Chatra: Jurnal Pendidikan dan Pengajaran
E-ISSN: 2774-3829|Page: 120-130
https://journal.yazri.com/index.php/chatra/index

Inclusive Disaster Education for Students with Special Needs in Indonesia: A Case Study at SLB BC Harapan Ibu, Jakarta

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ABSTRACT

Purpose – This study investigates how inclusive disaster education is implemented for students with special needs in Indonesia, addressing a critical gap where vulnerable groups often lack adequate preparedness. It aims to examine the effectiveness of visual learning strategies and identify challenges in practice.

Design/methods/approach – A qualitative case study was conducted at SLB BC Harapan Ibu, Jakarta, involving interviews with teachers and parents, classroom observations, and analysis of educational materials and evacuation drills to explore practical implementation and obstacles faced.

Findings – The study found that visual media significantly improved students' understanding of safety procedures. However, challenges remain, including the lack of official educational modules tailored for special needs contexts, insufficient school infrastructure, and the need for repetitive instruction for students with intellectual disabilities. These insights contribute practical knowledge on how inclusive disaster education can be operationalized in special needs schools.

Research implications/limitations – This research is limited to a single school context, which may constrain generalizability. Future studies should explore diverse educational settings and develop standardized disaster preparedness materials to ensure broader, effective implementation of inclusive disaster education.

OPEN ACCESS

ARTICLE HISTORY
Received: 05-07-2025
Revised: 26-07-2025
Accepted: 29-07-2025

KEYWORDS
inclusive disaster education, special needs, visual learning, disaster preparedness, Indonesia

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Introduction

Indonesia is recognized as one of the countries most prone to natural disasters globally due to its geographical location along the convergence of three major tectonic plates and its complex physical landscape (BNPB, 2023). Events such as earthquakes, tsunamis, volcanic eruptions, and urban fires frequently cause casualties, infrastructure damage, and psychosocial disruptions, particularly in densely populated urban areas like Jakarta. Within the educational context, schools serve a dual function—not only as centers of academic learning but also as crucial spaces for protection and disaster preparedness (Tentang Penyelenggaraan Pendidikan Tangguh Bencana., n.d.). Inclusive disaster risk education has emerged as a critical approach to ensure that every individual, regardless of physical or cognitive limitations, can access the knowledge, skills, and strategies necessary for self-protection and resilience (Senanayake et al., 2023). This is particularly significant because inclusive disaster education aims to reduce vulnerability and enhance resilience across diverse learners, bridging the gap between disaster management policies and educational practices.

Students with special needs, particularly those with intellectual or communication impairments, are identified as one of the most vulnerable populations during emergencies due to their limited capacity to process complex information, recognize danger signals, or respond swiftly to evacuation instructions (Rofiah et al., 2021; Sheehy et al., 2022). Global research confirms that, despite existing inclusive education policies, many schools worldwide still lack specific guidelines or preparedness modules tailored for students with disabilities (Boon et al., 2012; Boon et al., 2014; Kawasaki et al., 2023). In Australia, for example, disaster management plans rarely include provisions for students with disabilities, while in Japan and Banda Aceh, Indonesia, disaster preparedness in special needs schools varies widely, often relying on local initiatives and the presence of sustained disaster drills (Jummi et al., 2024). This situation highlights a significant research gap—the limited integration between national policies and school-level practices in ensuring truly inclusive disaster risk education (Boon et al., 2014; Kawasaki et al., 2023). This gap underscores the urgency to develop educational interventions that are both accessible and tailored to the unique learning needs of special education contexts.

While digital technology has offered alternative avenues for delivering disaster education, the COVID-19 pandemic has introduced new challenges, including a significant digital divide characterized by unequal ICT infrastructure and low digital literacy among both teachers and students with special needs (Johansen, 2023; Samarakkody et al., 2023; Senanayake et al., 2023). This digital inequality necessitates online learning designs that are not only interactive but also adaptive to the social vulnerability contexts of learners, especially those with disabilities (Sheehy et al., 2022). Literature emphasizes that children

with special needs often remain underrepresented in disaster risk reduction education (DRRE) programs developed to date (Rofiah et al., 2021). Inclusive disaster education is considered a cost-effective tool for risk management while simultaneously supporting sustainable development by strengthening community resilience (Kwabena et al., 2021; Torani et al., 2019). Therefore, any educational intervention must not only transfer knowledge but also empower vulnerable groups through participatory and culturally relevant learning methods.

Within the realm of disaster education, visual learning strategies have proven to be highly effective, particularly for students with special needs. The use of digital comics, virtual environments, and interactive games has significantly enhanced students' understanding of disaster scenarios and improved decision-making skills (Amin & Bahri, 2024; Caroca et al., 2016; Huda et al., 2024). In Indonesia, research by Rahmatika et al. (2023) demonstrates that visual media effectively improves preparedness among students with hearing impairments, while Hidayat (2019) emphasizes the necessity for tailored disaster preparedness materials. The integration of DRR materials into formal curricula, such as in science and geography subjects, further reinforces students' comprehension of disaster risk management (Kamarudin, 2024). Nevertheless, challenges persist in achieving universal implementation of these visual learning strategies, given the diverse needs of special education students and the limitations of school resources, including ideal teacher-to-student ratios (Chen et al., 2022; Rofiah et al., 2021). These realities underscore that the success of disaster education lies in its adaptability and its sensitivity to learners' diverse cognitive and sensory profiles.

Against this backdrop, this study focuses on examining the implementation of inclusive disaster education at SLB BC Harapan Ibu, Jakarta, a special needs educational institution facing tangible challenges due to physical limitations of the school environment, fire hazards, and the diverse needs of its students. Employing a qualitative case study approach, this research seeks to explore how disaster education is adapted for students with special needs, the extent to which visual media support their understanding, and the challenges encountered in the process. This study contributes to the international literature by showcasing best practices that can be adopted by other inclusive schools while filling a significant research gap concerning inclusive disaster education practices within the Indonesian context (Boon et al., 2014; Hayati et al., 2024; Sheehy et al., 2022). The authors believe that answering these research questions is critical, not only for enhancing disaster preparedness among students with special needs but also as a strategic step toward building a more resilient, equitable, and inclusive national education system capable of mitigating disaster risks. In essence, this study aims to bridge the gap between policy and practice, offering empirical evidence for effective disaster education tailored for special needs contexts in Indonesia.

Methods

This research adopted a qualitative approach using a case study design, chosen for its suitability in exploring complex educational phenomena within specific real-life contexts (Hollweck, 2015; Patton, 2015). A case study allows for in-depth examination of processes, strategies, and subjective experiences, which was essential in investigating how inclusive disaster education is implemented in a special needs school setting. The qualitative design was selected to capture rich, contextual data that could illuminate not only the practices but also the challenges faced in delivering disaster preparedness education tailored for students with special needs, aligning with recommendations for qualitative exploration in education and disaster research (Creswell, 2018).

Participants comprised key informants from SLB BC Harapan Ibu, Jakarta, including two teachers actively involved in disaster preparedness activities, thirty students with special needs—particularly those with intellectual and communication disabilities—and several parents engaged in disaster simulation events. A purposive sampling technique was employed to ensure that all participants possessed relevant knowledge and experiences pertinent to the research objectives (Palinkas et al., 2015). Such sampling ensured that insights gathered were both context-specific and deeply informed by direct involvement in disaster education practices at the school.

Data collection methods included semi-structured interviews, direct observations, and document analysis. Interviews with teachers and parents focused on exploring their perspectives regarding disaster education strategies, the effectiveness of visual media, and encountered challenges. Observations were conducted during evacuation drills and routine preparedness activities to document student responses, comprehension, and teacher-student interactions. Document analysis examined educational materials such as evacuation posters, floor markers, and records of school-based disaster preparedness activities. Data analysis followed a thematic analysis approach, involving iterative reading, coding, categorizing, and theme development (Miles et al., 2014). To ensure data validity, triangulation of sources and methods was applied by comparing information across different participants and data collection techniques, consistent with recommendations for enhancing trustworthiness in qualitative research (Denzin & Lincoln, 2018).

Result

This study aims to portray how inclusive disaster education is implemented at SLB BC Harapan Ibu, Jakarta. The findings of this research are presented in three main sections that describe in depth the implementation of disaster education, the effectiveness of visual media as a learning tool, and the various challenges faced by the school in realizing this program optimally.

1. Implementation of Inclusive Disaster Education

The implementation of disaster education at SLB BC Harapan Ibu is not merely an additional topic inserted into the school curriculum but has become an integral part of daily teaching and learning activities. Teachers strive to apply approaches tailored to the unique needs of children with special needs. They do not simply deliver theoretical material but employ simple language, clear body gestures, and concrete examples to ensure that every student can grasp the information being conveyed. One teacher passionately shared: *"We introduce disaster preparedness to the children during class lessons, using simple language and directly demonstrating the steps so that they can remember more easily." (Teacher 1)*

Direct observations conducted by the researcher captured the vibrant atmosphere during fire evacuation drills. Approximately every three weeks, the environment dramatically changes as the fire alarm sounds. The loud alarm echoes through the school's narrow hallways. Some students appear startled, covering their ears with distressed expressions, yet many quickly follow the teachers' instructions. Patiently, teachers guide each student out of the classroom along narrow corridors marked with red lines indicating evacuation routes. The atmosphere remains relatively orderly, although a few students occasionally pause and appear confused. Figure 1 depicts one of these evacuation routes within the school corridor, highlighting the red lines serving as safety indicators.

Figure 1. Evacuation Route in the Corridor of SLB BC Harapan Ibu, Jakarta
(Source: Research Documentation, 2025)

In addition to fire evacuation drills, teachers also teach protective actions to take during earthquakes, such as hiding under desks and shielding one's head with both hands. However, the school's physical conditions—including its location in a densely populated neighborhood, the predominance of wooden structures, and narrow passageways—pose significant obstacles to ensuring that evacuations can proceed safely and efficiently. All these activities reflect the school's strong commitment to instilling

disaster knowledge, even though they continue to grapple with space limitations and environmental challenges.

2. Effectiveness of Visual Media in Disaster Education

Visual media has emerged as a critical element in the disaster education process at SLB BC Harapan Ibu. Both teachers and parents consistently emphasize that children with special needs learn differently and require visual aids to better comprehend the messages being conveyed. The researcher noted how classrooms were adorned with colorful posters depicting various evacuation procedures—from how to exit the room during an earthquake to identifying signs of fire hazards.

These posters are not merely decorative elements but serve as interactive tools. Children are often seen pointing at the images while repeating words previously taught by the teachers. Figure 2 shows one of the disaster evacuation posters commonly used during lessons.

Figure 2. Disaster Evacuation Poster Used in the Classroom
(Source: Research Documentation, 2025)

During each drill, the researcher observed that students with hearing impairments responded swiftly to visual signals such as flashing lights or teachers' hand gestures. They appeared calm and moved promptly toward the familiar evacuation routes. Conversely, students with intellectual disabilities required more intensive guidance. Despite participating in frequent drills, some still appeared confused and needed step-by-step reminders. A teacher explained: "*The pictures really help the children remember what to do. Hearing-impaired children follow signals very quickly, but children with intellectual disabilities need to be taught repeatedly." (Teacher 2)*

The presence of visual media in this school is not merely an educational tool but also functions as a crucial means of communication between teachers and students,

many of whom face barriers in verbal communication. Visual media serves as a bridge connecting safety messages to students' understanding, reinforcing their memory, and minimizing the risk of miscommunication during emergencies.

3. Challenges in Implementing Inclusive Disaster Education

Despite various efforts undertaken, this study revealed that the implementation of inclusive disaster education at SLB BC Harapan Ibu still faces numerous real challenges. One fundamental issue is the lack of official modules or standardized teaching materials specifically designed for children with special needs. Teachers in this school have to create their own materials, crafting simple visuals and using more communicative language. One teacher expressed, with a hint of fatigue: "*There is no official disaster education module made specifically for children with special needs. We make our own learning materials, using simple pictures and easy language." (Teacher 1)*

Beyond issues related to teaching materials, the school's physical environment poses additional concerns. Located in a densely populated urban area, with many wooden structures and narrow corridors, the school is vulnerable to panic and chaos during sudden evacuations. The researcher noted how several students appeared confused even though evacuation routes were clearly marked. From the parents' perspective, there is understandable anxiety about whether their children would be able to remain calm and remember evacuation steps during an actual emergency. One parent shared their worry: *"My child understands during practice, but if a real fire happens, he might panic and forget everything he was taught." (Parent 3)*

Teachers also recognize that repeated drills are essential. Particularly for students with intellectual disabilities, learning about disaster preparedness cannot be accomplished with just one or two explanations. They need to practice multiple times to internalize each safety step. Figure 3 illustrates a scene during a fire evacuation drill, where a teacher guides students out of the classroom while some still appear hesitant and confused despite repeated practice.

Figure 3. Teacher Guiding Students During a Fire Evacuation Drill

(Source: Research Documentation, 2025)

These findings emphasize that although the spirit of inclusivity has been embedded into disaster education practices at this school, there remain significant areas requiring improvement. This includes the development of more specific teaching materials tailored for children with special needs, physical infrastructure capable of supporting safe evacuations, and psychological and emotional support to help students face real-life disaster situations with greater readiness and calm.

Discussion

The findings of this study reaffirm that inclusive disaster education at SLB BC Harapan Ibu, Jakarta, has been pursued through various practical strategies, particularly the utilization of visual media. The use of visual aids—such as illustrated posters, brightly colored evacuation pathways, and routine simulation exercises—has been shown to significantly assist students with special needs in comprehending safety procedures. This supports the notion that inclusive disaster education is a crucial component for preparing communities to effectively manage and mitigate disaster impacts, ensuring that vulnerable groups like children with disabilities are not left behind (Senanayake et al., 2023). Given Indonesia's position as one of the most disaster-prone countries globally, the urgency of such educational initiatives is undeniable. However, this research also underscores structural challenges within the school, such as narrow corridors and flammable building materials, which pose additional risks during emergency evacuations. These findings highlight that disaster preparedness is not merely about educational content but is deeply influenced by the physical and infrastructural readiness of educational environments, as similarly emphasized by Rofiah et al. (2021) and Ronoh (Ronoh, 2017).

More specifically, the effectiveness of visual learning strategies in this study provides compelling evidence that visual pedagogical approaches are highly suitable for students with special needs. Teachers reported that students with hearing impairments were able to respond swiftly to visual cues, while students with intellectual disabilities required repeated practice to retain safety protocols. This aligns closely with previous literature that demonstrates the benefits of visual media in enhancing comprehension, engagement, and preparedness among students, as seen in tools like digital comics such as "Landslide Alert" (Amin & Bahri, 2024), virtual environments, and interactive games (Caroca et al., 2016; Huda et al., 2024). Integrating disaster risk reduction (DRR) content into formal school curricula, especially in subjects such as science and geography (Kamarudin, 2024), is proposed as a pathway to ensure systematic and sustained disaster education. These insights suggest that visual approaches should not be viewed merely as optional enhancements but as essential pedagogical strategies in inclusive disaster education.

Nevertheless, this study identified a significant gap: the absence of official, standardized disaster education modules specifically designed for special needs schools. Teachers are currently compelled to develop their own instructional materials, often relying on limited resources. This reflects broader global conditions where many special education institutions lack inclusive disaster preparedness guidelines (Boon et al., 2014; Kawasaki et al., 2023). Even in countries like Japan and Australia, disaster management plans frequently fail to account for the unique needs of students with disabilities (Boon et al., 2014). Similar disparities were found in Banda Aceh, Indonesia, where varying levels of preparedness among schools indicate an urgent need for ongoing socialization and training (Jummi et al., 2024). Digital inequity further compounds these challenges, as not all schools have equitable access to the technological infrastructure necessary for implementing interactive online learning (Samarakkody et al., 2023; Senanayake et al., 2023). This underscores that while inclusive policies may exist in principle, they often remain insufficiently translated into practical, operational strategies on the ground.

This research directly addresses its core research questions by demonstrating that although efforts to deliver inclusive disaster education are underway, implementation remains partial and highly dependent on individual teacher initiative. The study contributes significant empirical insights into how visual strategies can be practically applied in a special education context, while also identifying the tangible barriers faced in the field. It complements prior studies, many of which have been more conceptual or quantitative in nature, by providing detailed qualitative narratives about the experiences of a special needs school integrating disaster preparedness into its teaching (Rofiah et al., 2021; Sheehy et al., 2022). Furthermore, this research adds a critical Indonesian perspective to the international discourse on inclusive disaster education, which is particularly valuable given Indonesia's unique and complex disaster landscape.

Despite the contributions of this study, several limitations must be acknowledged. The research was conducted at a single special needs school in Jakarta, limiting the generalizability of the findings to other regions or contexts within Indonesia. Additionally, constraints in time and resources prevented deeper exploration into the psychosocial readiness of students, particularly regarding their capacity to respond under real emergency conditions. Future research should prioritize the development and broader testing of inclusive disaster education modules, involving diverse schools across various regions. From a practical perspective, stronger national policies and dedicated funding are urgently needed to support the development of disability-friendly visual materials and teaching resources. Ultimately, inclusive disaster education is not merely about protecting individuals; it is a strategic investment in building community resilience and sustainable development (Kwabena et al., 2021; Torani et al., 2019).

Conclusion

This study concludes that the implementation of inclusive disaster education at SLB BC Harapan Ibu, Jakarta, has been carried out through various strategies, particularly the use of visual media, which has proven effective in enhancing the understanding of safety procedures among students with special needs. Nevertheless, challenges remain, including the absence of official educational modules, inadequate school infrastructure, and the necessity of repetitive instruction for students with intellectual disabilities. These findings not only answer the research questions concerning how disaster education can be implemented inclusively but also contribute significantly to the development of disaster education practices within special needs schools. The study recommends the development of disaster preparedness modules specifically tailored for students with special needs, stronger national policy support, and the expansion of research across diverse school contexts to ensure that inclusive disaster education can be implemented more evenly and effectively.

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