

The Role of Local Wisdom-Based Disaster Education and Training Through Education Levels in Disaster-Prone Areas

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ABSTRACT

This study aims to find out conceptually-theoretically disaster education and training based on local wisdom can strengthen the character of disaster preparedness. The method used in this study is the library research method, or it can also be called the literature review method, which is a type of study conducted by reviewing relevant relevant literatures. Based on the results of data analysis, it can be concluded that the application of disaster education and training based on local wisdom can improve the character of student preparedness. So that the stronger the character of student preparedness can reduce the risk in the event of a disaster. One of the reasons for the high number of casualties and property losses due to disasters is the lack of preparedness for a disaster. The character of disaster preparedness is certainly not formed instantly, but goes through a long process. Disaster education and training based on local wisdom is the right step in strengthening the character of disaster preparedness in students. Disaster education is very important to be held starting from basic education to higher education.

Keywords: Disaster Education and Education, Local Wisdom, Disaster-Prone



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INTRODUCTION

The territory of Indonesia is an archipelago that stretches from Sabang to Merauke with a high level of vulnerability to natural disasters. The Indonesian archipelago is included in the Pacific Ring of Fire (Pacific volcano area) which has a curved shape from the north of the island of Sumatra, Java_Nusa Tenggara to North Sulawesi (Indonesia has 129 volcanoes and 80 of them are dangerous). The Indonesian archipelago is also located at the confluence of two world tectonic plates and is influenced by three movements, namely: the Sunda system movement in the west, the East Asian periphery system movement, and the Australian Circum Movement, these factors make Indonesia prone to disasters, especially volcanic eruptions and earthquakes.

One of the active volcanoes is Semeru, which is located in Lumajang Regency. This mountain is the highest mountain on the island of Java. The impact of his activities continues to envelop the activities of the surrounding community. Mount Semeru has several times shown its threat to the surrounding community in particular. So some areas in Lumajang became KRB (Disaster Prone Area) Mount

Semeru. While other areas are also included as other KRB, be it floods, landslides and other disasters. Under certain conditions, threats of loss and victims, both property and life, become an integral part of the dynamics of society.

On Saturday 4 December 2021 at 15.20 WIB Mount Semeru erupted. Lava floods accompanied by eruptions of material and ash rain hit Lumajang District, which was concentrated in Pronojiwo and Sumberwuluh Districts. Even four days after the eruption, Mount Semeru's activity was still fluctuating. On Wednesday 8 December 2021 there were 5 avalanches, 5 gusts, 1 deep volcanic earthquake, and 1 distant tectonic earthquake. Semeru is a volcano located in the Malang and Lumajang regions, East Java, and is the highest mountain on the island of Java. Mahameru which is the peak of Mount Semeru is reported to have a height of +3676 m above sea level. Semeru is an active A-type volcano which frequently erupts until now. The history of Mount Semeru's eruptions has been recorded since 1818, with the number of eruptions so far recorded at around 90 times (Purba, Sumantri, Anwar Kurnadi³, Raka, & Ango, 2022). A major disaster was also recorded in 1976 due to a cold lava flood which claimed 118 lives. Apart from eruptions, the Mount Semeru area is also vulnerable to floods, landslides and forest fires. The most prominent impact of the Semeru eruption is the incandescent cloud which, due to its topography, can move southward at a speed of 100 km/hour with temperatures reaching 1000 degrees Celsius and a sliding distance of up to 15 km. In other words, the disaster caused by Mount Semeru is not new and should have been anticipated earlier so as not to have a severe impact. (Purnomo, 2021).

Based on the level of disaster vulnerability, the hazard area is divided into three areas, namely: Disaster Prone Areas (KRB) I, Disaster Prone Areas (KRB) II, and Disaster Prone Areas (KRB) III. To be able to understand the distribution of the Explanation of Disaster Prone Areas is as follows: KRB I has the potential to cause fatalities, damage to infrastructure, and loss of property due to lava flows, especially along rivers that disgorge in peak areas so that this area is at very high risk for human settlements and activities. Communities along the river that disgorge in the peak area must increase their awareness of lava flows, when there is heavy rain in the volcanic area. KRB II also has the potential to cause casualties, damage to infrastructure, loss of property, so this area is very high risk for human settlements and activities. This area also has a high probability of being hit by hot clouds, lava flows, rock avalanches (incandescent) as an expansion of KRB III which in the event of a very fast lava dome formation and larger eruptions. Communities must prepare themselves to evacuate by following local government orders, when there is an increase in volcanic activity at Level III (Alert) and Level IV (Awas). KRB III is a very high-risk area for human settlements and activities, also has the potential to cause casualties, damage to infrastructure and loss of property, because this area has the potential to be hit by hot clouds, lava flows, rock fall (incandescent). Communities must prepare themselves to evacuate by following local government orders, when there is an increase in volcanic activity at Level III (Alert) and Level IV (Awas). (Arianto, 2015).

The areas around Mount Semeru in particular have the potential to enter KRB according to their level. Empirical evidence shows an eruption on December 4 2021 of Mount Semeru, the government through the East Java BPBD has reported the occurrence of Mount Semeru Hot Clouds (APG) which were felt in 2 Regencies/Cities namely Lumajang Regency and Malang City with coordinates: 8.151761, 112.902557 and total refugees: 4,019 people, 62 people died, with the impact of losses experienced by the local community, namely loss/damage to 1,107 houses, 3,026 livestock, broken Gladak Perak bridge and other damage in the form of educational facilities, health facilities and places of worship as many as 47 units from the report above are accumulated recorded until January 31, 2022 (LUSIANA, 2021).

Since 1967 until now the activity of Mount Semeru has never stopped, with the center of activity in the Jonggring Seloko crater, southeast of the Mahameru peak in the Lumajang region, East Java. Where the history of the eruption of Mount Semeru began on November 8, 1818. The real threat from the impact of Mount Semeru activity requires early handling. One thing that needs to be done is to prepare the affected communities in the KRB area to remain on alert, always considering the

sudden threat. Education and training, especially at various levels of education while still paying attention to local wisdom, can be an alternative for handling disaster preparedness. This local wisdom deserves attention, given the socio-cultural differences between Lumajang and other districts or cities.

In the midst of technological limitations in disaster mitigation, local wisdom can be an alternative in efforts to reduce disaster risk. Each region has various and different forms of local knowledge and wisdom. Even though the terms used are different and the methods that have become traditions are not the same, all of these are potentials in developing disaster mitigation based on the potential of local wisdom. Local wisdom can be used as a way to anticipate disasters earlier. Local wisdom is one of the steps that can be used as disaster anticipation. Even without using formulas, or academic theories, nature has taught humans many things. Local wisdom is more effective in creating awareness about disasters than appeals by officials (ZAINAL, 2021)

Disaster Education and Training

The purpose of this disaster mitigation education and training is to instill an attitude of disaster preparedness and disaster prevention that has been affected by previous disasters. It is hoped that through this education and training there will be awareness for participants about the importance of carrying out flood disaster prevention and preparedness. It is also hoped that these education and training alumni students will become disaster mitigation ambassadors who will transmit flood disaster preparedness attitudes to the community.

Disaster education and training based on local wisdom is an alternative to increase public understanding of disaster. Disaster education and training is needed due to the lack of public understanding of disaster mitigation management (Hasddin & Tamburaka, 2021) and (Erni Suharini & Edi, 2015). The lack of understanding held by the community can cause material losses and increase the number of fatalities. Knowledge of the risks of flood disasters can increase community preparedness when a flood occurs (Purwoko, Sunarko, & Putro, 2015)

Disaster education and training can be carried out by building knowledge, understanding and actions that encourage preparedness, prevention and recovery (Septikasari & Ayriza, 2018) and (Tahmidaten & Krismanto, 2019). Disaster education with dissemination of disaster management (before, during, and after) floods is also needed to minimize the impact and losses from flood disasters (Awaliyah, 2014) . Socialization activities can be carried out by bringing local wisdom, including mutual cooperation which has been applied in everyday life. This is in line with the statement (Desfandi, 2014) which states that the existence of disaster education, especially locally based, is able to prepare individuals who are prepared for disasters.

Local Culture

Local wisdom is a view of life and knowledge as well as various life strategies in the form of activities carried out by local people in responding to various problems in meeting their needs. In foreign languages it is often conceptualized as local policy "local wisdom" or local knowledge "local knowledge" or local intelligence "local genius".

According to (Fatimatujahro, 2015), Local wisdom is human intelligence possessed by certain ethnic groups which is obtained through community experience. That is, local wisdom is the result of certain communities through their experiences and may not necessarily be experienced by other communities. These values will be very strongly attached to certain communities and these values have gone through a long journey of time, throughout the existence of that society. Anthropologists, such as Koentjaraningrat, Spradley, Taylor, and Suparlan, have categorized human culture which is the container for local wisdom into ideas, social activities, artifacts. his daily actions.

Disaster-Prone Areas

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Disaster Preparedness

Preparedness is an action taken during the pre-disaster period (before a disaster occurs). The purpose of disaster preparedness is to reduce the risk (impact) caused by a disaster. (Puspita & Pranoto, 2021) explained that preparedness is actions that enable governments, organizations, communities, communities and individuals to be able to respond to a disaster situation quickly and effectively. Preparedness measures also include preparation of disaster management, maintenance of resources and training of personnel.

Preparedness also includes preparing an emergency response plan, meaning that with this plan the community can know what actions to take in the event of a disaster. Of course, the design of a disaster emergency response will very much depend on the types of threats, vulnerabilities and risks that may occur in the area of each region. Preparedness needs to be done in various communities, not only at the community level.

Educational institutions need to carry out preparedness in order to create citizens of these institutions from being ready and alert to disasters. The reality is that the mitigation education program in schools located in disaster-prone areas has not been optimal. This is what causes the lack of preparedness of students for potential disasters that can occur at any time. The factors that gave rise to the above problems were caused by the lack of cooperation between the school and the Disaster Management Agency, the absence of a specific school principal policy that regulates the implementation of disaster education and the provision of knowledge about mitigation has not yet reached a meaningful learning stage, because it is only just theoretical.

METHODS

This research uses library research methods or can also be called a literature review. Library research is a type of research that is carried out using literature (literature), which can be in the form of reference books, research reports by previous researchers, or scientific articles. (Okmawati, 2020). Data sources are divided into main and additional sources which come from scientific articles in journals, research reports, and reference books related to disaster education and training, local wisdom, and preparedness. Data collection technique is documentation. The analysis technique in

this study refers to qualitative descriptive analysis techniques. It is hoped that the purpose of using the library research method will foster a new conception of studies in disaster education and become a consideration for future disaster research. The opportunity to develop disaster research based on natural disaster mitigation is very open considering the high potential for disasters in Indonesia.

RESULTS AND DISCUSSION

Mandate of law number 20 of 2003 concerning the National Education System states that education has an important role in shaping the nation's next generation who are intelligent and reliable in the implementation of development. Education requires the parties involved in it to participate in achieving optimal educational outcomes.

Learning as the art of presenting and cultivating students' intelligence has a variety of patterns that determine success (Ariska, Nawangsih, & Hidayat, 2019). Internal and external factors of learning are very influential in achieving this learning goal. Teacher competence, learning infrastructure, teacher and student motivation to the determination of educational policies affect all sides. When entering the world of children's education, we are required to pay more attention, especially in solving problems that occur in the surrounding environment. Child development with all its dynamics fosters strong perceptions and memories in the future. Children are one of the most vulnerable groups at risk of being affected by disasters (PP No 21, 2008). Children's vulnerability to disasters is triggered by the limited understanding of disaster risks around them, which results in a lack of preparedness in dealing with disasters. Based on data on disaster events in several areas, many victims due to disasters are school-age children, both during school hours and outside school hours.

This shows that the importance of knowledge about disasters and disaster risk reduction from an early age to provide understanding and guidance on steps that must be taken when a threat occurs in the vicinity to reduce disaster risk. (Pahleviannur, 2019). Disasters can have an impact on weakening the economy and the resilience of the government. Disasters can also have an impact on the world of education. Losses to school elements such as teachers and students, teaching and learning processes, property, and provision as a result of the disaster have resulted in the future of millions of young people being threatened. The cessation of education as a result of conflict and natural disasters is the main cause of the exclusion of children and young people from the educational pathway. The negation of their right to education takes away their opportunity to develop themselves to get out of poverty and marginalization (Pereznieto & Harding, 2013). Therefore, natural disasters have an impact on children and young people. The disaster caused many schools to be damaged or destroyed. Many schools were destroyed or damaged during the earthquake and Tsunami in Aceh (2004), Yogyakarta Earthquake (2006), Mount Merapi Eruption (2010), and other natural disasters which resulted in the cessation of teaching and learning activities. This shows that disasters cannot be avoided, but communities can be prepared to reduce disaster hazards. The importance of knowledge about disasters and disaster risk reduction from an early age is to provide understanding and guidance on steps that must be taken when a threat occurs in the vicinity to reduce disaster risk. (Pahleviannur, 2019).

Disasters can have an impact on weakening the economy and the resilience of the government. Disasters can also have an impact on the world of education. Losses to school elements such as teachers and students, teaching and learning processes, property, and provision as a result of the disaster have resulted in the future of millions of young people being threatened. The cessation of education as a result of conflict and natural disasters is the main cause of the exclusion of children and young people from the educational pathway. The negation of their right to education takes away their opportunity to develop themselves to get out of poverty and marginalization (Pereznieto & Harding, 2013). Therefore, natural disasters have an impact on children and young people. The disaster caused many schools to be damaged or destroyed. Many schools were destroyed or damaged

during the earthquake and Tsunami in Aceh (2004), Yogyakarta Earthquake (2006), Mount Merapi Eruption (2010), and other natural disasters which resulted in the cessation of teaching and learning activities. This shows that disasters cannot be avoided, but communities can prepare to reduce disaster hazards. Perceptions of disaster education are needed in aligning learning activities carried out by students (Audley & Jović, 2020).

The potential for disaster-prone areas with the implementation of education requires an in-depth study related to disaster perceptions with concrete steps in the field of developing disaster education. Alignment of learning with the environment where students live is related to the potential that arises in student interactions with the surrounding environment. The harmony of the student's living environment reflects developmental differences in social, cognitive, and metacognitive awareness in students at various developmental ages in certain schools. Overall, these findings explain the congruence and tension of the socialization of pro-social values in elementary schools, the development of values indirectly provides proportionally environmental learning for students. The implementation of disaster preparedness schools indirectly fosters preparedness in anticipation of disasters that arise in the region. The implementation of the disaster preparedness school will run optimally if it takes into account the local wisdom adopted by the people who live in it. Local wisdom in an area naturally educates residents in the area to be prepared for any potential disasters that arise.

The development of this local wisdom has not been fully processed in an academic text so that it is considered to be a local myth and it is complicated to trace the root causes of this phenomenon so that it has the potential to be forgotten by the people in the area. The implementation of disaster preparedness schools can document local wisdom in disaster-prone areas in the end it becomes a benchmark for attitudes by leading to the growth of community character to understand and care about all the potential disasters that arise therein. (Suarmika & Utama, 2017) states that in ethnopedagogy, the main element is the local wisdom of the community which is integrated into education. Local wisdom or local wisdom can be understood as a collective understanding, knowledge, and wisdom that influences a decision to resolve or overcome a life problem. Local wisdom-based disaster mitigation education can be implemented in the 2013 Curriculum by: 1) identifying local wisdom in disaster mitigation, and 2) integrating it in learning.

From an early age children are brought closer to disasters and maintain and treat the environment well, this will form children who are resilient in dealing with disasters and love the environment for a sustainable life. Disaster management from an early age can be anticipated by strengthening local wisdom which encourages the learning process carried out in student-teacher interactions. Local wisdom in the form of idioms, symbols, songs found in a disaster-prone area instills awareness of the surrounding community against natural threats that can be anticipated early on. Increased awareness from an early age is the key to the success of disaster learning (Petrović, Jeknić-Dugić, Arsenijević, & Dugić, 2020). Several studies and research results show how important the role of local wisdom is in disaster education. (Desfandi, 2014) Several studies and research results show how important the role of local wisdom is in disaster education. A culture of mitigation based on local wisdom needs to be built from an early age in every element of society to create an empowered community so that it can minimize the impact caused by disasters. In this case, mitigation is built not only as an early warning system but also as a culture in people's behavior.

Effective steps that can be taken include providing provision to the community, both through education in schools and training for the general public. Education in schools for students is very strategic for instilling knowledge about disaster from an early age and dissemination of local wisdom in the area. (Ariska et al., 2019). Schools are an effective facility, where the teacher's role in students is able to encourage the development of a culture of mitigation within the school and family. (Rusilowati, Supriyadi, & Widiyatmoko, 2015) emphasizes that local wisdom is not only in the form of moral messages, but also related to the physical. For example, making buildings earthquake resistant, using alternative energy sources, using natural materials as natural dyes, using certain

plants for medicine or cleaning, responding to natural disasters, and so on. Thus, local wisdom is very important to be used as a basis and reference for compiling the curriculum and its derivatives so that it can be internalized in every student so that they are more prepared for disasters.

(Fitrianingtyas & Rachmawati, 2019) explained that each region has disaster characteristics. Therefore, people in certain areas have more knowledge about their area and the disasters that often strike their area. In other words, local people usually have local knowledge, local wisdom in interpreting natural phenomena in their area so that they can read and predict disasters in their area. (Hidayat & Ermawati, 2022). Through activities based on local wisdom in predicting disasters, natural disaster mitigation activities will emerge in the region (Hidayat & Ermawati, 2022). This local wisdom can then be developed and integrated with learning activities in schools so that students are more sensitive and understand and more prepared in the event of a disaster.

CONCLUSION

Based on the results of the study, it can be concluded that the role of local wisdom is very important as a reference material for disaster education. Implementation of local wisdom in disaster education can be carried out using various methods or methods such as developing materials, learning resources, teaching materials, learning models, learning media, and education and learning management. Through a series of disaster education activities it is hoped that all students will be able to improve and strengthen disaster preparedness character. Therefore, disaster education based on local wisdom should be carried out at all levels of education, starting from the elementary level to the higher education level.

REFERENCES

- Arianto, B. B. (2015). *Studi Penentuan Jalur Aliran Lava Metode Steepest Slope Dari Data Dem Insar Dan Peta Rupa Bumi Indonesia (Studi Kasus: Gunung Semeru, Jawa Timur)*. Institut Teknologi Sepuluh Nopember.
- Ariska, A., Nawangsih, N., & Hidayat, Z. (2019). Dampak Penempatan Sumber Daya Manusia dan Disiplin Kerja terhadap Kinerja Karyawan Pada PT. PUTRA MOJO di Kabupaten Lumajang. *Jobman: Journal of Organization and Business Management*, 2(1), 1-5.
- Audley, S., & Jović, S. (2020). Making meaning of children's social interactions: The value tensions among school, classroom, and peer culture. *Learning, Culture and Social Interaction*, 24, 100357.
- Awaliyah, N. (2014). *Pengetahuan Masyarakat Dalam Mitigasi Bencana Banjir di Desa Penilih Kecamatan Kaligondang Kabupaten Purbalingga*. Universitas Muhammadiyah Purwokerto.
- Desfandi, M. (2014). Urgensi Kurikulum Pendidikan Kebencanaan Berbasis Kearifan Lokal Di Indonesia. *SOSIO DIDAKTIKA Social Science Education Journal*, 1(2), 192-198. doi: 10.15408/sd.v1i2.1261
- Erni Suharini, D. L. S., & Edi, E. K. D. L. S. (2015). Pembelajaran kebencanaan bagi masyarakat di daerah rawan bencana banjir DAS Beringin Kota Semarang. *Paper presented at the Forum Ilmu Sosial*.
- Fatimatujahro, R. (2015). Kearifan Budaya dalam Kata. *Metalingua: Jurnal Penelitian Bahasa*, 13(2), 273-275.
- Fitrianingtyas, F., & Rachmawati, L. N. A. (2019). *Psikodrama Berbasis Kearifan Lokal Sebagai Media Pendidikan Kebencanaan*. Paper presented at the Prosiding Seminar Nasional dan Workshop Psikologi Klinis UM.
- Hasddin, H., & Tamburaka, E. (2021). Analisis Spasial Titik dan Jalur Evakuasi Dalam Mitigasi Pengurangan Risiko Bencana Banjir di Kecamatan Mandonga Kota Kendari. *ENVIROTEK: Jurnal Ilmiah Teknik Lingkungan*, 13(2), 16-23.

- Hidayat, Z., & Ermawati, E. (2022). Urgensi Capacity Building Terhadap Resiko di Kawasan Gunung Semeru Lumajang. *Jurnal Abdi Masyarakat Indonesia*, 2(4), 1265-1270.
- Lusiana, N. A. (2021). Mitigasi Bencana Sebagai Upaya Pengurangan Dampak Bencana Banjir di Kabupaten Lamongan. UPN Veteran Jatim.
- Okmawati, M. (2020). The Use Of Google Classroom During Pandemic. *Journal of English Language Teaching*, 9(2), 438-443.
- Pahleviannur, M. R. (2019). Edukasi Sadar Bencana Melalui Sosialisasi Kebencanaan Sebagai Upaya Peningkatan Pengetahuan Siswa Terhadap Mitigasi Bencana. *Jurnal Pendidikan dan Ilmu Sosial*, 29(1), 49-55.
- Pereznieta, P., & Harding, J. H. (2013). *Youth and international development policy: the case for investing in young people. ODI Project Brief No, 80.*
- Petrović, I., Jeknić-Dugić, J., Arsenijević, M., & Dugić, M. (2020). Dynamical stability of the weakly nonharmonic propeller-shaped planar Brownian rotator. *Physical Review E*, 101(1), 012105.
- Purba, A., Sumantri, S. H., Anwar Kurnadi³, Raka, D., & Ango, K. A. (2022). The capacity of Affected Communities to Manage Disaster in the Eruption of Mount Semeru. *International Journal of Arts and Social Science*, 5(6), 161-.
- Purnomo, A. D. (2021). Evaluasi Kesesuaian Kawasan Permukiman Korban Erupsi Gunung Merapi Menggunakan Sistem Informasi Geografis. Sekolah Tinggi Pertanahan Nasional.
- Purwoko, A., Sunarko, S., & Putro, S. (2015). Pengaruh Pengetahuan Dan Sikap Tentang Resiko Bencana Banjir Terhadap Kesiapsiagaan Remaja Usia 15–18 Tahun Dalam Menghadapi Bencana Banjir Di Kelurahan Pedurangan Kidul Kota Semarang. *Jurnal Geografi: Media Informasi Pengembangan Dan Profesi Kegeografian*, 12(2), 214-221.
- Puspita, D., & Pranoto, B. E. (2021). *The Attitude of Japanese Newspapers in Narrating Disaster Events: Appraisal in Critical Discourse Study. Studies in English Language and Education*, 8(2), 796-817.
- Rusilowati, A., Supriyadi, & Widiyatmoko, A. (2015). Pembelajaran Kebencanaan Alam Berbasis SETS Terintegrasi dalam Mata Pelajaran Fisika Berbasis Kearifan Lokal. *Jurnal Pendidikan Fisika Indonesia*, 11(1), 42-48. doi: 10.15294/jpfi.v11i1.4002
- Septikasari, Z., & Ayriza, Y. (2018). Strategi Integrasi Pendidikan Kebencanaan Dalam Optimalisasi Ketahanan Masyarakat Menghadapi Bencana Erupsi Gunung Merapi. *Jurnal Ketahanan Nasional*, 24(1), 47-59. doi: //dx.doi.org/ 10.22146/jkn.33142
- Suarmika, P. E., & Utama, E. G. (2017). Pendidikan Mitigasi Bencana Di Sekolah Dasar (Sebuah Kajian Analisis Etnopedagogi). *Jurnal Pendidikan Dasar Indonesia*, 2(2), 18-24.
- Tahmidaten, L., & Krismanto, W. (2019). Implementasi Pendidikan Kebencanaan di Indonesia (Sebuah Studi Pustaka tentang Problematika dan Solusinya). *Lectura: Jurnal Pendidikan*, 10(2), 136-154.
- Zainal, A. (2021). Dampak Pertambangan Emas Tanpa Izin (Peti) Terhadap Lingkungan dan Masyarakat Desa Lalar Liang Kecamatan Taliwang Kabupaten Sumbawa Barat. Universitas_Muhammadiyah_Mataram.