Local Culture Inventory for Disaster Mitigation Learning

Ramdan Afrian¹, Joko Hariadi², Bachtiar Akob³, and Zukya Rona Islami¹
¹ Department of Geography Education, Samudra University, Langsa, Indonesia
² Department of Language Education, Samudra University, Langsa, Indonesia
³ Department of History Education, Samudra University, Langsa, Indonesia

*ramdan.afrian_geo@unsam.ac.id

Abstract. Indonesia is a country that is vulnerable to disasters. The position of Indonesia which is located at the confluence of several plates in the world makes it possible for disasters to occur. Realizing this, the government responded by issuing regulations on disaster mitigation at the secondary school level. Mitigation learning can be absorbed perfectly; it should be taken as an example that is close to the community as an example of local culture. An example of disaster mitigation between culture and disaster is the Smong culture that is in Simeulue. The Smong culture helps save more lives than the area around it. Therefore, an inventory of local culture is needed which leads to disaster mitigation so that it can be absorbed and modified as an alternative in disaster mitigation learning. The method used is literature study. The results obtained in the form of an explanation of Aceh's local culture relating to disaster mitigation, how the existence of Aceh's local culture related to disaster mitigation, and how education can be a vehicle of existence from Aceh's local culture in terms of disaster mitigation.

1. Introduction
Indonesia is a region with a high level of disaster vulnerability. Almost all forms of disasters can occur in Indonesia. According to the Republic of Indonesia Law, a disaster is an event or series of events that threaten and disrupt people's lives and livelihoods caused by both natural and/or non-natural and human factors, resulting in human casualties, environmental damage, property loss, and psychological impact[1]. The type of disaster that concerns the Indonesian people is natural disaster. That is because in Indonesia, natural disasters are still many victims, especially fatalities.

Natural disasters are defined as disasters caused by events or a series of events caused by nature including earthquakes, tsunamis, volcanic eruptions, floods, droughts, hurricanes, and landslides[1]. Natural disasters in Indonesia occur because Indonesia is located between active plates. The plates move and collide, causing an earthquake. If an earthquake occurs in the ocean, there is the potential for a tsunami.

The location of Indonesia which is between several plates also makes it have many volcanoes. The number of volcanoes that surround Indonesia makes this area called the ring of fire. This condition provides benefits with beautiful natural conditions and biodiversity. But behind that, this condition also caused Indonesia to be threatened by volcanic eruptions. When this happens, there are many losses that must be borne by the people who live at the foot of the mountain. Losses in the form of damage to various types of materials and buildings to the loss of life.

Indonesia's position on the equator or tropical climate zone also causes many hydro-meteorological disasters. Wind movements that occur can cause high waves in the ocean. In addition, floods occur in urban areas and downstream of the river. Rain can also cause landslides in hilly areas or plateaus. Apart from that rain can also cause soil liquefaction. This incident was felt by the people of Palu which caused many casualties.

The large number of fatalities, property casualties and the worst impact is the cessation of economic activities that take place in the affected area making the government must act. Actions taken can take the form of mitigation systems, increased preparedness or increased knowledge from the public about disasters. These actions are expected to minimize the losses experienced. One tangible form of action taken is implementing a disaster mitigation program starting at the secondary school level. This was done to fulfill the mandate of the law concerning the rights of every citizen in disaster mitigation which included obtaining education, training, and skills in carrying out disaster management. And get information in writing and / or verbally about disaster management policies.
The application of mitigation in the world of education can be applied starting with the inclusion of disaster mitigation materials in the curriculum. The existence of disaster mitigation material in the curriculum makes students are required to learn and understand about the disaster. But the learning should be packaged in the form of learning that is close to the daily lives of students. A. Kadir states that “through the contextual learning model, learning experiences not only occur and are owned when a student is in the classroom, but far more important than that is how to bring the learning experience out of the classroom, i.e. when he is required to respond and solving real problems that are faced everyday” [2].

In accordance with the statement above, mitigation learning can be absorbed perfectly if a teacher understands the concept of contextual learning. For this reason, teachers can take examples that are close to the community. One alternative of these examples is the culture or local wisdom that is owned by the surrounding community. A good example of acculturation between culture and disaster is Smong culture that exists in Simeulue. Smong culture helps save more lives than the surrounding area. Therefore, an inventory of local culture is needed that leads to disaster mitigation so that it can be absorbed and modified as an alternative in learning disaster mitigation.

2. Methods
This research was conducted using literature study methods. Literature research or often also called literature study, is a series of activities relating to the method of collecting library data reading and recording and processing research material [3]. This study will use data from the literature review from books, journals, and newspapers obtained from literature studies. Literature study is related to theoretical studies and other references relating to values, culture and norms that develop in the social situation under study, besides the study of literature is very important in conducting research, this is because research will not be separated from scientific literature [4].

3. Results and Discussion

3.1 Urgency of Local Wisdom-Based Learning
Indonesia is an area that has a high potential for disaster. An active mountain trail that runs along the islands of Indonesia. making it vulnerable to earthquake and volcanism potential. Besides that, Indonesia which is on the equator also makes it vulnerable to hydro-meteorological disasters. These disasters occur in almost every corner of the country every year. These disasters always damage property and cause casualties. An example is an earthquake with a magnitude of 6.8 in the city of Ambon that occurred on September 26, 2019. The earthquake caused about 30 deaths [5].

Indonesia, which is in the form of an archipelago, besides having the potential for disaster as described above, is also blessed with diverse cultural patterns. The islands in Indonesia with different natural conditions, geomorphological and climatological features cause differences in adaptation. This resulted in diverse cultures in each region. The number of cultures is a gift for Indonesia both in tourism and in identity. But many of these cultures began to fade due to globalization and the entry of foreign cultures into Indonesia.

Indonesia has a culture that must be maintained, because it is part of the nation's identity. If not maintained, culture will fade with the changing times. Culture will be able to survive if it is adapted in formal education. The survival of this culture is due to the mandatory education program of the government which requires every citizen to study in formal schools so that every citizen is required to attend formal schools. With the existence of cultural aspects in formal schools, of course culture will be studied by every level of society.

Indonesia has a culture that must be maintained, because it is part of the nation's identity. If not maintained, culture will fade with the changing times. Culture will be able to survive if it is adapted in formal education. The survival of this culture is due to the In addition to preventing the fading of culture in Indonesia, culture-based learning or local wisdom is very important. That is because in learning, it must be instilled in the minds of children that humans are not just living, but also exist. So that they are motivated to try to overcome the all-limited situation [6]. To be able to fulfill this existence, the learning must be close to students. Mandatory education program of the government which requires every citizen
to study in formal schools so that every citizen is required to attend formal schools. With the existence of cultural aspects in formal schools, of course culture will be studied by every level of society.

Local wisdom-based education is education that teaches students to always be close to the concrete situations they face every day. Local wisdom-based education is an example of education that has high relevance for life development skill [7]. Mirza Deswandi strengthens by stating that local wisdom accommodated in the curriculum can provide appropriate education to handle and handle disasters [8]. Concrete learning makes students accustomed to dealing with problems in their environment. This will change the attitudes and behavior of existing human resources in order to increase work productivity to face various challenges in the future.

Local culture-based education will explain the relationship between humans and the natural environment and the surrounding cultural environment [8]. So that local culture-based learning can provide students with the ability and skills and knowledge about the area that is useful for themselves and the community in general [7]. Students who learn with a local culture-based approach will have skills in dealing with all kinds of disaster situations that will occur. In addition, students also have the ability to adapt in an environment similar to the conditions from which the local culture originates.

### 3.2 Urgency of Local Wisdom Inventory of Disaster Mitigation

Local culture-based learning will succeed if the teacher or teaching staff is skilled in explaining the local wisdom. Teachers in learning must internalize the values of local wisdom. So the teacher can be a good facilitator for students [7]. In order for teachers to explain properly, it is of course required accurate information about the local culture, in accordance with the material presented.

Indonesia consisting of diverse tribes has a lot of local wisdom in an effort to maintain life and be friendly with nature [9]. Local wisdom in Indonesia consists of various types and forms. Local wisdom owned by Indonesia is very diverse from the problem of social life to how to survive from natural conditions. The many types of local wisdom require inventory of local wisdom especially about efforts to deal with disasters. This is done so that the teacher as an educator is easy to learn and understand the values contained to be transferred with students.

### 3.3 Various Types of Local Wisdom Disaster Mitigation

One form of local wisdom in disaster mitigation carried out by Hindus in Bali in the form of the use of saput pollute in large trees can indirectly prevent the Balinese people from flooding, landslides and drought [10]. Besides Bali, the Sundanese are aware that a disaster will occur if their environment lives in disrepair. This awareness takes the form of traditional myths and rules in the form of (1) Bamboo House Buildings; (2) Land Planning & Zoning in Spatial Micro Scale; (3) Environmentally Friendly Soil Management [11].

Java Island also implements a form of local wisdom regarding disaster mitigation. One of them is the local wisdom of the Naga village community in Garut Regency. People in this dragon village always adhere to values: 1) Discipline and Honesty, 2) Religion Values, 3) Compliance with Values, 4) Mutual Assistance and Value Togetherness, 5) Simple, Friendly and Independent Values. The values of local wisdom that can provide communities in disaster-based environmental management [12]. In addition to Kampung Naga there is also local wisdom derived from the Baduy community about disaster mitigation, both in the tradition of cultivation, buildings, and relating to forests and water is actually based on customary provisions (pikukuh) in the form of oral culture. The main point of local wisdom is basically to teach not to damage mountains and valleys (water sources). The voice of wisdom uttered includes: "Lojor teu meunang is cut, teu meunang hut is connected to Mount teu meunang, which is smashed, lebak teu meunang is destroyed." Which means “the old must not be cut, the short must not join? Mountains must not be destroyed, valleys or sources of water must not be destroyed” [13].

Baduy also has other local wisdom related to mitigating earthquake disasters, landslides, floods and fires reflected in (1) cultivation traditions, namely the community has rules in choosing the location of fields, land use procedures and procedures for land clearing. This prevents them from landslides and fires. (2) The regulations for building buildings that come from flexible natural materials. This is so that the building can be in accordance with the contours of the land it occupies. This will prevent landslides and floods. (3) Division of forest zones in three areas as a concrete manifestation of ecosystem conservation and mitigation of landslides, floods, erosion, and other disasters [14]. Local wisdom from Java and Bali has kept the area beautiful and the surrounding environment maintained.
Aceh Province also has some local wisdom related to disasters. One that is quite famous is the local wisdom “Smong”. Smong is a local wisdom spoken from the island of Simeulue. Smong was born based on the experience of people who have experienced the tsunami disaster. Parents sing smong lyrics as a lullaby for children. Knowledge of this story has succeeded in reminding the Simeuluean people of the 2004 Indian Ocean tsunami [15]. Smong’s local wisdom has also defeated the early warning technology system [16].

Arlu Village, Linge, Central Aceh which is part of Aceh Province also has a unique form of local wisdom. Central Aceh is a highland area that is very prone to landslides. Almost every rainy season comes, there will be landslides in this area. But local people have local wisdom that is quite unique and integrated with the surrounding environment. The Arul Barang community believes in natural signs such as animal sounds. Indigenous people will evacuate if they get an order after the traditional elders hear screams from imo (Siamang), hear teger (rumbling in the sky) and watch murky river water and mixed with oil. This has been proven to prevent landslides (mitigation) [17].

Aceh also has traditional buildings that are resistant to earthquake disasters. Traditional building in the form Rumoh Aceh. Rumoh Aceh is in the form of houses on stilts. Rumoh Aceh was built to withstand earthquakes. The construction process that does not use nails but is joined by wooden elbows makes the building resistant when there is shock. Vibration will be distributed through cracks of wood following the pattern of the building. In addition, Rumoh Aceh is also resistant to flooding because of its tall, shaped platform building. This form of building has been abandoned by many people, especially those around the city of Banda Aceh. So during the 2004 tsunami, many houses were destroyed.

3.4 Success in Implementing Local Wisdom-Based Learning

The curriculum based on local wisdom cannot be separated from the elements of learning with the application of local wisdom. Implementing appropriate disaster mitigation learning will result in high understanding. In addition, if learning is done well, the values of existing local wisdom can be absorbed and form students or communities who are concerned and responsive to disasters. The successful application of local wisdom-based learning has been proven by Johar Maknun which obtained the conclusion of implementation (Local Learning Wisdom-Oriented Disaster Mitigation) PMBBKL in two Vocational Schools in West Java shows that students who applied PMBBKL with STM approach (Community Technology Science) have a better understanding from disaster mitigation compared to students who take conventional learning. This may be due to the learning process showing and the impact of disasters through various media, including the local wisdom of the community to avoid disasters [18].

Hasanah also proved that student learning outcomes obtained in disaster learning based on local wisdom were included in the high category, his attitude towards the environment also improved [19]. In addition, if material based on disaster coping is coupled with periodic training, it is likely that local wisdom will become a habit for students to save themselves in the event of a disaster [20]. his attitude towards the environment also improved [19]. In addition, if material based on disaster coping is coupled with periodic training, it is likely that local wisdom will become a habit for students to save themselves in the event of a disaster [20]. his attitude towards the environment also improved [19]. In addition, if material based on disaster coping is coupled with periodic training, it is likely that local wisdom will become a habit for students to save themselves in the event of a disaster [20].

Based on local success on wisdom of disaster mitigation learning. So it would be nice if Indonesia began to dig deeper into the values held by local wisdom in Indonesia. After that the research results are packaged to be more interesting whatever its form in the form of narration, story, or comic [11]. This can attract students' interest in learning it. Finally, a caring attitude about disaster was formed.

4. Conclusions

The amount of local wisdom in disaster mitigation will be very useful if it can be learned and adapted by other communities throughout Indonesia. If the values in local wisdom can be absorbed in the form of knowledge, confidence will be formed in the community to overcome disasters. This is because knowledge is the basis for the formation of beliefs [21]. In addition, knowledge can also increase the capacity of the community in dealing with disasters. People who have good knowledge of disasters will
surely prepare themselves well to face disasters. Preparation can be in the form of programs, strategies, tools or technology that can be used when facing a disaster. So, that the capacity of the community in dealing with disasters is increasingly high. The higher level of capacity, the smaller risk of negative impacts caused by disasters. Factors that influence the level of community capacity in dealing with disaster, one of which is the level of education [22]

Acknowledgments
Thank you to Universitas Samudra for your support in this research.

References
[1] Undang-Undang Republik Indonesia Nomor 24 Tahun 2007 Tentang Penanggulangan Bencana Jakarta
[2] Kadir A 2013 Konsep Pembelajaran Kontekstual di Sekolah Dinamika Ilmu 13 22
[3] Zed M 2004 Metode Penelitian Kepustakaan Yayasan Obor Indonesia
[4] Sugiyono 2011 Metodologi Penelitian Kuantitatif/ Kualitatif dan R&D Bandung: Alpbeta
[5] Iqbal M 2019 Korban Tewas Gempa Ambon 30 Orang, 244.780 Orang Mengungsi https://www.cnbcindonesia.com Accessed on 29 September 2019
[6] Tobroni 2012 Relasi Kemanusiaan Dan Keberagamaan (Mengembangkan Etika Sosial Melalui Pendidikan) Bandung: CV Karya Putra Darwati
[7] Nadhir 2014 Urgensi Pembelajaran Berbasis Kearifan Lokal Jurnal Pendidikan Agama Islam 2 300–330
[8] Desfandi M 2014 Urgensi Kurikulum Pendidikan Kebencanaan Berbasis Kearifan Lokal di Indonesia SOSIO DIDAKTIKA: Social Science Education Journal 1
[9] Jokowinarno D 2010 Mitigasi Bencana Tsunami Jurnal Rekayasa 15 8
[10] Suda I K 2010 Ideologi Pelestarai Lingkungan Hidup Dibalik Pemakaian Saput Poleng Pada Pohon Besar di Bali Jurnal Bumi Lestari 10 8
[11] Maryani E 2014 Kearifan Lokal Masyarakat Sunda Dalam Memitigasi Bencana Da Aplikasinya Sebagai Sumber Pembelajaran IPS Berbasis Nilai Jurnal Penelitian Pendidikan 14 12
[12] As’ari R and Hendriawan N 2016 Kajian Nilai Kearifan Lokal Masyarakat Adat Kampung Naga Dalam Pengelolaan Lingkungan Berbasis Mitigasi Bencana in Upaya Pengurangan Risiko Bencana Terkait Perubahan Iklim Surakarta
[13] Permana R C E, Nasution I P, Gunawijaya J 2011 Kearifan Lokal Tentang Mitigasi Bencana Pada Masyarakat Baduy Makara Human Behavior Studies in Asia 15 67
[14] Suparmini, Setyawati S, Sumunar D R S 2014 Mitigasi Bencana Berbasis Kearifan Lokal Masyarakat Baduy Jurnal Penelitian Humaniora 19 18
[15] Rahman A, Sakurai A, Munadi K 2018 The Analysis of the Development of the Smong Story on the 1907 and 2004 Indian Ocean Tsunamis in Strengthening the Simeulue Island Community’s Resilience International Journal of Disaster Risk Reduction 29 13–23
[16] McAdoo B G, Dengler L, Prasetya G, Titov V 2006 Smong: How an Oral History Saved Thousands on Indonesia’s Simeulue Island during the December 2004 and March 2005 Tsunamis Earthquake Spectra 22 661–669
[17] Afriani R and Akob B 2017 Local Based Natural Wisdom of the Linge Aceh Tengah District Community as Landslide Mitigation Disaster 6
[18] Maknun J 2015 Pembelajaran Mitigasi Bencana Berorientasi Kearifan Lokal pada Pelajaran IPA di Sekolah Menengah Kejuruan Jurnal Kajian Pendidikan 5 14
[19] Hasahah I, Wahyuni S, Bachtair R W 2016 Pengembangan Modul Mitigasi Bencana Berbasis Potensi Lokal Yang Terintegrasi Dalam Pelajaran IPA di SMP Jurnal Pembelajaran Fisika 5 9
[20] Subagia I W 2015 Pelatihan Mitigasi Bencana Alam Gempa Bumi Pada Siswa Sekolah Dasar Negeri 1 Pengastulan Kecamatan Seririt Kabupaten Buleleng Bali J. pendidik indonesiia 4
[21] Lestari P, Kusumayudha S B, Paripurno E T, Ramadhaniyanto B 2016 Komunikasi Lingkungan untuk Mitigasi Bencana Erupsi Gunung Sinabung aspikom 3 56
[22] Setiawan H 2014 Analisis Tingkat Kapasitas Dan Strategi Coping Masyarakat Lokal Dalam Menghadapi Bencana Longsor- Studi Kasus Di Tawangmangu, Karanganyar, Jawa Tengah

*JPSEK* **11** 70–81