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PROMOTING PRO-ENVIRONMENTAL BEHAVIOR THROUGH DISASTER EDUCATION

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Abstract

Disaster education has a strategic role in encouraging pro-environmental behavior by increasing public awareness of the relationship between human activities, disasters, and environmental sustainability. This study discusses various strategies for implementing disaster education, including integration into the formal curriculum, strengthening extracurricular programs, community involvement, utilization of technology, and policy support. With a comprehensive approach, disaster education can be an effective tool in forming a society that is more prepared for disasters and more environmentally conscious. Support from various stakeholders, such as the government, educational institutions, non-governmental organizations, and the private sector, is essential to ensure the sustainability of this program. Evaluation and monitoring are also important factors in increasing the effectiveness of disaster education. In conclusion, disaster education is not only a mitigation tool but also a strategy in building pro-environmental awareness and behavior for the sustainability of the ecosystem and the welfare of future generations.

Keywords: Disaster education, pro-environmental behavior, technology, education policy

INTRODUCTION

A healthy and sustainable environment is an important aspect in the sustainability of human life. However, in this modern era, various human activities have caused significant environmental degradation, such as deforestation, air and water pollution, and increasingly extreme climate change (Vadivarasi, 2017). In this context, education is one of the effective tools in instilling sustainability values and building environmental awareness, especially through a disaster education approach.

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According to Lane et al., (2023) natural disasters such as floods, earthquakes, forest fires, and landslides are often triggered or exacerbated by human activities that are not environmentally friendly. For example, uncontrolled deforestation can increase the risk of floods and landslides, while high greenhouse gas emissions accelerate climate change and increase the frequency of hydrometeorological disasters. Therefore, understanding the relationship between human activities and disaster impacts is essential to shaping pro-environmental awareness and behavior.

Disaster education not only focuses on disaster mitigation and response efforts, but can also be used to encourage environmental awareness (Yusuf et al., 2022). By integrating environmental education materials into the disaster education curriculum, individuals can understand how their actions contribute to disaster risk and how they can adopt more sustainable behaviors to reduce negative impacts on the environment. This education can be taught from elementary school to college, so that character building and environmental awareness can begin early.

Efforts to implement disaster education as a means of promoting pro-environmental behavior can be done in various ways. One approach that can be used is to strengthen education in schools by teaching the relationship between human behavior and disaster risk. Through various learning activities such as discussions, experiments, and field practices, students can gain direct experience of how their actions impact the environment. In addition, disaster training and simulations can be conducted to provide a practical understanding of environmentally based mitigation methods, such as reforestation of landslide-prone areas or wiser management of water resources (Motevalli et al., 2024).

Outside the school environment, public awareness campaigns also play an important role in increasing public understanding of the relationship between the environment and disasters. Social media, seminars, and workshops can be effective means of disseminating information about how human lifestyles and behaviors can affect environmental sustainability and increase disaster risk. By involving the community in community-based education programs, awareness of the importance of maintaining ecosystem balance can be increasingly instilled widely (Tan et al., 2023). In addition, active community participation in various environmental conservation activities is also a concrete step in forming pro-environmental behavior. Through involvement in reforestation, waste management, and carbon emission reduction programs, the community can feel the direct benefits of the actions

they take. Thus, disaster education is not only a preventive effort against the impact of disasters but also a means to instill positive habits in preserving the environment.

However, there are several challenges in implementing disaster education to encourage pro-environmental behavior. One of them is the lack of resources and supporting facilities in the education system, which often becomes an obstacle in implementing holistic educational programs. In addition, the lack of public awareness of the importance of environmental education can also be an obstacle, especially in areas that do not yet have access to adequate information. To overcome this challenge, cooperation is needed between the government, educational institutions, and non-governmental organizations in creating more effective strategies in delivering disaster education that is integrated with environmental education.

With increasing global attention to the issues of climate change and sustainability, the opportunity to develop disaster education as a tool to promote pro-environmental behavior is increasingly open. Various international policies and initiatives have begun to emphasize the importance of a holistic approach in addressing environmental problems, including through a more inclusive education system (Huang, 2016). Therefore, stakeholders in various sectors need to collaborate to ensure that disaster education is not only oriented towards disaster mitigation and response but also as a means to form a generation that cares more about the environment. Disaster education is a very important tool in shaping pro-environmental awareness and behavior. By understanding the relationship between human activities and disaster risk, individuals can be encouraged to adopt more environmentally friendly practices. Therefore, a systematic strategy is needed to integrate disaster education with environmental education in order to create a society that is more aware and responsible for environmental sustainability. With the support of various parties, it is hoped that this education can have a significant positive impact in building a civilization that is more harmonious with nature (Bradley et al., 2020).

RESEARCH METHOD

This study uses a literature review method that aims to collect, analyze, and synthesize various relevant sources regarding disaster education and pro-environmental behavior. The literature review was conducted by searching scientific journals, books, research reports, and policy documents that discuss the relationship between disaster education and the promotion of pro-

environmental behavior. The sources used were selected based on their relevance and credibility to ensure the validity of the information obtained. In this study, the analysis was conducted by comparing various findings from previous studies to identify trends, challenges, and recommendations in integrating disaster education into pro-environmental behavior promotion strategies.

This approach allows research to gain deeper insight into the effectiveness of disaster education in shaping public awareness and action towards environmental sustainability. The results of this literature review are expected to provide a strong theoretical basis for the development of more effective education policies and programs in supporting disaster mitigation efforts and environmental conservation.

RESULT AND DISCUSSION

Disaster Education Analysis in Increasing Environmental Awareness

Ozkazanc, S., & Yuksel, U. D. (2015) stated that disaster education plays a very important role in increasing environmental awareness, because it provides a deep understanding of the relationship between human activities and the impacts they have on the ecosystem. This education not only focuses on disaster mitigation and response, but also instills sustainability values that help individuals understand that their behavior towards the environment can affect the level of disaster risk. Thus, this approach can be an effective strategy in building a culture of environmental care. Through disaster education, individuals are taught to understand that many disasters that occur are not only due to natural phenomena, but also due to human activities that damage the environment. For example, flooding that is increasingly occurring in various regions can be associated with deforestation and land conversion that reduces groundwater absorption. With this understanding, individuals will be more motivated to take preventive actions such as planting trees, managing waste properly, and reducing the use of materials that pollute the environment. Disaster education that is integrated with environmental aspects can also encourage active community involvement in conservation efforts, such as reforestation and preservation of water catchment areas (Ramadhan et al., 2019).

Disaster Education Implementation Strategies to Encourage Pro-Environmental Behavior

The strategy for implementing disaster education to encourage pro-environmental behavior is an important aspect in efforts to mitigate and adapt to environmental change. Disaster education not only aims to increase public understanding of the risks and impacts of disasters, but also to build awareness and change behavior to be more environmentally friendly. Through the right approach, disaster education can contribute to forming a society that is better prepared to face disasters and is more concerned about environmental sustainability (Rau et al., 2022).

According to Maulidiana et al., (2023) one strategy in implementing disaster education is the integration of disaster material into the formal curriculum. Education in schools has a significant role in shaping the mindset and attitudes of students from an early age. By including disaster and environmental material in subjects such as Science, Geography, and Civic Education, students will gain a holistic understanding of the relationship between human activities, environmental change, and potential disasters. In addition, interactive approaches such as disaster simulations, case studies, and environmental-based projects can increase the effectiveness of learning and student involvement in real pro-environmental actions.

In addition to the formal curriculum, disaster education can also be applied in extracurricular programs. Activities such as emergency response training, environmental care camps, and disaster mitigation innovation competitions can increase students' awareness and practical skills in dealing with disasters. By connecting disaster aspects with interesting activities, students are more motivated to understand the importance of protecting the environment to reduce disaster risks (Yu et al., 2019).

A community-based approach is also an important element in the implementation strategy of disaster education. Communities need to be actively involved in education programs to create a stronger collective awareness. Community-based counseling, disaster mitigation training, and collaboration with environmental organizations can expand the reach of disaster education. In this context, local wisdom can also be utilized as a means of education that is more relevant to local conditions. For example, people living in flood-prone areas can learn traditional techniques in water management and adopt environmentally friendly practices to reduce disaster risks.

Technology and media also play a crucial role in disseminating disaster education. The use of digital platforms such as educational videos, interactive games, and disaster simulation applications can reach a wider audience and increase public understanding of disasters. Social media campaigns that highlight the relationship between human behavior and the impacts of environmental disasters can reinforce the message about the importance of protecting the environment. In addition, collaboration with mass media in presenting disaster-based educational programs can strengthen the delivery of information more widely and sustainably (Suárez-Perales et al., 2021).

The importance of policies that support disaster education cannot be ignored. Governments, both at the national and regional levels, need to develop regulations and policies that ensure disaster education becomes an integral part of the education system. Strengthening the capacity of educators through disaster training, providing adequate learning resources, and supporting school infrastructure that is safe from disasters are steps that can strengthen the implementation of disaster education. In addition, collaboration between the government, educational institutions, the private sector, and civil society is needed to create an effective and sustainable disaster education ecosystem.

Evaluation and monitoring are also important parts of the disaster education implementation strategy. Education programs must be evaluated regularly to assess their effectiveness in increasing pro-environmental understanding and behavior. Surveys, case studies, and program impact analysis can be used to identify weaknesses and make necessary improvements. With a data-driven approach, disaster education can continue to develop and adapt to the needs and challenges faced by the community (Kyoi, S., & Mori, 2024).

Overall, effective disaster education does not only provide information about disaster risks, but also instills pro-environmental values in everyday life. By adopting a comprehensive approach, including integration into the curriculum, extracurricular programs, community participation, use of technology, policy support, and ongoing evaluation, disaster education can be a powerful tool in shaping a society that is more responsive to disasters and more concerned about environmental sustainability. This effort requires synergy from various parties so that its impact can be felt widely and sustainably.

Challenges and Opportunities for Integrating Disaster Education into Environmental Education

Integration of disaster education into environmental education is a strategic step in building community awareness and preparedness for disaster threats and their impacts on the environment. In its implementation, there are various challenges that need to be overcome as well as opportunities that can be utilized to ensure the sustainability and effectiveness of this education (Shaw, 2014).

According to How et al., (2020), one of the main challenges in integrating disaster education is the limitations of the existing curriculum. Curricula in many countries, including Indonesia, are often dense with various subjects, making it difficult to add new material without sacrificing other aspects. In addition, disaster education materials are often not fully integrated with environmental learning, so that the delivery of these concepts is still fragmented and less holistic. Therefore, adjustments and flexibility are needed in the curriculum so that disaster education can be integrated without reducing the effectiveness of environmental education as a whole.

Another obstacle is the lack of resources and educators who have the competence to teach disaster education in an environmental context. Many educators do not have special training related to disaster mitigation and its relationship to environmental change. This limitation makes learning less in-depth and difficult to apply in real life. The solution that can be implemented is to provide training for teachers and develop more applicable teaching materials so that they can be applied in various conditions and levels of education.

In addition, the lack of public awareness and participation in disaster education is also a significant challenge. Many individuals still consider disaster education as something that is less relevant in everyday life, especially for those who live in areas with low disaster risk. This can be overcome through more interesting educational campaigns and programs based on direct experience, such as disaster simulations, environmental-based projects, and active involvement in community mitigation programs.

On the other hand, there are great opportunities in integrating disaster education into environmental education. One of the main opportunities is the increasing global awareness of the importance of education that is oriented towards sustainability and preparedness. With various international initiatives such as the Sustainable Development Goals (SDGs), especially goal 13 on

action on climate change, more and more institutions are supporting environmental and disaster-based education programs. This support paves the way for the integration of disaster education into environmental education more systematically (Cabello et al., 2021).

Technological advances also offer great opportunities in supporting the integration of disaster education. The use of digital technologies, such as virtual simulations, e-learning platforms, and artificial intelligence-based applications, can help students understand the impact of disasters and the importance of protecting the environment in a more interactive and engaging way. This technology also allows for wider and faster dissemination of information, so that disaster education is not only limited to the classroom but can also be accessed by the general public.

In addition, a community-based approach provides opportunities for more effective integration of disaster education into environmental education. By involving the community in an environment-based disaster mitigation and adaptation program, learning becomes more contextual and applicable. For example, a reforestation program as an effort to mitigate flooding or building earthquake-resistant houses can be part of environmental and disaster learning simultaneously. This approach not only increases public awareness but also provides real benefits in reducing disaster risks.

Policy support is also an important factor in creating opportunities for the integration of disaster education into environmental education. The government and educational institutions can work together to develop regulations that ensure disaster education is part of the national education system. Policies that support teacher training, provision of resources, and development of environmental and disaster-based curricula will strengthen the implementation of this education at various levels of education.

Continuous evaluation and development are key to ensuring the success of the integration of disaster education into environmental education. By conducting regular evaluations, the effectiveness of the program can continue to be improved in accordance with scientific developments and community needs. Case studies, surveys, and research on the impact of disaster education on environmental awareness and behavior can be used as a basis for improving the curriculum and teaching methods (Brundiers, 2018). By understanding the challenges and opportunities that exist, the integration of disaster education into environmental education can be a strategic step in creating a society that is more prepared to face disasters and more concerned about environmental sustainability. With a holistic approach, involving various

stakeholders, and utilizing supportive technology and policies, disaster education can develop into an integral part of efforts to build better community and environmental resilience in the future.

Implications of Study Results for Education Policies and Programs

The implications of the study results for education policies and programs are an important aspect in ensuring that research findings can be applied in real terms to improve the education system. Studies conducted in the field of education often provide in-depth insights into the effectiveness of teaching methods, disparities in access to education, and the impacts of various policies implemented (Snilstveit et al., 2016). Therefore, it is important to understand how the results of the study can be integrated into education policies and programs to create a more inclusive, effective, and sustainable system.

One of the main implications of the study results for education policy is the need for evidence-based policy formulation. Empirical data obtained from research can help policymakers design more targeted regulations. For example, if a study shows that project-based learning methods are more effective in improving student understanding, then education policy can emphasize the use of this method in the national curriculum. Thus, the policies implemented are not only based on assumptions, but are also supported by valid scientific findings.

In addition, the results of the study can also encourage reforms in education programs, especially in terms of curriculum and teaching methods. If a study shows that a technology-based educational approach can improve student learning outcomes, then educational programs need to adapt by providing adequate technological facilities and training for educators. In this context, collaboration between the government, educational institutions, and the private sector is important to ensure that the proposed innovations can be implemented effectively and sustainably.

Another implication is the importance of increasing the capacity of educators as part of educational policy. Studies that highlight gaps in teacher competency in using innovative teaching methods can be the basis for developing more comprehensive training programs. With evidence-based training programs, teachers can be better prepared to face the challenges of modern learning, so that the quality of education can be significantly improved.

The results of the study can also influence budget allocation in the education sector. For example, research that shows that inclusive education requires more resources can be the basis for the government to increase investment in providing facilities and educators who support students with special needs. Thus, the education budget can be allocated more efficiently and appropriately, so that the benefits can be felt by all levels of society (Dodge et al., 2017).

Furthermore, the implications of educational studies for policy also include increasing access and equity in education. Studies that identify factors that hinder access to education for marginalized groups can form the basis for formulating affirmative policies. For example, if research shows that economic factors are the main barrier for children from low-income families to attend school, then scholarship policies or educational assistance programs need to be expanded to address this problem. In the context of educational programs, the results of studies can be used to evaluate and improve existing programs. If an evaluation shows that literacy programs in remote areas are less effective, then it is necessary to revise the implementation strategy, such as using a community-based approach or utilizing digital technology. In this way, educational programs can be more responsive to the needs and challenges in the field. Overall, the implications of the results of the study for educational policies and programs are very broad and diverse. By utilizing research findings in policy formulation and program development, the education system can be more adaptive and based on real needs. Therefore, collaboration between researchers, policy makers, and education practitioners is the main key to ensuring that every policy and program implemented truly has a positive impact on the development of education as a whole.

CONCLUSION

Disaster education plays a very important role in encouraging pro-environmental behavior. With a comprehensive approach, from integration into the curriculum to community involvement, this education can raise public awareness of the importance of protecting the environment to reduce disaster risks. Communities that have a better understanding of the relationship between disasters and the environment will be more likely to implement responsible behavior towards nature.

In addition, support from various stakeholders, such as the government, educational institutions, non-governmental organizations, and the private sector, is needed to ensure the sustainability of disaster education

programs. Strengthening policies, increasing the capacity of educators, and utilizing technology are key factors in increasing the effectiveness of this education. With synergy between various parties, disaster education programs can continue to develop and provide long-term benefits for the environment and society.

Thus, disaster education is not only a mitigation tool, but also an effective strategy in building pro-environmental awareness and behavior. With programs that are continuously evaluated and adjusted to needs, the community can be better prepared to face disasters while also being more concerned about environmental sustainability. This effort will have a positive impact on the sustainability of the ecosystem and the welfare of future generations.

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