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Disaster Education for Mitigate Nature Disaster at School

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Abstrak

Bencana alam termasuk banjir, perubahan iklim, longsor, dan bencana angin topan masih belum bias diatasi dalam kehidupan manusia. Hal tersebut berdampak buruk termasuk masalah sosial dan ekonomi sebab bencana alam berdampak terhadap kehilangan harta. Penelitian ini bertujuan untuk menemukan beberapa aspek bencana pendidikan untuk mitigasi bencana ekologis yang meliputi simulasi bencana, kurikulum, dan peningkatan laju pengetahuan dan keterampilan siswa. Metode yang digunakan adalah literature review dimana beberapa literatur dari berbagai sumber dikumpulkan dan mencoba untuk membuat beberapa kesimpulan dan melakukan perbandingan. Hasil penelitian menunjukkan bahwa simulasi dalam bencana mampu meningkatkan kemampuan siswa untuk lebih waspada saat terjadi bencana karena siswa terlibat dalam tindakan nyata untuk mitigasi bencana. Selain itu, sekolah memiliki peran yang sangat penting dalam mitigasi bencana karena merupakan tempat untuk memiliki pengetahuan, materi, dan komunikasi serta transformasi pengetahuan. Meski harus didukung oleh guru yang memiliki keterampilan untuk membuat siswa lebih paham tentang materi kebencanaan serta dorongan dari orang tua di rumah. Terlebih lagi, sekolah harus meningkatkan pengetahuan siswa karena mendorong kesadaran siswa. Pada saat tingkat kesadaran dapat meningkat, hal itu berdampak pada pelepasan tindakan untuk menghadapi bencana

Kata kunci: *Pendidikan, Bencana, Pengetahuan, Sikap, Simulasi*

Abstract

Nature disaster including the inundation, climate change, land sliding, and hurricane disaster still combat the human life. It has detrimental impacts including social and economic issues. The goal of this research to discover some aspects of education disasters to mitigate ecology disasters including simulation of disaster, curriculum, and rise in the rate of knowledge and skill. The method used is a literature review where some literature from numerous sources are collected and tries to create some conclusion and comparison. The result shows that simulation in a disaster is able to increase the capacity student to be more aware when a disaster occurs because the student involves in real action to mitigate disaster. Moreover, the school has a pivotal role to mitigate disaster because it is a place for having knowledge, materials, and communication as well as the transformation of knowledge. Despite they have to be supported by the teacher who has the skill to make students more comprehend about materials of disaster and also boost by the parents at home. What is more is, schools have to increase the student knowledge because it encourages the awareness of student. As the consciousness level can scale up, it impacts to release of the action for facing disaster.

Key words*: Eduation, Disaster, Knowledge, Attitude, Simulation*

INTRODUCTION

Indonesia is an archipelagic country that has about 13,500 islands. Is a country that is in tropical latitude climate that makes it vulnerable or at risk of disasters caused by the dynamics of the atmosphere of tropical storms. Being in a subduction zone or encounter between the Eurasian and Pacific Plate making it prone to earthquakes and has many volcanoes due to the formation of two mountainous paths of the world that is the Pacific Circum and Sirkum Mediteranian with morphology of the hills, this makes it at risk of landslides and volcanic eruptions (Kastolani & Mainaki, 2018). Indonesia is a country that is in the path of the most active earthquake in the world because it is surrounded by the Pacific Ring of Fire and are on top of three continental plates colliding, namely, Indo-Australia from the south, Eurasia from the north, and the Pacific from the east. This geographical condition on the one hand makes Indonesia an area prone to volcanic eruptions, earthquakes and tsunamis (Rosadi et al., 2020). Even Indonesia is one of the countries that has areas that are vulnerable to disasters including earthquakes. In 2016, Indonesia was included in the top 5 countries with the highest number of events, which contributed 30.1% of the total disaster events in the world (Pontjosudargo, 2021).

Then, snatural events that cause damage and loss to humans include earthquakes, tsunamis, floods, robb floods, landslides, hurricanes, hurricanes, all unscheduled and planned natural events, they come suddenly and are devastating. Everything in front of him. The earthquake in West Sumatra that occurred on September 30, 2009 with a magnitude of 7.6 on the ricter scale has caused hundreds of thousands of damage to buildings and claimed the lives of thousands of humans and livestock, material and immaterial losses are immeasurable (Suhardin, 2021). Based on what Indonesia has previously described as a country that has a high degree of vulnerability to disasters, whether disaster caused by the dynamics of lithosphere, hydrosphere, atmosphere and technological failure, the need for awareness of the people of Indonesia with regard to disaster mitigation. Growth of this awareness can be done through education and talk about education is not separated from the school as a formal educational institution in Indonesia (Kastolani & Mainaki, 2018).

Furthermore, environment ecology has been devastated by the human activity including the forest zone has been transformed to other function including housing and agriculture area. It lead to ecology disaster like the inundation and drying in the long term. It can be exacerbated by eliminating rice paddy field, this area has been altered for housing area. It results to increase nature disaster including flooding in cities in rural areas. As a consequence as, the inhabitant receives drawbacks such as reduced subsistence because the income sources must be hampered due to the place for having the income has been destroyed. For example, as there is an inundation in cities area, it effect trade activity where the people are unable to run their businesses properly. The other detrimental effect are house and infrastructure devastated, economic disturbance, losing entire wealth, economic issues including vanishing income region and the cost for reduction of the drawback of disaster (Oktari et al., 2022). Even it result to increase the number of casualties when nature disaster combat the life as the clue that preparation and readiness still low because the lack of concern and knowledge in this phenomena (Hidayat, 2008). It is related to the human can be aware of disaster and motivate to create the prevention and resilience to nature disaster (Narayanan SP, Rath H, Mahapatra S, 2023).

In addition, it is also indicated that it is related to the shortage of preparedness in multi-stakeholder (Hadi et al., 2019). Nature disasters able to occur when the children at home, school, when they with their family. It is crucial as the children include in a plan rescue for disaster and recognize what they do when disaster occurs (Rahiem & Rahim, 2020). What is more is Several factors are the main cause of the emergence of many victims of the consequences disaster is due to lack of public knowledge about disaster, thus causing less alert and ready in anticipation of disaster the. Women and children are vulnerable members of society and high risk of disaster. One of the reasons for the lack public knowledge of disaster mitigation because of knowledge about disaster has not yet been included in the education curriculum in Indonesia (Fakhrurrozi, 2021). Based on these issues, It is pivotal to

release education disaster for the student at school. Education disaster can be defined as one endeavor to prefer the student to reduce the risk of disaster (Logayah et al., 2022).

Furthermore, disaster education is a process that includes the period before, during and after disasters. Each process has its steps, and each is important in its own way. Undoubtedly, individuals and society should be educated about disaster processes to prevent losses, especially human life, or minimise the damage (Avcı & Prof, 2022). The ultimate purpose of disaster education is to enable students to understand the relationship between natural disasters, the environment, and human beings; cultivate awareness of disaster prevention and reduction; make correct judgments and take measures to protect their safety when facing disasters; and train them for emergencies and to aid mutual escape (Su & Wang, 2022). School is sources of knowledge and school able to improve student knowledge and skill to mitigate disaster. Teacher has capacities to increase the student to overcome nature catastrophe through developing physicological respon including dealing with disaster (Logayah et al., 2022). Formal education is an effective method to provide education through combination materials into curriculum. One example that it can do is to combine science learning and disaster (Prihastyanti et al., 2020). To achieve this mitigation, education disasters have to blend the communities at school such as parent, teacher, student, and the people who live in school environment.

As education disaster successful in implementation level, it scale up the rate of understanding and resilience to disaster (Yusuf et al., 2022). Awareness, education and preparedness can encourage communities to combat the detrimental effect of disaster. It is well fact that as the school is good quality will bring success to solve the nature disaster (Matunhay, 2022). It is boosted by other perspective to reveal that awareness is crucial through school to solve the disaster despite to mitigate disaster through school has not released well (Siti Irene Astuti, Coloma Pastora, Edylen Aquino, Suwarjo, Dyah Respati, Sudaryono, 2015). It must be boosted by the government where the policy from government impact to all resident at school (Yusuf et al., 2022b). One method that can mitigate disaster through school can reach through school watching and town to scale up the understanding and education of disaster in early age (Setyowati et al., 2023). Based on this previous finding, the research continue to find out some strategy for mitigating nature disaster through education at school and the obstacle that school confront when applicate disaster education at school.

METHOD

The topic of this research is stimulating agriculture education in early childhood exert literature studies. A literature review is a surveys scholarly articles, books and other sources relevant to a particular issue, area of research, or theory, and by so doing, providing a description, summary, and critical evaluation of these works (Ramdhani et al., 2014). Literature reviews play an important role as a foundation for all types of research. They can serve as a basis for knowledge development, create guidelines for policy and practice, provide evidence of an effect, and, if well conducted, have the capacity to engender new ideas and directions for a particular field (Snyder, 2019). A literature review article provides a comprehensive overview of literature related to a theme/theory/method and synthesizes prior studies to strengthen the foundation of knowledge (Paul & Criado, 2020). A literature review is an excellent research methodology. For example, a review can synthesise research findings and identify areas where more research is needed, thus providing the basis for a conceptual model, and informing policy and practice. However, despite their potential, the contribution and knowledge development of literature reviews are often weak.

Time and again, literature reviews provide only a summary of descriptive statistics that does not facilitate knowledge development or inform policy and practice (Snyder, 2023). To achieve these goals, researchers are advised to plan and execute the literature review carefully. The guidance in this editorial provides considerations and recommendations that may improve the quality of literature reviews (Maggio et al., 2016). The identification and selection process includes search and retrieval of publications and the development and

application of inclusion and exclusion criteria to select the publications that will be abstracted and analyzed in the final review. Literature identification and selection for overviews of the methods literature is challenging and potentially more resource-intensive than for most reviews of empirical research (Gentles et al., 2016). It will involve writing and citing what has been found while reading, summarising, compiling, analysing and interpreting the findings from previous studies and making a case for future research agenda. This makes the writing and citing aspect of the literature review overarching activities. Together, they form a continuum of scientific procedures that are carried out throughout the entire literature review process (Chigbu et al., 2023). They can be put into descriptive information (e.g. authors, year of publication, topic or type of study), or in effects and findings format, conceptualizations or theoretical perspective.

Additionally, it is better to avoid any differences in coding and monitoring the data abstraction carefully during the review process in order to ensure quality and reliability. Researchers should ensure that their literature is appropriate to answer the selected research question (Alsalami, 2022). In this research, the researcher investigate in numerous of article regarded disaster education in student at school. There are some factor in this research will obtain including whether the curriculum has involved in school for mitigating the disaster and stimulation that it impact to improve the behavior of student at school toward disaster. Then, the researcher will gather information in some paper sources such as the condition and the action that it can boost the knowledge, skill and awareness of student. Lastly, to identify some supporter namely teacher, family and the communities at school to mitigate and strengthen the student for overcoming the nature catastrophe. After discovering the variable in some article, the content will be compared and get the conclusion each of article. Furthermore, these finding must be tightened by other finding to make it more better.

RESULT AND DISCUSSION

In school areas, the effort to combat disaster can conduct through several action such as increasing the knowledge, providing the space area for mitigating nature disaster, supporting physicological condition for the student, preparing the area and facilities for the student in reducing disaster (Setiadi, 2014). Schools and early learning communities design educational programs within a context informed by curriculum frameworks, professional standards and contemporary evidence-based, good practice to learning and teaching. In addition to teachers and educators, organisations engaging with young people in schools should also take into consideration this context when developing a DRE program or activity (AIDR, 2021). There are some aspect that must be pay attention to reduce the risk of disaster through school including (1) strong initiative to conduct self-initiated DRR education for all students; (2) modification of infrastructure and learning environment to accommodate children with special needs and other students; (3) broadening learning methods in DRR; (4) child empowerment and meaningful participation; (5) school management awareness and strategies for conducting DRR; and (6) extensive stakeholder involvement within disaster mitigation education (Rofiah et al., 2021). The other perspective about this is there are some step at school where education disaster must be involved including combination disaster education with curriculum, learning from expert, laboratory and field trips (Suroso et al., 2022).

The other strategy to increase the ability of student at school must be integrated it with disaster preparedness school such as involving education disaster in numerous of subject, and extracurricular activity which exist at school as well as giving deserve training including right participant, the subject that relates to a local disaster, functional modules, good time setting, monitoring equipment, done routinely and systematically, and also involving the whole stakeholder (Kurniadi & Bahar, 2020). The curriculum was designed to build on simple introductory concepts that progressively became more challenging, interactive, and immersive. Lectures transitioned to skill stations reinforcing important concepts which then transitioned to full on immersive disaster simulation scenarios executed by an interprofessional group of subject matter experts providing immediate feedback on the

strategies utilized by the students during the debriefing period (Gable et al., 2021). The educational activities that are carried out through the the curricula in schools are effective measures to emphasize the importance of reducing the risk of natural disasters, because working with children, the knowledge is being spread to their families also. Climate change and measurable increase in the number of natural disasters around the world can change that perception, especially because they cause significant damage to the infrastructure, and even represent a threat to national security (McCowan, 2019).

On the contrary, It face to hurdle when disaster education include in curriculum because lack of resources and shortage of plan as guide for application (Mutasa & Africa, 2018). The literature study of the national curriculum document in schools shows that disaster education is integrated into the curriculum sich as learning in elementary schools uses a thematic learning approach according to factual conditions in the field, such as learning related to disasters. Students are expected to have competencies that can preserve the environment wisely and responsibly (Ridha et al., 2022). Moreover, to solve this disaster must be conducted through disaster simulation at school. This study concluded that there was an effect of simulation methods and picture books on increasing student knowledge about earthquake preparedness (Ratchna et al., 2019). The disaster simulation method provides the opportunity and experience for students to be able to directly apply the theories obtained in class to situations that are made as closely as possible with disaster conditions (Fatmawati et al., 2020). The objective of disaster simulation is to enable the school community to carry out the disaster emergency response procedures and to ensure that the school's citizens have good preparedness in the face of disaster. Disaster simulations have proven to be effective as a disaster education integration strategy (Septikasari, 2018).

Disaster preparedness simulation activities are activities that prepare nursing students to be able to know their role in disaster management and to practice skills in communicating, collaborating, understanding characters, being responsible, and skilled in conflict management. This method can be recommended for nursing institutions as one of the learning methods combining with theoretical and practical fact-based fieldwork (Andriyanto & Hidayati, 2021). The simulation model gave the decision-makers an opportunity to quantify and visualize the consequences of their decisions. In addition, it helped them in making the decisionmakers forced to discuss with other responsible individuals (M Malaekah et al., 2022). The primary purpose of this simulation was to examine the community's capacity to deal with certain incidents, analyze individual groups' ability and readiness to collaborate and respond to emergencies, and discuss the roles, duties and anticipated actions of various organizations (Wijaya et al., 2022). Disaster learning does not stop at preventive action, but must introduce post-disaster management methods. Students have the understanding to be active, proactive and creative which is needed to build a culture of Disaster Risk Reduction for long-term mitigation purposes. Perceptions of objective knowledge of disaster events still need to be strengthened in students (Atmojo, 2021).

Moreover, to reduce disaster through school must be improved by refining the knowledge, perception, and skill. There is related among of this components, the knowledge can be capable to strengthen perception as well as the perception predict skill. The appropriate perception as the major factor to release the behavior (Vu et al., 2023). The disaster knowledge content must be able to provide in-depth information to be given to anyone in the face of natural disasters that will occur at any time. The disaster knowledge content is called disaster mitigation. Disaster mitigation is conceptual that was developed to provide knowledge in early prevention in dealing with natural disasters, both before, during, and after natural disasters with the main objective being to reduce and minimize the risks and impacts of a disaster that is happening (Noviana et al., 2020). Disaster knowledge is an ability to remember events that disrupt people's lives, both by natural and non-natural factors and human factors that can result in casualties, environmental damage, loss of property, and psychological impacts (Noviana et al., 2023).

There are some finding to tighten this perspective such as most respondents agree that disaster education has a role to build knowledge about disaster mitigation in the

community and also to minimize casualties in the natural disaster, most of the respondents agree that the materials that should be given to the education of disaster include materials related to natural sciences, social sciences, and geography, most respondents agree that disaster education is not only the responsibility of National Disaster Management Authority but also schools, Most respondents agree that disaster education should be taught by all teachers and parents and most respondents agreed that disaster education should be a part of the Primary School curriculum (Atmojo, 2021). When the knowledge has been improved through school, it result to encourage the knowledge and skill as well as the consciousness of the student. Also, progress in improving knowledge about disasters can be implemented within school programs, where a particular subject would be introduced that would deal with the study of content related to this issue. By showing the content through multimedia, students would be faced with real situations and the harmful effects of disasters and instructed how to react adequately and act in such situations (Krnjić & Cvetković, 2021). Skill, knowledge and awareness are some point to support the student able to mitigate the nature catastrophe. Before taking the action, awareness is crucial. As the student aware about disaster, they will solve the problem before receiving the drawback of disaster.

Disaster awareness education can be performed early on through disaster preparedness education at school so that children can be aware of ways to escape them from danger during a disaster (Indriasari et al., 2018). Education consciousness has the capacity to mitigate for surviving toward disaster if they understand nature catastrophe and are able to create a decision when a disaster occurs because when this situation combats them, their parent is far away from them (Ferreira et al., 2016). Therefore a teacher must be good at choosing interesting learning methods or models so that in the learning process, students become more enthusiastic while participating in the learning and teaching activities (Asiah et al., 2023). Given the existing content of natural disasters in the curriculum, as well as in geography textbooks in which mainly deal with natural processes and partly their consequences, we conducted a survey of school-aged children which included checking of acquired knowledge, perception of risk of seismic hazard and response to a specific disaster (Panic et al., 2013). The problem that arises is the students' low knowledge of natural disasters. Meanwhile, there are many disasters that must be anticipated in everyday life. This resulted in many students not being able to cope with the disaster. Knowledge concept on disaster mitigation is crucial; therefore, it should be more detail to add students' insight. In turn, it will be expected to be realized in the form of students' disaster preparedness behaviors thus improving the capacity that could reduce disaster risks (Susanto et al., 2021).

It is time for teachers to think about disaster management to provide information through lectures because pedagogy always has a crucial role in transmitting knowledge and learning competencies. In addition, the community can determine in school disaster education, and students can participate in school activities and community organizations. This activity can help students to build good relationships with the community (Bada, 2022). According to some studies, effective measures for greater productivity and achieving the desirable standards of education for vulnerable people such as evaluating the pathology of existing educational activities for children, surveying educational work, recognizing successful and effective activities for children, involving the elites and thinkers concerned with the issue, changing the ways of education and culture, drawing up a vision document and act accordingly with educational standards, insisting on the continuity of programs, and using educational technology experience (Narayanan SP, Rath H, Mahapatra S, 2023).

Education will help to spread awareness of the significance of disaster management and preparedness for these catastrophes so that students can help their family members and friends meet the challenges head-on, also, students from construction major will build inherent cautiousness for disaster this way which will help them later as design and construction engineers and construction leaders in their practical field of work. However, to justify the findings of this literature review study, this study recommends conducting a related survey among students from different construction programs (Nipa et al., 2020). Teachers

are only facilitators in this learning. The teacher's explanation is only when needed, for example at the end of this activity the learner formulates a conclusion that means the problems that arise at the beginning of the learning should be answered, but the students still ask a lot to come here and the class is a little noisy. This is a sign that students still do not understand the concept that we teach so it needs a teacher explanation (Ayub et al., 2021). Education will run well if all components work professionally. The teacher is an important component in the world of education. Education will run well if teachers have adequate teaching competencies. One of the professional teacher competencies is in choosing the most appropriate learning method for students (Benardi et al., 2021).

CONCLUSION

Based on this finding, Student as the susceptible person to disaster typically who they school in prone areas. School have to place to encourage the student to solve disaster because at school, every student has potential to receive the material of science, teaching and knowledge. Then, student able to overcome disaster as the student has skill and knowledge to understand the disaster as well as the student can escape because they provide readiness and preparedness. As the student has the skill, they can mitigate disaster when they far away from the parent. It must be supported by environment at school to increase the capacity of the student in mitigating ecology disaster such as parents, teacher, and the society around. Beside that, it will be valuable as the education disaster include in teaching curriculum and involved it in some materials. Furthermore, simulation disaster as the crucial method to support the student aware about disaster because they include directly in simulation like undergoing immediately disaster. The goal of this simulation to scale up the consciousness when disaster occure.

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