNAL PENDIDIKAN, SOSIAL, DAN AGAMA

Learning Model for Natural Disaster Mitigation Based on Local Wisdom

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| **Abstract** | The geographical situation of Palu City is rich in local culture and, at the same time, vulnerable to natural disasters. Learning with an insight into natural disaster mitigation based on local wisdom in Junior High Schools (SMP) in Palu City is important. This research aims to explain a learning model with an insight into natural disaster mitigation based on local wisdom in Palu City Junior High Schools (SMP). This research is a type of descriptive qualitative research. The source of research data is learning documents, and the subjects of this research are students and teachers at five junior high schools in Palu City. Data collection techniques were carried out using documentation, observation, and interviews. Data analysis techniques are done by data reduction, classification, and verification. The research results found that the learning model for natural disaster mitigation based on local wisdom was implemented through intracurricular and extracurricular learning activities. Extracurricular activities are taught with a practical preparedness approach in OSIS activities, Scouts, Youth Red Cross (PMR), etc. Intracurricular learning is taught with an integrated approach to natural disaster mitigation material based on local wisdom in Indonesian Language, Natural Sciences, Social Sciences, Civics, and Arts and Culture. |
| **Keywords** | Learning Models; Natural Disaster Mitigation; Local Wisdom |

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1. INTRODUCTION

Geographically, Indonesia is located in the equatorial region with a diverse morphology ranging from land to high mountains. This morphological diversity is strongly influenced by geological factors, especially the movement of active tectonic plates around Indonesian waters, including the floor plates of the Eurasian, Australian, and Pacific Oceans (Hamilton, 2018). Indonesia's geographic location triggers natural disasters such as earthquakes, landslides, volcanic eruptions, etc.

Purwantoro (2021) revealed that the movement of tectonic plates causes the formation of earthquake paths, a series of active volcanoes and geological faults which are zones prone to earthquakes, tsunamis, liquefaction, and landslides (Purnama, 2019). With these geological and geographical conditions, there is great potential for changes in the surface conditions of Indonesia's regions (relief), which are very diverse and have the potential to be hit by natural disasters. Sulawesi Island, one of Indonesia's land areas, is included in the areas most vulnerable to earthquakes and tsunamis. This is because, on Sulawesi Island, there is a fault with quite large dimensions and the

highest activity in Indonesia. This is known as the Palu-Koro fault (Abdullah, 2017 & Purnama, 2019).

Experts strongly suspect that active Palu-Koro fault activity triggered the natural disaster of earthquake, tsunami, and liquefaction that hit Palu City on September 28, 2018. From this incident, 2,113 people died, and 4,612 people were injured as a result of the Palu earthquake and tsunami. Apart from that, there are still 1,309 people who are declared missing (Purnama, 2019). One of the causes of the high number of victims and material losses due to natural disasters is the community's lack of knowledge, awareness, and preparedness towards disasters, the threat of natural disasters, and the risks they face (Fahrevy et al., 2014). The high potential for natural disasters in several regions of Indonesia, such as in the city of Palu, and the low level of public knowledge, awareness, and vigilance regarding the threat of natural disasters and their risks, the President of the Republic of Indonesia. (Joko Widodo), at the National Coordination Meeting for Disaster Management on 2 February 2019 in Surabaya, said, "Indonesia is a country in the "ring of fire" zone. All components of the nation must be responsive and responsible for facing all risks from the impact of natural disasters. "Disaster education must be one of the concerns of education and learning programs, both in schools and the community, especially in disaster-prone areas" (Seknas, 2019).

The demand for mainstreaming disaster risk reduction or mitigation in education and learning has been implemented since 2010, based on a Circular Letter from the Minister of National Education of the Republic of Indonesia. Number 70a/MPN/SE/2010 concerning Mainstreaming Disaster Risk Reduction in Schools. This circular emphasizes three important points in the strategy for implementing natural disaster mitigation education and learning in schools, namely: empowering institutional roles and strengthening the capacity of school communities; integration of disaster risk reduction (mitigation) into the school curriculum; and building partnerships and networks between various parties to support the implementation of disaster risk reduction initiatives (Edaran, 2010).

The three important points above lead to efforts to realize the three pillars of a disaster safe education unit, namely: (1) disaster safe school facilities, (2) school disaster management, and (3) education on disaster risk reduction and prevention. Education and learning about disaster risk reduction or reduction in schools is carried out with the aim of (1) providing information (knowledge) to students about disasters in the environment or region where they live and developing their lives; (2) equipping students with an understanding of systematic protection based on characteristics, geological, geographical, socio-cultural conditions, and the potential for occurrence, signs and causes of disasters in the environment (region) where they live; and (3) Equipping students through practical training on how to protect themselves and how to respond to disasters quickly and appropriately (Seknas, 2010).

Based on the three objectives of disaster mitigation education and learning above, as an area that is classified as prone to natural disasters such as earthquakes, tsunamis, liquefaction, landslides, and floods, education and learning to mitigate natural disasters in schools in Palu City is very important to develop. Both at primary, secondary, and even tertiary education levels. Sukmandanu Prihatmoko believes that it is time for natural disaster mitigation to be included in the primary and secondary school curriculum, even in universities, to educate children from an early age about the urgency of disaster mitigation by the geological characteristics and local wisdom of disasters in each region, especially in the cities of Palu and Central Sulawesi (Prihatmoko, 2018). The statement above is relevant to the view of Asep Mahpudz (2019) that the vulnerability of Indonesia's territory to natural disasters, especially in Palu City, Central Sulawesi Province, makes it very important to include mitigation content in the education curriculum from elementary school (SD), junior high school (SMP) level.). Middle School), High School (SMA)".

This perspective is regarding the urgency of developing learning with an insight into natural disaster mitigation in formal education units in the city of Palu, one of the areas prone to natural disasters in Indonesia (Abdullah, 2017). By including natural disaster mitigation into the school curriculum in Palu City, it is hoped that students will understand natural disasters and natural disaster

mitigation from an early age through the education and learning process.

The research results of Wignyo Adiyoso and Hidehiko Kanegae (2013) identified that the integration of natural disaster issues in the learning curriculum in schools was effective in increasing disaster knowledge, increasing the level of risk perception, and preparedness of individual students and the community. Robika Alkadri et al. (2019) in their research found that integrated natural disaster mitigation teaching materials were very well developed in areas prone to natural disasters because they were able to increase students' knowledge competency, preparedness attitudes, disaster response, awareness, and skills with an average of the very good category.

Through their knowledge capital, attitudes, and natural disaster mitigation skills, students can transfer them to their families (Zela and Ayzira, 2018). They can become volunteers providing natural disaster education to the community (Rahma, 2018), thereby increasing the capacity to build resilience and awareness among families and communities facing the threat of natural disasters and their risks. Suppose a family and community's resilience capacity is strong enough, and they are highly aware of the threat of natural disasters. In that case, vulnerability to the risk of natural disasters can be reduced (Zamroni, 2011).

Therefore, learning about natural disaster mitigation is important in increasing students' capacity and awareness in facing natural disasters with their families and communities. Efforts to increase competency, capacity, and awareness of natural disaster mitigation, from the perspective of Suhardjo (2011), Rozi (2017), Zulafrdin et al. (2018), and Maknun (2015), it is very important to consider elements of local wisdom. Consider elements of local wisdom as part of learning about natural disaster mitigation because the people of an area have local wisdom to reduce disaster risk. Each ethnic and regional entity has its wisdom in responding to the phenomena and life problems it faces. Society's mechanisms for dealing with life's problems are usually born and formed from knowledge, experience, understanding, and meaning of every phenomenon, event, and reality around them (Ma'arif et al., 2012).

Local wisdom is the form of local community mechanism in dealing with life's problems. This local wisdom becomes an "early warning system" for dealing with life's problems, such as natural disasters, which must be passed down through socialization from generation to generation (Ilyas, 2014). Thus, local wisdom, whether in the form of knowledge, experience, or skills, is functionally very valuable in mitigation, as an early detection tool, and as a basis for determining safe points and vulnerable points for settlement, evacuation, and relocation (Gunawan, 2014).

This is where the trend of natural disaster mitigation educational approaches emerged in learning in countries prone to natural disasters. Mohsen Ghafory Ashtiany (2009) revealed that in several countries such as Iran, India, and even Japan, in the last few decades, there has been an increase in capacity. and strengthening community participation in the disaster risk reduction process through the development of effective and scientific religious education and learning that is integrated with historical traditions, religious beliefs, and local wisdom. For this reason, according to Rubaidi (2018), learning material can be explained conceptually, theoretically, and practically to reduce the dangers or vulnerabilities of society in facing disasters (Rubaidi, 2018).

Learning plays an important role in the short, medium, and long term for students in important processes and stages related to socialization, education, socialization, and even disaster practices. The greater hope is that students can understand religion and disaster well. Islamic religious education strategically transforms religious values in the dialectical context of life, such as the increasingly phenomenal dimension of awareness of natural disaster mitigation (Siswanto, 2008). Therefore, this research aims to examine and describe mitigation-oriented learning models based on local wisdom in schools in Palu City.

2. METHODS

This type of descriptive qualitative research focuses on systematic field phenomena. It is directed at finding, formulating, developing, and producing findings related to learning models with a natural disaster mitigation perspective based on local wisdom in junior high schools throughout Palu City. The research focuses on a learning model with an insight into natural disaster mitigation based on local wisdom applied in junior high schools throughout Palu City. Initial data or information collection was collected using field and literature studies. Field studies were conducted using interview techniques, observation, documentation, curriculum analysis, learning conditions analysis, and needs analysis. Meanwhile, a literature study is carried out by reviewing books and sources that are relevant to the research to be carried out. The data analysis technique in this research uses descriptive analysis techniques by carrying out data reduction, data classification, and data verification and conclusions.

3. FINDINGS AND DISCUSSIONS

Results

The Palu City Government, through the Palu City Education and Culture Office, has made natural disaster mitigation one of the materials in the integrated learning curriculum starting in the 2019/2020 academic year. Ansyar Sutiadi, Head of the Palu City Education and Culture Service, explained that the September 28, 2018, natural disaster provided real learning.

Data and information were obtained from the results of the studies carried out. Based on typographic, geological, and seismological conditions, the City of Palu can experience damage due to earthquakes, including subsequent disasters (tsunami, liquefaction, cliff landslides). The potential for natural disasters is triggered by the active Palu-Koro fault (Ramadhani, 2011). Several natural disasters such as earthquakes and tsunamis have occurred in Palu City, including the 1927 earthquake and tsunami, the 1938 earthquake, the 1968 earthquake and tsunami, the 1996 earthquake, the 2005 earthquake, the 2012 earthquake, the 2018 earthquake, the tsunami, and liquefaction.

The natural disasters of earthquake, tsunami, and liquefaction on September 28, 2018, for example, greatly impacted human and material losses in all sectors of community life in Palu City. Therefore, as an area with a high potential for natural disasters, one aspect that needs to be strengthened is structural and non-structural mitigation (Rubaidi, 2018). Non-structural mitigation is an effort to mitigate natural disasters by strengthening community capacity regarding knowledge, awareness, and commitment so that they are expected to play an active role in efforts to reduce the impact of natural disaster risks. Several literature studies confirm that non-structural mitigation can be carried out through education and learning efforts in schools, especially in areas prone to natural disasters, such as Palu City.

Based on the results of the literature and field studies, several forms of local wisdom of tribal communities were found. Search for related items is integrated into junior high school student learning materials. Forms and examples of local wisdom can be seen in the following table:

Table 1. Forms and Examples of Local Wisdom for Natural Disaster Mitigation Integrated in Middle School Students Learning

No.	Forms of Local Wisdom	Examples of Local Wisdom
1	Geological history of the Palu valley	History of Palu Valley; the origin of the name Palu; traces of natural disasters in the Palu Valley; history of the discovery of the active Palu-Koro fault; etc.
2	Toponymy of the natural environment	*Kaombona* (ever collapsed/drowned); Nalonjo (immersed in mud); Limas (embedded due to suction of mud/liquefaction); Here it is (earthquake); Rasa (landslide occurred); Bulat (edge of the ridge above

		the landslide); center (sea center), Tanamodindi (land sound); etc.
3	Folklore	Legend of the formation of the Palu Valley, the story of Tonggo Magau, stories about Nilingayo, etc.
4	Oral literature	*Kayori* (Ancient poetry warning of disaster)
5	Nature/environmental preservation	*Ombo Pekanaolu Nungata* (settlement conservation regulations); Nama Pekanaolu Mpangale (forest conservation regulations); Nama Pekanaolu Livutontasi (marine conservation regulations), Nama Pekanaolu Binangga (river conservation regulations), and so on.
6	Traditional expression	*Ane Molipa Rapeili Taliku* (When walking, always look behind you). It contains a message of moral values: always alert, ready, and careful; White Rapovia, White Rakava (good is created, good is obtained). It contains a value message to maintain attitudes and behavior to avoid bad things: Aginamo Mainga Nemo Maonga (better safe than sorry). The moral message is to always act with caution and lightness, etc.
7	Architectural technology	Building architectural style and earthquake isolation Lobo Building, Tambi, Souraja, Banua Oge.
8	Medicine and food security	Types of foliage, herbs, and plants, and staple foods. Traditions of logistics storage habits anticipate food crises, such as the Gampiri and Lumbu Boya food barns.
9	Traditional knowledge of early warning system	Observation of the unusual behavior of certain animals.

The form of wisdom of the Kaili Tribe of Palu Valley above is local knowledge and experience born from adaptation to experiences facing several environmental events that have positive implications for preserving life and the environment. Apart from that, local community knowledge is also the knowledge that local people use to survive in their environment. It is combined with systems of knowledge, belief, religion, norms, culture, and traditions that are deeply rooted and communicated from generation to generation. generation (Prajoko, 2020).

In the community's view, local wisdom has many positive values that guide attitudes and behavior and is very important in transforming junior high school students through classroom learning activities. From here, local wisdom becomes a wealth of community knowledge and culture in the dimensions of local wisdom, local values, local skills, local resources, and so on regarding various aspects of life, including local wisdom related to natural disaster mitigation, which participants can internalize junior high school students through learning activities. From here, through learning with a mitigation perspective based on local wisdom, students can actualize themselves into individuals who understand local wisdom and become skilled in mitigation.

Discussion

As living creatures, humans have a reciprocal relationship in harmony with their environment. There is a balance and interaction between the two. In interactions that have taken place from prehistoric times to the present, humans gain experience about their environment. The natural environment provides life and a way of life for humans, both directly and indirectly, so cultural elements are realized in every community group or ethnic group, such as religious systems, technological systems, social

organization systems, livelihood systems, and art. , language, and science systems (Prajoko et al., 2020).

Human interaction with the environment is partly or wholly determined by cultural development and the development of value systems about the environment, which includes attitudes and views towards nature. Humans have an important role in realizing how the environment functions and providing guidance on what humans can expect from their environment, both naturally and culturally, and what they can and cannot do (Djorimi, 2019).

Human knowledge and experience greatly influence their behavior in treating the environment in which they live. Therefore, humans are aware of all changes in the surrounding environment and can adapt to their physical and biological environment. In the adaptation process, humans always strive to utilize local wisdom and natural resources to support life needs in an integrated manner with other ecosystems. Awareness of the importance of processing, utilizing, and maintaining the balance of the environmental ecosystem is not new for society. Since the beginning, society has believed that the natural environment is a communication system between the creator and his creation (Djorimi, 2019).

From here, education plays an important role in rebuilding awareness of mitigation in students based on local wisdom. For this reason, this discussion focuses on reviewing information about mitigation-oriented learning models based on local wisdom, carried out through two strategies: literature studies and field studies (Ruyadi, 2019). A literature study is a step in reviewing data by looking for sources through relevant books and scientific journals, namely data information regarding learning models with a natural disaster mitigation perspective based on local wisdom that experts and researchers have developed. The field study was carried out through observations and interviews focused on three contexts: a study of implementing natural disaster mitigation learning policies in Junior High Schools (SMP) in Palu City and learning conditions based on local wisdom. About natural disaster mitigation and the urgency of development in learning.

The Palu City Government, through the Palu City Education and Culture Office, has made natural disaster mitigation one of the materials in the integrated learning curriculum. Ansyar Sutiadi, Head of the Palu City Education and Culture Office, explained that September 28, 2018, natural disaster event was enough to provide real learning. We must build preparedness awareness and understand the current picture of natural disaster vulnerability in Palu City. It is urgent to increase understanding and awareness of community preparedness, especially for the next generation who will live in the years to come when this disaster event is likely to recur. So, it is important from an early age that our children are given an understanding both through curricular and extracurricular learning activities at school (Cholifah, 2020).

Therefore, starting in the 2019/2020 academic year in Palu City, we have begun implementing integrated and local wisdom-based learning in junior high schools (SMP) within the Palu City Education and Culture Office (Setiadi, 2019). Ansyar Sutiadi (2019) emphasized that the dense national education curriculum should not be used as an excuse for not sustainably carrying out disaster risk reduction activities in schools. Disaster risk reduction (mitigation) learning in schools such as junior high schools can be done by integrating natural disaster mitigation learning materials into main subjects/themes, local content, and extracurriculars, as well as self-development in the context of fostering a school environment with a disaster resilient culture (Lestari, 2020).

The city of Palu has developed natural disaster mitigation learning based on local wisdom as one of the efforts to mitigate natural disasters in a non-structural form. This local wisdom-based natural disaster mitigation learning policy is provided to students in Junior High Schools (SMP) within the Palu City Education and Culture Office through intracurricular and extracurricular activities (Mulyani, 2020). Extracurricular activities are taught with a practical preparedness approach in OSIS activities, Scouts, Youth Red Cross (PMR), etc. Apart from that, natural disaster simulation activities are also carried out in collaboration with other parties, such as non-governmental organizations (NGOs) or the Palu City Regional Disaster Management Agency (BPBD).

Meanwhile, learning about natural disaster mitigation based on local wisdom in intra-curricular activities is taught with an integrated approach to natural disaster mitigation material in several subjects. Junior high school subjects recommended to be integrated with natural disaster mitigation knowledge material include Indonesian Language, Natural Sciences, Social Sciences, Civics, and Arts and Culture subjects. In terms of implementation, the policy for developing integrated learning on natural disaster mitigation material in the 2013 Curriculum in schools in Palu City, based on the results of interviews with the Head of the Curriculum Section, provides information that a conceptual model design cannot yet be formulated. Still, the Department has facilitated the preparation of learning and training guidebooks. Teach. Curriculum by integrating natural disaster material based on local wisdom supported by NGOs, such as YSTC, Plan International, and other NGOs (Salmi, 2019).

Likewise, with mitigation-oriented learning based on local wisdom in Palu City, based on observations and interviews with the Chair of the PAI Subject Teacher Conference (MGMP), information was obtained that mitigation-oriented learning based on local wisdom was carried out normally as expected. Curriculum standards. This means that content standards, core competencies, basic learning competencies, learning materials, and systems run according to the school curriculum. Learning competency development activities at the MGMP level involve strengthening the application of learning models and assessment systems. Meanwhile, developing a learning model with an integrated view of natural disaster mitigation has not been carried out (Indra, 2019). This condition confirms that mitigation-oriented learning based on local wisdom in junior high schools in Palu City has not yet developed integrated learning for natural disaster mitigation. There is a policy from the Palu City Education and Culture Office to develop local wisdom-based natural disaster mitigation learning in subjects so that the development of local wisdom-based mitigation-oriented learning will be projected. Therefore, a conceptual framework for learning models is needed that integrates insights into natural disaster mitigation based on local wisdom (Indra, 2019).

Learning insight into natural disaster mitigation based on local wisdom in junior high schools throughout Palu City can be developed because in the PAI and Budi Pekerti curricula, there are relevant materials/subjects to be integrated with insight into natural disaster mitigation. All that is needed is the model and method of implementation (Baharuddin, et al. ., 2019). Consider local wisdom-based learning development policies as a basis for integrating natural disaster mitigation material in Palu City because they are based on natural characteristics, geology, sociology, potential threats of natural disasters, and the experiences of local communities. The Palu Valley has a treasure of local wisdom that needs to be revitalized into knowledge through a learning process for students and society, which has begun to be degraded by the current global culture (Setiadi, 2019).

The Kaili tribal people who live in the Palu Valley actually have several local wisdoms regarding natural disasters. However, information about local wisdom has not been disseminated properly. According to Iksam Djorimi, Kaili's civilization is strong in its speech culture and tends to be exclusive (closed) to only certain families who receive its speech. Thus, the local wisdom of the Kaili tribe has not been transformed much by the generations who inhabit the Palu valley (Djorimi, 2019).

This civilization of speech and exclusive attitudes is the cause of the lack of local wisdom, which is exacerbated by the increasingly rapid trend of shifting local wisdom and cultural values in the current global era. This is why it is important to introduce the dimension of locality through the learning process, including local wisdom regarding natural disasters. This local wisdom includes local knowledge and experience regarding the natural environment, geological history, toponymy, traditional medicine, environmental conservation traditions, food security, local architectural technology, local resources, norms, stories, advice, traditional language, and expressions (Djorimi, 2019).

Introducing the locality dimension through the learning process is important because it can strengthen community identity and preparedness for natural disasters. Local wisdom related to natural

disasters covers various aspects, such as local knowledge and experience about the natural environment, geological history, toponymy, traditional medicine, environmental conservation traditions, food security, local architectural technology, local resources, norms, stories, advice, language, and traditional expression. By introducing and strengthening this local wisdom through a learning process, the community can internalize the values and practices that have been proven effective in dealing with natural disasters for generations. This is not just about preserving local culture but also about leveraging previous generations' proven knowledge and skills to increase resilience and adaptability to future threats of natural disasters. Thus, learning about local wisdom related to natural disasters is key in building a more resilient and empowered society.

4. CONCLUSION

A natural disaster mitigation learning model based on local wisdom is developed through intracurricular and extracurricular learning activities. Extracurricular activities are taught with a practical preparedness approach in OSIS activities, Scouts, Youth Red Cross (PMR), etc. Apart from that, natural disaster simulation activities are also carried out in collaboration with other parties, such as non-governmental organizations (NGOs) or the Palu City Regional Disaster Management Agency (BPBD). The intracurricular learning model is taught with an integrated approach to natural disaster mitigation material based on local wisdom in Indonesian Language, Natural Sciences, Social Sciences, Civics, and Arts and Culture. In terms of implementation, the policy is to develop integrated learning of natural disaster mitigation material in the school curriculum at junior high schools in Palu City. The mitigation-oriented learning model based on local wisdom is implemented normally according to curriculum standards, namely content standards, core competencies, basic learning competencies, learning materials, and systems that run according to the school curriculum. Learning competency development activities are oriented towards strengthening the implementation of learning models and assessment systems so students' understanding and skills can be mastered appropriately.

REFERENCES

Abdullah. 2017. *Tsunami di Teluk Palu dan Sesar Palu Koro*. Palu: Tadulako Publishing.

Asep Mahpudz, "*Mitigasi Bencana Perlu Masuk dalam Kurikulum Lokal*". Harian Palu Ekspress, Edisi 20 Maret 2019.

Cholifah, Tety Nur. 2020. *Pembelajaran Tematik Berbasis Kearifan Lokal.* Bandung: MnC Publishing.

Denzin, Norman K dan Yvonna S. Lincoln. 2021. Handbook of Qualitative Research. Yogyakarta: Pustaka Pelajar.

Djorimi, Iksam. 2019. "Keraifan Tradisional Masyarakat Suku Kaili dalam Mitigasi dan Lingkungan" dalam *Makalah Disampaikan pada Workshop Penyusunan Kurikulum Mitigasi Bencana Alam Berbasis Kearifan Lokal, Palu, 20 Januari 2019, 1-17.*

Djorimi, Iksam. 2019. *Keraifan Tradisional Masyarakat Suku Kaili dalam Mitigasi dan Lingkungan*, Makalah Disampaikan pada Workshop Penyusunan Kurikulum Mitigasi Bencana Alam Berbasis Kearifan Lokal, Palu, 20 Januari 2019, 1-17.

Fahrevy, dkk. 2014. *Kajian Tingkat Pemahaman Kepala Keluarga dalam Menghadapi Bencana Gempa Bumi di Kecamatan Baitussalam, Kabupaten Aceh Besar*. Jurnal Cakradonya Dent J. Nomor 6(2), 2014, 678-744.

Gunawan. 2014. *Kesiapsiagaan Masyarakat dalam Penanggulangan Bencana: Studi Kasus di Kecamatan Cangkringan, Kabupaten Sleman, Yogyakarta*. Jurnal INFORMASI Volume 19, Nomor 2, Mei-Agustus, Tahun 2014, 91-106.

H. Baharuddin, Susilawati, Munira, Farida, dkk. Guru PAI dan Budi Pekerti SMP Kota Palu, "*Wawancara*" di Palu 17 Juli 2019.

Ilyas. 2014. *Kajian Penyelesaian Konflik Antar Desa Berbasis Kearifan Lokal di Kabupaten Sigi, Sulawesi Tengah*. Junal Academica, Volume 06 Nomor 01 Februari 2014, 1213-1227.

Indra, Emi. Ketua MGMP PAI dan Budi Pekerti SMP Kota Palu, "*Wawancara*" di Palu, 14 Juli 2019.

Lasimpo, Givents. 2019. *Mitigasi Bencana Berbasis Pengalaman Suku Kaili di Lembah Palu* (Palu: IU KOMIU, 2019), 11-22.

Lestari, Nurdiyah, dkk. 2021. *Pendidikan Lingkungan Berbasis Kearifan Lokal.* Yogyakarta: UNY Press.

M. Alie Humaedi. 2015. *Penanganan Bencana Berbasis Perspektif Hubungan Antara Agama dan Kearifan Lokal.* Jurnal Analisa Journal of Social Science and Religion. Volume 22 No. 02 December 2015, 213-226.

Ma'arif, Syamsul. 2012. *Kontenstasi Pengetahuan dan Pemaknaan Tentang Bencana Alam.* Jurnal Penanggulangan Bencana Volome 3 Nomor 1 Juni 2012, 1-13.

Maknun, Johar. 2015. *Pembelajaran Mitigasi Bencana Berorientasi Kearifan Lokal pada Pelajaran IPA di Sekolah Menengah Kejuruan*. ATIKAN: Jurnal Kajian Pendidikan, 5(2) Desember 2015, 143-156.

Mulyani, Mimi. 2020. *Pembelajaran Menulis Kreatif Berbasis Kearifan Lokal.* Yogyakarta: Cipta Nusantara.

Prajoko, Setyo, dkk. 2020. *Pembelajaran Mitigas Bencana di Magelang.* Magelang: Universitas Tidar Press.

Prihatmoko, Sukmandanu. 2018. *Pendidikan Mitigasi Bencana: Upaya Siapkan Warga Sulteng Hadapi Gempa*, Paper Pengantar Diskusi yang digelar di Sekretariat AJI (Aliansi Jurnalis Indonesia) Palu, Sulawesi Tengah, 11 Oktober 2018.

Purnama, Drajat Indra. 2019. *Analisis Komponen Utama Pada Data Potensi Kecamatan di Kota Palu Sebelum Bencana Gempa Bumi dan Tsunami 28 September 2018*. Jurnal Matematika, Statistik, Komputasi, Volume 16 Nomor 1 Juli 2019, 26-32.

Purwantoro, Suhadi. 2021. "Urgensi Pendidikan Kebencanaan di Indonesia" dalam *Prosiding Semiloka Nasional Pendidikan Kebencanaan di Indonesia.* Yogyakarta: Fakultas Ilmu Sosial dan Ekonomi Universitas Negeri Yogyakarta.

Rahma, Aldila. 2018. *Implementasi Pendidikan Pengurangan Resiko Bencana (PRB) Melalui Pendidikan Formal*. Varia Pendidikan, Volume 30, Nomor 1, Juli 2018, 1-11.

Robika Alkadri, Festiyed, dan Asrizal. 2019. *Meta Analisis Bahan Ajar Terintegrasi Materi Mitigasi Bencana Alam Terhadap Kompetensi Peserta Didik*. Jurnal Pillar of Physics Education, Volume 12, Nomoro 4, Tahun 2019, 857-864.

Rozi, Syafwan. 2017. *Local Wisdom and Natural Disaster In West Sumatra*. Jurnal el Harakah Vol. 19 No. 1 Tahun 2017, 3-19.

Rubaidi. 2018. *Pengarusutamaan Pengurangan Resiko Bencana (PRB) Berbasis Kurikulum Pendidikan Agama Islam*. Al Izzah: Jurnal Hasil-Hasil Penelitian. Volume 13, Nomor 2 November, 2018, 283.

Ruyadi, Yadi. 2019. *Pendidikan Karakter Berbasis Kearifan Lokal.* Bandung: Indonesia Emas.

Sahlan, Muhammad. 2019. *Kearifan Lokal dan Peran Elit Agama dalam Mitigasi Bencana di Kecamatan Tangse, Kabupaten Pidie*. Jurnal Sosiologi USK Volume 13, Nomor 1, Juni 2019, 72-88.

Saleh, Sukmawati. 2013. *Kearifan Lokal Masyarakat Kaili Sulawesi Tengah*. Jurnal Academica, Vol .05 No. 02 Oktober 2013, 1126-1134.

Salmi, Kepala Seksi Kurikulum SMP Dikbud. Kota Palu, "*Wawancara*" di Dikbud. Kota Palu 08 Agustus 2019.

Seknas. 2019. *Satuan Pendidikan Aman Bencana (SPAB) di Indonesia: Kebijakan dan Implementasi di Indonesia.* Jakarta: Kemendikbud. RI.

Seknas. SPAB Kemendikbud. 2015. *Road Map Implementasi Satuan Pendidikan Aman Bencana (SPAB) di Indonesia Tahun 2015-2019.* Jakarta: Kemendikbud. RI.

Siswanto. 2008. *Pendidikan Islam Berwawasan Lingkungan Hidup* dalam Jurnal Karsa, Vol. XIV No. 2 Oktober 2008, 87.

Sriyati, Ramadhani. 2011. *Kondisi Seismisitas dan Dampaknya di Kota Palu*, Jurnal Infrastruktur, Volume 1

Nomor 2, Desember 2011, 111-119.

Suhardjo, Drajat. 2011. *Arti Penting Pendidikan Mitigasi Bencana dalam Mengurangi Resiko Bencana.* Jurnal Cakrawala Pendidikan, Juni 2011, Tahun XXX, Nomor 2, 174-188.

Surat Edaran Menteri Pendidikan Nasional No.70a/MPN/SE/2010 tentang Pengarusutamaan Pengurangan Risiko Bencana di Sekolah. Tanggal 31 Maret 2010.

Sutiadi, Ansyar. 2019. Kepala Dinas Pendidikan dan Kebudayaan Kota Palu, "*Wawancara*" di Kantor Dikbud. Kota Palu 07 Agustus 2019.

W. Hamilton. 2018. *Tectonics of Indonesian Region.* Washington DC: U.S. Govt. Print.

Wignyo Adiyoso dan Hidehiko Kanegae 2013. *Efektivitas Dampak Penerapan Pendidikan Kebencanaan di Sekolah terhadap Kesiapsiagaan Siswa Menghadapi Bencana Tsunami di Aceh, Indonesia.* Jurnal Edisi 03/Tahun XIX/2013, 31-44.

Zamroni, M. Imam Zamroni. 2011. *Islam dan Kearifan Lokal dalam Penanggulangan Bencana di Jawa.* Jurnal Dialog Penanggulangan Bencana, Volume 2 Nomor 1 Juni 2011, 1-10.

Zela Septikasari dan Yulia Ayriza. 2018. *Strategi Integrasi Pendidikan Kebencanaan dalam Optimalisasi Ketahanan Masyarakat Menghadapi Bencana Erupsi Gunung Merapi.* Jurnal Ketahanan Nasional. Volume 24, Nomor1, April 2018, 47-59.

Zulfadrim, Y Toyoda, H Kanegae. 2018. *The Implementation of Local Wisdom in Reducing Natural Disaster Risk: a Case Study from West Sumatera.* Journal Earth and Environmental Science 106 (2018), 2-16.