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MORALITY BEFORE KNOWLEDGE

A review of disaster mitigation analysis in learning

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ABSTRACT
Education has a role in building character and community disaster response through learning in schools. Learning that is integrated with disaster mitigation is one of the efforts to develop the soul (character) to have disaster preparedness. This is important to reduce the impact of the disaster. This study aims to present information related to disaster mitigation techniques on the lessons that have been carried out. through a literature review of 7 articles on the Google Scholar database with limitations for 2019-2023. The article search method begins with Harzing's publish or perish software. The results of the research based on the 7 articles that have been reviewed show that the integration of disasterpreparedness learning towards disaster preparedness with various levels of education integrated into learning materials using a structured learning model and updates according to the year the journal was published.

KEYWORDS: disaster mitigation; learning; review literatur

1.Introduction
According to the Emergency Events Database, the frequency of natural disasters has increased in recent decades. These disasters include floods, earthquakes, sandstorms, epidemics, and man-made disasters such as industrial accidents and terrorist attacks. In addition, in the same report, there were several events such as heat waves, droughts, forest fires, and monsoon floods in July and August. In the CRED Crunch 2022 newsletter, the EM-DAT disaster database lists 187 natural disasters in 79 different countries. According to available data, at least 6,347 people died, 50 million people were affected, and it is estimated that the total damage will exceed USD 40 billion in 2022. These estimates are lower than the 2002-2021 average, which is explained by impact data of major disasters such as the Haiti earthquake January 2010 with 222,000 deaths.

Disaster is an event or series of events that threatens and disrupts people's lives and livelihoods caused both by natural factors and/or non-natural factors as well as human factors, resulting in human casualties, environmental damage, loss of property, and psychological impacts. Unpreparedness in dealing with disasters, especially in areas with high economic value, will cause enormous losses (Nursyabani *et al., 2021*). Disasters have caused economic losses of around $450 million over the past three decades (OECD, 2024).

Topics related to disaster prevention and preparedness have been widely studied. This is due to the impact of natural and non-natural disasters that are quitelarge for life. In addition, the investment that is currently the focus of the government and society is in two phases, namely the crisis management phase andthe general resilience phase (de Vet *et al.,* 2019). Historically, international emergency preparednessefforts began in the 1950s and

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focused on disaster events rather than building disaster-resilient communities (Saifudin *et al.,* 2021). Permanent and integrative reduction of the impact of disasters can be done through disaster education. Actions to protect and present information about disaster hazards and risks are part of the material content in disaster education. Disaster knowledge integration activities will provide habituation to safety practices for the community in all forms of action. To build a culture of safety and community response to disasters, Disaster Risk Reduction and Prevention Education must be designed in an effective and integrated manner.

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Based on constitution of the state of the Republic of Indonesia no. 24 of 2007, education, training, counseling, and skills in managing disaster management must be obtained by everyone, both in conditions where there is no disaster or when there is a potential for disaster. Through education, it is hoped that disaster-related introduction as an effort to reduce disaster risk can be maximized, namely by integrating disaster education into the school curriculum as well as into extracurricular activities. Awareness of disaster education is needed to coordinate learning activities carried out by students (Audley & Jović, 2020). Disaster education can be integrated into several subjects (Saraswati *et al.,* 2021). Main subjects can be integrated into disaster preparedness education at the elementary level (Pranajati, 2022). Disaster disaster education can be integrated in geological subjects.

Learning can be interpreted as a system or topic learning process that is planned or compiled, implemented, assessed by students in a systematic manner sothat students can achieve learning goals effectively and efficiently (Faizah, 2017). Learning that is integrated with disaster mitigation is one of the efforts to develop the soul (character) to have disaster preparedness. Many schools located in disaster-prone areas have started to build disaster preparedness schools. This development starts with the integration of the character of disaster preparedness in the curriculum andthe improvement of disaster response in the existing resources at school.

The purpose of this literature review study is to present information relatedto the technical integration of disaster mitigation in the studies that have been carried out, so that it can enrich the body of knowledge and science and increase disaster preparedness.

2. Methods

The research method used is literature review by reviewing literature and journal articles from various original research. Using the literature search method from the Google Scholar database with 2019-2023 limitations. The article search method begins with Harzing's publish or perish software with the keyword's awareness, disaster, mitigation, and education.

The articles found were then subjected to screening for titles and abstracts using VOS Viewer software: the intended inclusion criteria were: 1) contained integrated techniques for disaster risk reduction, 2) study design in learning, 3) fullarticles could be accessed and

downloaded (full article). Selected articles undergo independent critical evaluation to determine the appropriateness of the article content.
Based on the results of article analysis, 7 articles were obtained that met thecriteria with the PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analyses) technique used to search for and select articles in this study.

3. Results and Discussion

Based on a literature search on Harzing's published or perish limited software for 2019–2023 on the Google Scholar database, more than 1,000 articles were searched based on keywords. From a total of 1000 articles, the authors selected based on integration into learning and produced 7 articles that met the author's criteria.

Then 7 articles were filtered by reading the title, keywords using VOS, as well as abstracts and articles that met the inclusion criteria. The results of using the VOS application show that this article has the same interests and discussion.

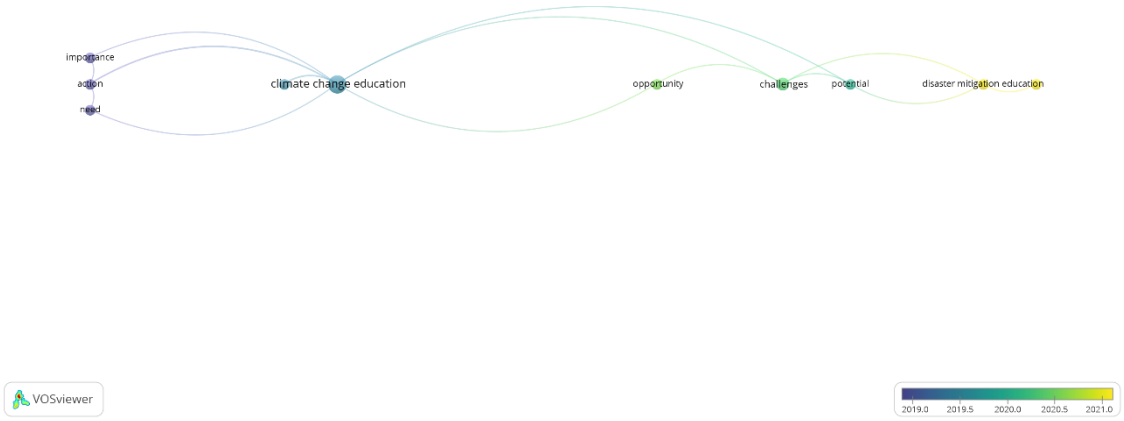

Fig 1. VOS results reading titles and keywords
(Source: Research analysis, 2023)

Table 1. Summary Literature Review

Code	Year	School level	Method / learning model	Technical
J1 (Proulx & Aboud, 2019)	2019	Kindergarten	Disaster Risk Reduction (DDR) Program	The study uses a quasi-experimental evaluation design, examines the short-term impact of preschool-based DDR programs
J2 (*Noviana et al.*, 2019)	2019	Elementary school	KOASE Comic	Learning is carried out using quasi-experiments with a graphic design group, then conducting a knowledge test at each elementary school
J3 (*Gunawan et al.*, 2019)	2019	University	Disaster Simulation	Learning is carried out by telling stories and disaster simulation guided by

				the Indonesian Red Cross (PMI)
Code	Year	School level	Method / learning model	Technical
J4 (Yeon et al., 2020)	2020	Elementary school - senior highschool	Discussion, reading, listen, hypermedia, activities, and game	Holding earthquake disaster classes for 4 months, which were explained by professors and alumni and conducting surveys of cognitive and emotional responses
J5 (Nipa *et al*., 2020)	2020	University	Curriculum	Learning is in the form of comprehensive research related to disaster preparedness for students and provides strategies for disaster preparedness in the course curriculum program
J6 (*Rahmayanti et al*., 2021)	2021	Elementary school	Environmental learning	Learning is carried out measuring various levels of preparedness for disaster mitigation and seeking information
J7 (*Righi et al*., 2021)	2021	Elementary school - senior highschool	Curriculum and training EmTASK	Learning by facilitating knowledge and experience gained during disasters and increasing preparedness to address disaster risks

(Source: Research analysis, 2023)

Based on the results of the 7 articles that have been reviewed, the researcherstates that there is an integration of disaster preparedness and disaster preparedness in the learning process. Each journal has different criteria and integration techniques in learning both in terms of the method or model used. Of the 7 articles, both in terms of school level, they have implemented disaster preparedness which aims to implement disaster mitigation, both natural and non- natural disasters, in learning material using a structured learning model and updates according to the year the journal was published.

Several studies link local wisdom to provide culturally appropriate disaster preparedness training in the community. This integration technique makes knowledge related to disaster mitigation and disaster preparedness more understandable to students. This is increasingly supported by the integration of the SETS (Science, Environment, Technology and Society approach because there is an Environment (community) concept in the learning activities carried out. Disaster risk reduction is a series of activities that canbe predicted in the event of a disaster, by organizing and taking appropriate and effective disaster management measures. The aim of disaster reduction is to prevent disaster risk, reduce community vulnerability, mitigate the consequences of disasterrisk, and cooperate with the environment (De Leon & Pittock, 2017).

The simulation method is a way of presenting learning experiences based onsituations of understanding certain concepts, principles or skills, and simulation can increase imagination in learning, especially for elementary school children with an emphasis on discussion and deepening interaction and communication in group learning. Simulations have also been shown to increase engagement and allow participants to actively participate in simulations (Amri et al., 2018).

The simulation method seems to describe the situation and improve thinking and memory (Pandie & Manapa, 2021). The type of simulation that can be carried out in the preservationof disaster pedagogy is social drama because social drama presents a series of participants who must be involved in social interactions to solve social problems (Muskita et al., 2022). Deng et al (2022) Education agencies must develop disaster training, especially in disaster-prone areas. Disaster education aims to reduce disaster risks, including thepossibility of disasters and the history of disasters in the area, forms of anticipation, additional information, and awareness of signs of disaster, its impact on individuals,families and communities, opportunities for treatment with disasters, how to save oneself, how to survive in a disaster situation (Gina, 2017).

4. Conclusions

The application of disaster mitigation education in the world of education isreally needed, which needs to be implemented in several disaster mitigation simulation activities and disaster education, so that early learning can reduce the risk of panic and build disaster preparedness character. Based on the analysis of 7 articles, both in terms of school level, they have implemented disaster preparedness which aims to implement disaster mitigation, both natural and non-natural disasters, which are integrated into learning materials using a structured learning model and updates according to the year the journal was published.

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The authors declare no conflict of interest.

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