

Integration of Disaster Education and Social Entrepreneurship in The Development of Educational Tourism After The Mount Semeru Eruption: Rebuilding Learning and Livelihoods

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Abstract: This study aims to analyze the integration of disaster education with the development of educational tourism as a holistic post-disaster recovery strategy. Using a qualitative approach with a case study design, the data were collected through in-depth interviews with 25 purposively selected participants—teachers, students, community leaders, and government representatives—alongside field observations and document analysis conducted in the Pronojiwo and Candipuro Districts of Lumajang Regency. Data were analyzed using thematic analysis following Braun and Clarke's framework, supported by triangulation and member checking to ensure validity. The findings reveal five key aspects: (1) A gap between the national curriculum and the contextual needs of disaster education; (2) The potential of community empowerment as a source of experiential learning rooted in local wisdom; (3) Increased student engagement through experiential learning based on educational tourism; (4) Local government support that is not yet accompanied by adequate coordination and policy frameworks; and (5) The emergence of a sustainable education–economy ecosystem through social entrepreneurship. This study concludes that the integration model of disaster education and educational tourism offers a double-win solution: not only restoring the education sector through a contextual approach but also driving community economic recovery. The research implications recommend the development of a local-content disaster curriculum, teacher training based on trauma-informed pedagogy, and the establishment of a multi-stakeholder collaborative forum to create a resilient and sustainable learning environment in disaster-prone areas.

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Introduction

The eruption of Mount Semeru has resulted in impacts that extend beyond infrastructure and economic damage, encompassing deeper consequences such as learning loss and psychosocial disruptions among students in affected areas. Schools that were destroyed or repurposed as evacuation centers further exacerbated the situation by halting access to formal education—often for extended periods—significantly undermining the quality of student learning (Qosim & Lailiya, 2022; Rahmawati et al., 2024). Given that education is a vital element in shaping children's mental and social development, the loss of learning can trigger additional problems, including a lack of foundational knowledge and essential skills needed to adapt in the future (Rahmawati et al., 2024; Suryaningrum et al., 2021).

The psychological impact of the disaster is also profound. Studies reveal that children affected by the eruption frequently experience trauma that can lead to long-term emotional and behavioral issues, including depression and changes in social relationships (Qosim &

Lailiya, 2022; Shalahuddin et al., 2022). Psychosocial support programs, incorporating techniques such as trauma healing and play therapy, have been shown to effectively help children cope with anxiety and improve their emotional conditions in the aftermath of disasters (Qosim & Lailiya, 2022; Shalahuddin et al., 2022).

This situation demands close attention to effective strategies for educational recovery in both emergency and post-disaster contexts. Strengthening the community's educational resilience is essential, including through teacher training and the development of disaster-responsive curricula. Programs such as the Disaster Safe Education Schools (SPAB) initiative have the potential to enhance student preparedness and response during disasters, ensuring they possess the knowledge and skills necessary to face future hazards (Haikal et al., 2021; Syahrial et al., 2023). Research on disaster management further emphasizes that active participation of communities and students in understanding disaster risks strengthens both social and educational resilience (Handayani, 2022; Shalahuddin et al., 2022).

Therefore, restoring the learning process in areas affected by the Mount Semeru eruption requires a comprehensive approach that integrates psychological support, the recovery of formal education, and the enhancement of community disaster resilience. The sustainability of education in this context is a challenge that must be addressed by involving multiple stakeholders—from government and educational institutions to local communities—in order to create safe and supportive learning environments for all students (Haikal et al., 2021; Istiqamah & Suwarno, 2022; Syahrial et al., 2023).

Post-disaster educational recovery should not only focus on the physical reconstruction of schools but also on the integration of disaster education with economic revitalization. Contextual approaches to supporting students and educators are particularly important, as disasters often leave deep psychological and social scars. A disaster-based educational tourism model can serve as a “living curriculum,” simultaneously teaching disaster mitigation and empowering communities through social entrepreneurship (Atsillah & Kewuel, 2023; Irfana et al., 2022).

By developing enterprises that leverage disaster knowledge, communities can secure alternative sources of livelihood while maintaining educational processes (Tahir et al., 2020). Involving children in learning activities relevant to local contexts not only helps them cope with trauma but also equips them with valuable skills for facing future disasters (Noviani et al., 2023; Pitriani et al., 2023). Programs focused on disaster mitigation education can strengthen community resilience, making them better prepared for future risks (Jannah et al., 2023). Such a comprehensive approach is expected to foster both individual and community resilience while ensuring the continuity of education in disaster-affected regions (Fortuna et al., 2023; Saputri & Sari, 2022).

Although previous studies have examined disaster education, psychosocial recovery, and community empowerment separately, they have not adequately addressed how these elements can be integrated into a unified, context-specific model for post-disaster learning. Most existing research focuses either on school-based mitigation programs or on community-driven economic recovery initiatives, leaving a gap in understanding how educational processes can simultaneously support disaster literacy and local livelihood restoration. Moreover, studies rarely explore how experiential learning and social entrepreneurship can be combined to create sustainable edu-ecotourism models in disaster-prone areas. Clarifying these overlooked areas underscores the need for a more holistic framework that bridges formal education and community empowerment, thereby strengthening the rationale for this study and highlighting its novelty.

This study offers novelty through an integrative approach that bridges formal education and community empowerment in the post-disaster context, accompanied by the development of an edu-ecotourism model. The approach seeks to enhance disaster literacy among students and strengthen the social entrepreneurial capacity of teachers and communities in managing educational tourism potentials (Nugraha et al., 2022). Edu-ecotourism has the potential to create a sustainable learning ecosystem by utilizing existing local resources and transforming collective trauma into opportunities for education and alternative livelihoods. Such initiatives provide opportunities to increase public awareness of disaster mitigation while fostering innovation in education relevant to local conditions—an essential factor in building long-term post-disaster resilience (Bava et al., 2010; Johnson & Hayashi, 2012). By emphasizing collaboration between schools and communities, this model can reinforce social networks that support adaptive capacity and recovery among individuals and communities affected by disasters (Abramson et al., 2014).

To clarify the specific contributions of this study, it is important to compare the proposed integrative approach with existing literature on disaster education, community empowerment, experiential learning, and edu-ecotourism. Previous research has tended to examine these areas separately, resulting in fragmented understandings of how educational processes can simultaneously strengthen disaster preparedness and support socio-economic recovery. The following table highlights the gaps in previous studies and demonstrates how the integrative model developed in this research fills both theoretical and practical voids.

Table 1. Contributions of this study

Aspect	Existing Studies	Identified Gap	Contribution of This Study
Disaster Education	Emphasize school-based mitigation programs, SPAB initiatives, and psychosocial interventions.	Lack of integration between disaster learning in schools and community recovery needs.	Links disaster education with livelihood restoration through an educational tourism model.
Community Empowerment	Focus on post-disaster social entrepreneurship and economic revitalization.	Minimal alignment with formal education or student learning processes.	Embeds community-based entrepreneurship into school learning activities, creating shared learning spaces.
Experiential Learning	Highlight benefits of simulations, drills, and hands-on learning.	Rarely connected to long-term community resilience or economic outcomes.	Uses educational tourism as a form of experiential learning that strengthens disaster literacy and community resilience.
Edu-Ecotourism	Treated mainly as a tourism development strategy.	Not integrated with pedagogy, curriculum design, or disaster education.	Positions edu-ecotourism as a “living curriculum” combining mitigation learning with social entrepreneurship.
Holistic Post-Disaster Models	Address education and economic recovery separately.	Absence of a unified, interdisciplinary recovery framework.	Proposes a comprehensive model that unifies education, resilience-building, and sustainable economic development.

This table demonstrates that earlier studies have approached disaster education, community empowerment, experiential learning, and eco-based tourism as distinct areas, without exploring how these dimensions can be combined into a cohesive post-disaster strategy. The gaps shown in the table reveal the absence of a model that bridges pedagogy, disaster preparedness, and economic revitalization.

The integrative model proposed in this study addresses these shortcomings by showing how disaster learning can be contextualized through real community experiences,

strengthened through experiential edu-ecotourism activities, and expanded through social entrepreneurship. By connecting these previously isolated domains, the model contributes a holistic framework that not only enriches educational practices but also supports long-term community resilience and sustainable economic recovery.

This research aims to fill the gap in the disaster education literature by focusing on contextual approaches that can enhance both learning and community empowerment in areas affected by the Semeru eruption. Specifically, the research objectives are as follows: (1) To analyze the contextual learning needs based on disaster experiences, (2) To formulate a model integrating disaster education and social entrepreneurship through educational tourism.

The development of a resilient learning model is expected to enable schools in other disaster-prone areas to adopt best practices derived from this study. Moreover, this model is anticipated to empower local economies through the development of the education and tourism sectors, thereby contributing to broader community resilience. In this regard, a better understanding of local needs can support disaster risk management and foster collaboration between the education sector and local communities.

Research Method

This study employed a qualitative approach with a case study design to explore the integration of disaster education and social entrepreneurship through educational tourism in the aftermath of the Mount Semeru eruption. The research was conducted in Pronojiwo and Candipuro Districts, Lumajang Regency. Data were collected through in-depth interviews with 25 purposively selected participants, including teachers, students, community leaders, and representatives from relevant government agencies (Syafri et al., 2025). In addition, data were enriched by field observations of learning activities and tourism potentials, as well as document analysis of education and disaster management policies (Tohani et al., 2016).

For data analysis, this study applied thematic analysis following Braun and Clarke's model, which consists of transcription, theme identification, and theme review (Bachri et al., 2024). Data validity was ensured through source and method triangulation, along with member checking to validate the findings (Irnawati et al., 2023).

Result and Discussion

Validity of the Integrated Model

The validity of the integrated model of disaster education and edu-ecotourism is reflected in the extent to which it aligns with contextual realities and theoretical frameworks.

Theme 1: Curriculum Gaps and the Need for Contextualized Learning

Findings from interviews with elementary school teachers in Pronojiwo reveal a clear dissonance between the national curriculum and the lived realities of students in disaster-prone areas. Although disaster-related themes are included in national guidelines, the content often remains abstract and disconnected from students' direct experiences of trauma and environmental risk. Several teachers described how lessons on hazards or mitigation were taught only at a conceptual level, without linking them to the evacuation challenges or emotional impacts that students had personally faced. Consequently, teachers emphasized the urgent need to contextualize classroom learning—for example, by integrating mathematics with calculations of evacuation distances or incorporating social studies with historical mapping of eruption timelines and evacuation routes (Howard, 2024).

However, teachers also noted that implementing contextualized learning remains difficult due to limited capacity, insufficient training, and the absence of structured guidance for developing integrative disaster-based materials. This highlights the need for trauma-

informed pedagogy and targeted professional development programs that position teachers as curriculum designers rather than passive transmitters of centrally prescribed content (Howard, 2024). Incorporating components of disaster management and social entrepreneurship into teaching not only helps students better understand local risks but also transforms their experiences into meaningful, empowering learning resources. Such approaches can introduce entrepreneurial concepts—such as community-based tourism or local product development—that contribute to household and community recovery (Farida & Nisa, 2024).

Overall, these findings demonstrate the validity of the integrated model in bridging the gap between national curriculum standards and local contextual needs. They also align with existing literature showing that experiential and contextual learning strengthens students' cognitive, emotional, and cultural engagement. The incorporation of local knowledge systems—such as indigenous evacuation practices and community narratives—further enhances cultural sustainability, which scholars argue is essential for building education systems that are resilient and responsive in vulnerable communities (Sumarmi et al., 2020).

Practicality of Implementation

The practicality of the model lies in its feasibility for teachers, schools, and communities to implement within available resources and institutional frameworks.

Theme 2: Community Empowerment as a Living Source of Knowledge

The involvement of community leaders and disaster survivors in the learning process provides invaluable, experience-based insights that extend disaster knowledge management far beyond theoretical instruction. Their participation enables the integration of essential local wisdom—such as interpreting subtle environmental warning signs, applying long-practiced evacuation strategies, and recounting historical disaster narratives—directly into the formal curriculum (Qomarrullah, 2024). This does not merely increase the relevance of instructional content; it also strengthens cultural identity and affirms the legitimacy of community-based knowledge systems. Such engagement fosters a “community as classroom” model, where learning becomes participatory and dialogic, allowing students to co-construct understanding alongside experienced local mentors. This approach aligns closely with Vygotsky's sociocultural theory, which posits that learning is fundamentally a socially mediated process developed through interaction with more knowledgeable others within a specific cultural context (Waddell, 2021). Ultimately, this synergy between academic frameworks and indigenous knowledge creates a more resilient, contextualized, and empowering educational experience for all participants involved.

Theme 3: Local Government Support and Bureaucratic Challenges

The support from key local government bodies like the Lumajang Education and Tourism Offices indicates a crucial recognition of the powerful synergy between education and tourism as a driver for sustainable post-disaster recovery. This interdisciplinary approach promises not only to rebuild infrastructure but also to revitalize the local economy and strengthen community resilience through educational tourism. Nevertheless, a significant implementation gap persists due to chronically weak coordination across the relevant agencies—including the Education Office, Tourism Office, and the Regional Disaster Management Agency (BPBD). This fragmentation is exacerbated by the absence of a clear and binding regulatory framework, such as a specific local curriculum policy or a regent's regulation (Peraturan Bupati) that would mandate and standardize these efforts across the district.

To strategically address this systemic barrier, the establishment of formal Memoranda of Understanding (MoUs) coupled with pilot projects in selected schools is highly

recommended. These instruments would provide a necessary foundation for clearer task allocation, dedicated budget structures, and accountable monitoring and evaluation mechanisms. Furthermore, actively fostering cross-sectoral partnerships with non-governmental organizations (NGOs) and higher education institutions could inject essential technical assistance, innovative methodologies, and independent monitoring, thereby reducing the inherent dependency on slow-moving government bureaucracy. International studies consistently highlight that such collaborative governance models are fundamental to enhancing the feasibility and effectiveness of disaster education programs (Farra et al., 2016; Huh & Kang, 2018). Therefore, while the proposed educational tourism model is undeniably practical and contextually appropriate, its long-term sustainability and impact are entirely contingent upon the development of robust, institutionalized support systems and a clear, legally-supported division of authority and responsibility among all stakeholders.

Effectiveness in Achieving Educational and Economic Outcomes

Effectiveness is measured by the model's ability to enhance student engagement, strengthen community resilience, and generate economic recovery.

Theme 4: Enhancing Student Engagement through Experiential Learning

Research conducted among students in disaster-affected junior and senior high schools has revealed a strong and clear preference for dynamic, experiential learning approaches over traditional methods. These students expressed a greater engagement with activities such as physically walking and mapping evacuation routes and participating in realistic disaster mitigation simulations, finding them far more impactful than conventional lectures and static textbooks (Sumarmi et al., 2020). This preference is strongly supported by educational theory. Consistent with Kolb's theory of experiential learning, which posits that learning is most effective through a cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation, students reported significantly higher motivation, a deeper conceptual understanding of the material, and markedly improved long-term retention when their knowledge was acquired through direct, hands-on practice (Waddell, 2021). The profound value of such methods extends far beyond mere engagement. These experiential approaches not only improve cognitive learning outcomes but are also crucial for building embodied skills, often referred to as muscle memory, which are absolutely critical for executing swift and effective survival actions during high-stress emergency situations (Farra et al., 2016; Huh & Kang, 2018). Moreover, the benefits of experiential disaster education are holistic, fostering vital psychological resilience by offering students practical coping mechanisms to process and deal with trauma. This key finding is consistent with other research indicating that active, hands-on engagement in realistic simulations significantly reduces disaster-related anxiety and promotes a tangible sense of confidence and self-efficacy in executing emergency responses (Priyanto, 2018). Thus, a well-designed experiential model not only successfully transmits crucial knowledge but also simultaneously develops the affective and psychomotor competencies that are essential for comprehensive and holistic disaster preparedness.

Theme 5: Establishing a Sustainable Edu-Economic Ecosystem

Local entrepreneurs, particularly homestay owners and food stall operators in the disaster-affected region, quickly recognized the significant economic opportunities presented by the influx of educational tourism. Their active participation was not merely transactional but became a fundamental pillar in facilitating the creation of a robust and sustainable ecosystem where education and the local economy dynamically reinforce one another in a virtuous cycle. This synergy manifested in several tangible ways. For instance, local artisans and business owners contributed directly to the educational curriculum by teaching students

craft-making techniques using readily available volcanic materials, such as transforming volcanic sand and rock into souvenirs. Concurrently, students gained invaluable, real-world entrepreneurial skills by actively managing homestay bookings and operations, guiding educational tours that explained both the disaster's history and the local recovery efforts, and developing marketing strategies to sell the crafts they produced (Priyanto, 2018). This collaborative model provides a powerful dual benefit: it supports immediate economic recovery by injecting much-needed capital into the local community, while simultaneously fostering the long-term development of practical youth competencies, preparing a new generation to be resilient and economically self-sufficient.

This highly positive outcome aligns perfectly with established community-based tourism (CBT) principles, which posit that active and meaningful community participation, ownership, and management are the essential ingredients that ensure long-term socio-economic and educational benefits are retained within the community, rather than being extracted by external actors (Daldeniz & Hampton, 2012; Sari et al., 2022). Furthermore, the model's strategic embedding of entrepreneurial training directly into the disaster education curriculum does more than just teach business skills; it proactively fosters financial independence and a deeper layer of community resilience, thereby systematically reducing long-term dependency on external aid and charitable donations (Krisbintoro et al., 2023; Purnawan & Sardiana, 2018). The powerful combination of formal education with on-the-ground community entrepreneurship effectively transforms the disaster itself—a profound source of vulnerability and trauma—into a genuine catalyst for socio-economic empowerment and sustainable regional development. This represents a paradigm shift from reactive recovery to proactive, opportunity-based rebuilding.

Taken together, these multifaceted findings strongly affirm the integrated model's validity, practicality, and overall effectiveness. It successfully bridges critical gaps that often plague post-disaster initiatives: the gap between high-level policy and on-the-ground practice, the gap between an abstract national curriculum and the concrete, lived experiences of the students, and perhaps most importantly, the gap between pure educational recovery and tangible economic recovery. However, the long-term sustainability of this promising model will inevitably depend on several key factors: the commitment to continued professional development and training for teachers to deliver this experiential curriculum, the strengthening of institutional coordination between the education department, tourism office, and disaster management agency, and the ongoing nurturing and financial strengthening of community-based learning infrastructures to ensure they remain vibrant and effective long after the initial project funding ends.

The concept map provides a visual summary of the key findings of this study, illustrating how the major themes identified through data analysis are interconnected within the proposed integrated model of disaster education and edu-ecotourism. Each thematic category—ranging from curriculum gaps and community knowledge to government coordination issues, experiential learning, and the development of a sustainable edu-economic ecosystem—contributes specific elements that shape the overall framework. By mapping these relationships, the diagram demonstrates how educational, social, and economic dimensions converge to enhance disaster literacy, strengthen community resilience, and support long-term post-disaster recovery.

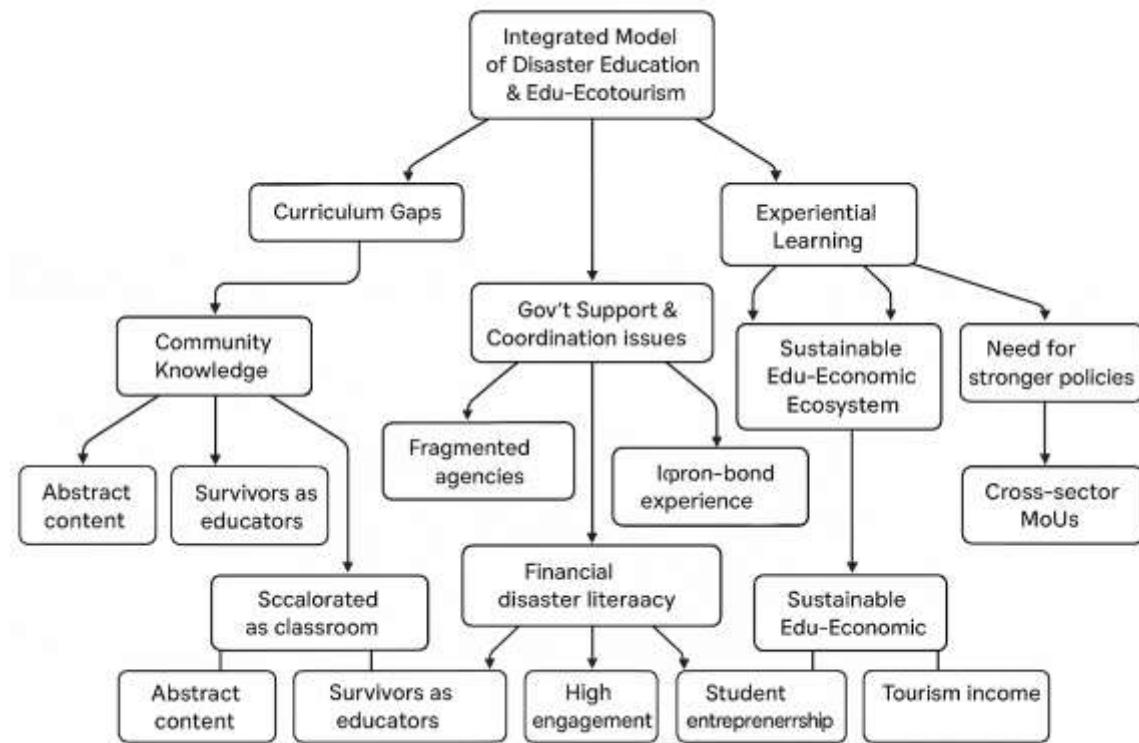


Figure 1. Integrated Disaster Education Concept Map

Conclusion

This study successfully addresses both of its research objectives. First, the analysis of contextual learning needs demonstrates a clear gap between the national curriculum and the lived realities of students affected by the Semeru eruption. The findings reveal that disaster-related content remains largely abstract, highlighting the necessity for learning approaches that draw upon students' direct disaster experiences, local wisdom, and trauma-informed pedagogy. These insights underscore the importance of contextualized and culturally grounded learning processes in disaster-prone communities. Second, the study formulates and validates an integrated model that connects disaster education with social entrepreneurship through educational tourism. The model incorporates community knowledge, experiential learning activities, and local economic potentials to create a holistic edu-ecotourism framework. This integrative approach not only enhances disaster literacy and student engagement but also strengthens community resilience and contributes to economic revitalization. By demonstrating the model's validity, practicality, and effectiveness, the study offers a comprehensive framework that bridges educational recovery with sustainable livelihood strategies in post-disaster settings. Overall, the findings affirm that disaster education can serve as both a pedagogical and socio-economic pathway for resilience, providing valuable insights for educators, policymakers, and communities in other disaster-prone regions.

Recommendation

This study recommends several strategic directions for advancing disaster education and edu-ecotourism in post-disaster contexts. First, curriculum development and teacher training should prioritize the integration of localized disaster knowledge with formal learning,

supported by trauma-informed pedagogy and professional development programs that enable teachers to act as curriculum designers rather than passive transmitters. Second, stronger multi-stakeholder collaboration is essential to overcome bureaucratic fragmentation. This can be operationalized through formal mechanisms such as Memoranda of Understanding (MoUs) and joint coordination forums involving education offices, tourism agencies, disaster management institutions, NGOs, and higher education. Effective partnerships require clear role delineation, shared implementation frameworks, and consistent communication channels. For example, a district-level edu-ecotourism coordination team could align curriculum development, safety protocols, and tourism management, ensuring that each sector contributes according to its mandate. Establishing these prerequisites provides a stable institutional foundation for implementing the integrated disaster education and educational tourism model in a sustainable and accountable manner. Third, scaling edu-ecotourism models beyond the Semeru case requires pilot projects in other disaster-prone areas and comparative studies to assess adaptability and effectiveness in diverse contexts. However, several barriers remain, including limited teacher capacity, weak regulatory frameworks, and inconsistent funding mechanisms, which may hinder sustainability; therefore, innovative financing models such as public-private partnerships are necessary to ensure long-term viability. Finally, future research should adopt mixed-methods or longitudinal approaches to measure long-term impacts on disaster literacy, resilience, and entrepreneurial skills, while also exploring the role of digital innovations such as virtual reality and mobile applications in strengthening experiential disaster education. Addressing these challenges while embracing innovation will ensure that edu-ecotourism evolves into a sustainable model for building resilience in disaster-affected and disaster-prone communities.

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