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Design of an Earthquake Disaster Mitigation Illustration Book for Children with Low Vision Aged 6–11 Years

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Abstract. *Children with low vision are a vulnerable group that requires tailored educational approaches to understand disaster mitigation, particularly earthquakes. Visual impairments require them to have specialized learning media in order to achieve better understanding. This study aims to design an earthquake mitigation illustrated book that is friendly for low-vision children aged 6–11 years, employing both visual and tactile methods. The research method follows the five stages of design thinking: empathize, define, ideate, prototype, and test. Data were collected through observations and interviews at Sekolah Luar Biasa Bekasi Jaya and with teachers working with low-vision students. The design resulted in a paperclay based tactile illustrated book, utilizing Atkinson Hyperlegible font, high-contrast colors, and an audio guide delivered via QR codes. Evaluation indicates that this book helps low-vision children understand mitigation steps independently and interactively. It is expected to enhance disaster literacy and preparedness for low-vision children in facing earthquakes calmly and effectively.*

Keywords: illustrated book, earthquake mitigation, low vision.

INTRODUCTION

The human eye plays a crucial role in daily life, serving as the primary organ for perceiving and interpreting visual phenomena, which are then processed by the brain. Through the eyes, individuals can easily identify colors, shapes, and dimensions of objects by capturing light. However, not everyone possesses optimal visual function. One example is individuals who are visually impaired. According to the *Kamus Besar Bahasa Indonesia* (KBBI), "tuna" means lacking, deficient, injured, or damaged, while "netra" means sight. Thus, "tunanetra" refers to individuals who are visually impaired, which is further categorized into two groups: blindness and low vision.

According to Oktaviana (2019), blindness differs from low vision in that individuals with low vision still retain a limited capacity for sight. People with low vision typically have a visual acuity of 6/16, which allows them to engage in daily activities similarly to individuals with normal vision.

Low vision is defined as a condition in which a person has a visual impairment that cannot be corrected with eyeglasses, contact lenses, medication, or surgery (Hissett, 2008). According to data from the World Health Organization (WHO, 2012), approximately 285 million people, or 4.24% of the global population, experience visual impairment. Among these, 39 million are blind and 246 million suffer from low vision. More recent data from WHO (2023) reports that 2.2 billion people worldwide live with some form of vision impairment, with one billion cases being preventable or treatable. Low vision represents a significant portion of this global population.

In Indonesia, the number of people with low vision is also considerable. According to the Indonesian Ministry of Health (2019), about 36 million Indonesians experience vision impairment, with 21.7 million suffering from low vision. Despite these numbers, efforts to support this community remain limited, especially in terms of accessible facilities, educational media, and inclusive public services tailored to their specific needs. One significant barrier is the lack of published books and reading materials designed for individuals with low vision

(Sekarlintang, 2019). This includes the limited availability of disaster mitigation books for children with disabilities, particularly those related to earthquake preparedness.

Earthquake mitigation is a critical topic, especially for vulnerable groups such as individuals with low vision. Natural disasters like earthquakes can have devastating impacts. Unfortunately, people with disabilities often receive inadequate education about disaster mitigation and emergency preparedness (Savitri et al., 2024). Studies show that Indonesia is one of the most earthquake-prone countries in the world, particularly regions like Aceh, which lies on the intersection of two active tectonic plates (Tauladani et al., 2015). Located in the Pacific Ring of Fire, Indonesia frequently experiences seismic activity and earthquakes (Sumartiningtyas, 2022). Vulnerable groups, such as the elderly and people with disabilities, often become the majority of victims due to their limited mobility during disasters (Rohmah, 2017). Additionally, according to Genika (2023), children generally have limited understanding of surrounding risks, resulting in a lack of preparedness when disasters occur.

Given these concerns, it is vital to provide early earthquake disaster mitigation education to children with low vision. According to Jean Piaget's theory of cognitive development (Ibda, 2015), children aged 6–11 years are in the concrete operational stage, where they begin to understand logical concepts through tangible objects. Data from Nuri (2023) shows that there are approximately 210,000 children with low vision in Indonesia. These children require specialized educational media that match their visual needs to help them understand information more effectively—such as illustrated books.

However, illustration books specifically designed for children with low vision remain rare, especially those focusing on earthquake disaster themes. Tailored illustration books can significantly enhance comprehension, stimulate interest in reading, and support imagination development. Books designed with inclusive features can serve as vital educational tools in emergency situations. The proposed book will be developed with a design and materials suited to the needs of children with low vision. Currently, no known design has specifically addressed the need for earthquake disaster mitigation materials for low vision children.

Existing tactile illustration books serve as an important reference. One such example is the tactile illustration book on the human skeletal system for children aged 9–11 with low vision, designed by El Baaqi & Aryanto (2022). This book aimed to offer an accessible educational medium and included high-contrast colors, readable fonts, and tactile elements to support sensory-based learning. Trials at special needs schools (SLB) showed the book effectively helped students understand skeletal structure and function while also increasing their learning motivation.

Another noteworthy design is the interactive tactile book using vector techniques for elementary school children with low vision, created by Istichomah & Ulita (2021). The book addresses the limited availability of visual-based learning materials, especially those introducing animals. It combines Braille and standard alphabets, with tactile illustrations that allow children to feel the shapes and textures of objects.

Also, according to Sucipto et al. (2022), the design of daily staple food product icons using tactile elements can significantly assist individuals with visual impairments in identifying and distinguishing goods independently, especially in public spaces such as markets.

From these earlier works, it is evident that books designed for children with low vision typically use tactile illustrations—books that allow readers to "feel" the content through their sense of touch. Tactile elements not only serve as engaging and interactive visual media but also significantly aid children with visual impairments in accessing information and enhancing their literacy skills (D'Angiulli et al., 1998). In implementing this concept, the designer found that clay is a suitable medium for tactile illustrations. Clay can be easily shaped into various forms, allowing for creative tactile designs that are engaging and informative. Tactile books constructed from clay-based materials allow readers to gain a better understanding through touch. **Moreover,** Asrinaldi and Mustafa (2025) suggest that visual mitigation media designed for the general public are not yet inclusive for students with hearing impairments, thus requiring simpler and more easily understandable designs.

Based on the discussion above, the designer proposes the development of an earthquake mitigation illustration book that is both tactile and readable for children with low vision aged 6–11 years. This book is intended to help these children grasp the concept of disaster preparedness in an engaging, accessible manner suited to their visual capabilities. Ultimately, it is hoped that this book will empower children with low vision to respond more independently and calmly in emergency situations.

This study aims to design an earthquake disaster mitigation illustration book that is specifically adapted to the visual and cognitive needs of children with low vision aged 6 to 11 years, in order to support their understanding and preparedness in emergency situations

METHOD

According to Koberg, as cited in Indarti (2020), design methodology refers to a structured sequence of steps undertaken during the design process, aimed at facilitating the systematic development of creative and functional design solutions. In the context of this study, a comprehensive understanding of each stage in the design process is essential to ensure that the resulting product is both user-centered and effective in achieving its intended educational goals. Specifically, the design of an illustration book for children with low vision requires a methodical approach to address their unique visual and cognitive needs while successfully delivering critical content on earthquake disaster mitigation.

To achieve this, the study employs the Design Thinking methodology, a human-centered framework widely used in creative problem-solving. This approach consists of five iterative stages: empathize, define, ideate, prototype, and test. Each stage plays a crucial role in aligning the design outcomes with user expectations. The *empathize* phase involves understanding the experiences and challenges faced by children with low vision. The *define* phase synthesizes insights to articulate a clear problem statement. In the *ideate* phase, various creative solutions are generated. These ideas are then translated into tangible concepts during the *prototype* stage, followed by user-centered evaluations in the *test* phase to assess the book's usability, accessibility, and effectiveness in communicating disaster preparedness.

Design Thinking is a problem-solving approach that consists of structured stages aimed at facilitating the process of identifying and developing effective design solutions. It is widely recognized for its emphasis on empathy and creativity in generating user-centered innovations. According to Brown (2008), Design Thinking is a method that fosters innovation by centering on human empathy and imaginative exploration. Dam and Siang (2024) further define Design Thinking as a user-focused design methodology used to develop innovative solutions to complex problems.

In the context of designing an earthquake disaster mitigation illustration book for children with low vision, the Design Thinking approach is employed systematically through five distinct stages: Empathize, Define, Ideate, Prototype, and Test. This sequential and iterative process ensures that the final product is closely aligned with the specific needs and capabilities of the target users—children with low vision. By following these phases, designers are able to develop meaningful and functional design outcomes that address both accessibility and educational effectiveness.

1. Empathize stage

The Empathize stage serves as the foundation of the Design Thinking process. It involves deeply understanding the user's experiences, challenges, and needs—especially crucial when designing for individuals with disabilities. In this study, the target users are children with low vision, which necessitates a sensitive and structured approach to uncover their specific visual and cognitive requirements. According to Djamaris (2023), empathy in design entails recognizing and appreciating the perspectives and needs of those affected by the problem. This stage emphasizes the importance of listening to and observing the intended users, thereby gaining insights into how they interact with the world and perceive information.

a. Observation process

The observation process was conducted on Monday, April 29th, at Bekasi Jaya Special Needs School (Sekolah Luar Biasa/SLB) located in Bekasi, West Java. This institution accommodates students ranging from elementary to senior high school levels. The observational study aimed to gather insights into the visual capabilities and educational needs of students with low vision. To facilitate this, the researcher conducted visual tracking activities using specially prepared materials. Five sheets of A4-sized paper were used, each containing three different font sizes of Atkinson Hyperlegible, a font designed specifically for low vision readability. The fonts were presented in varying sizes and progressively increasing contrast levels. Additionally, two sheets contained visual illustrations, ranging from simple to complex forms, to assess the students' ability to interpret and distinguish image content based on detail and clarity.

This observational method provided valuable data regarding students' visual responses to typographic and illustrative elements, which later informed the design choices for contrast, clarity, and tactile reinforcement in the prototype development.

b. Interview

In addition to observation, data collection was further conducted through interviews. These interviews were carried out both in person and via telephone. The participants included two teachers of children with low vision, referred to in this study as Respondent 1 and Respondent 2, who work directly with two students—referred to as Child 1 and Child 2—at Bekasi Jaya Special Needs School.

Furthermore, an interview was conducted with a third respondent, a teacher who is herself a person with low vision and teaches at the elementary level in a different school. Respondent 3 is a legally blind educator with severe low vision, currently teaching at a private institution. Although not affiliated with Bekasi Jaya Special Needs School, she maintains a close relationship with a fully blind teacher who works there.

Interviewing an educator who is also a person with low vision provided valuable insights into the lived experience and perspective of someone directly affected by the condition. This added depth and authenticity to the understanding of user needs and challenges.

The interview with Respondent 3 was conducted remotely via telephone due to geographical constraints, while the interviews with Respondents 1 and 2 were conducted face-to-face on location. Prior to the interviews, the researcher prepared a set of key questions. However, a flexible and adaptive approach was employed, allowing the interviewer to adjust the flow and phrasing of questions according to the dynamics of the field situation. This approach aimed to obtain richer and more context-sensitive data regarding the topic of this study.

2. Define Stage

Based on the data collected during the Empathize stage, it can be concluded that the design of an earthquake disaster mitigation illustration book for children with low vision aged 6–11 years presents not only significant strengths and opportunities, but also various weaknesses and potential threats. These findings highlight the complex nature of designing inclusive educational materials for children with visual impairments.

To synthesize the insights gained and better inform the next stages of the design process, the researcher conducted a SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats). This analytical tool is used to systematically evaluate the internal and external factors that could influence the success of the design project. By identifying these aspects early in the process, the designer can strategically plan for challenges, leverage existing strengths, and maximize the potential impact of the final product.

3. Ideate stage

According to Aurino Djamaris (2023), the Ideate stage is the process of generating a wide range of ideas without judgment or limitations. It emphasizes the free and creative flow of thought to encourage the development of diverse and innovative solutions. This stage builds directly upon the insights gathered during the Empathize and Define phases, serving as a bridge between problem identification and design execution.

In this project, the Ideate phase marks the beginning of concept development for the earthquake disaster mitigation illustration book, specifically designed for children with low vision. At this point, initial design ideas and visual frameworks start to take shape, guided by the users' needs and contextual challenges identified in earlier stages.

The ideation process involves careful consideration of various elements that support both visual and sensory accessibility. This includes typographic legibility, color contrast, tactile features, and interactive components that enhance comprehension of the disaster mitigation content. The goal is to generate creative, inclusive, and feasible concepts that align with the cognitive abilities and perceptual characteristics of children with low vision, ultimately laying the foundation for prototyping and user testing.

4. Prototype

The Prototype stage involves the development of an initial model or mock-up of the illustration book, serving as a tangible representation of the design concept. This stage is crucial for testing and evaluating the effectiveness of the proposed design prior to final production.

In this project, the prototype functions as a preliminary version of the earthquake disaster mitigation book, created specifically to assess its usability, accessibility, and clarity for children with low vision. The prototype enables the designer to explore how well the visual and tactile elements align with the needs identified in previous stages and whether the information on disaster mitigation is communicated accurately and effectively.

By observing how the target users interact with the prototype, the designer can identify strengths and weaknesses in the design, make necessary adjustments, and ensure that the final product is functional, accessible, and aligned with its educational objectives. The prototype stage is therefore not only a test of design execution but also a vital feedback mechanism in the user-centered design process.

5. Test Stage

The Test stage was conducted on June 18, aligning with the availability of students and teachers who work directly with children with low vision. Initially, the evaluation aimed to involve two low vision students, as identified in the earlier *Empathize* phase. However, due to unforeseen circumstances, Child 2 was unable to participate in the prototype testing. To ensure the completeness and reliability of the evaluation data, the test was instead carried out with Child 1—who had previously been observed—and a vision-impaired homeroom teacher serving as an additional respondent.

The inclusion of the totally blind teacher offered a broader and valuable perspective. As a person with total blindness, their ability to imagine and interpret the content of the book based on tactile and verbal cues becomes a benchmark: if a person with complete blindness can grasp the content, it suggests that children with partial vision (low vision) will likely find it even more accessible and understandable.

During the evaluation, the designer provided the prototype to both the child and the teacher for exploration. They were encouraged to engage freely with the book's content and tactile elements. After interacting with the prototype, both participants were asked to share their feedback and impressions regarding the usability, clarity, and accessibility of the design. This feedback served as a critical component in identifying areas for refinement prior to final production, ensuring that the book effectively meets the informational and sensory needs of its intended users.

FINDINGS AND DISCUSSION

Findings

The development of the earthquake disaster mitigation illustration book for children with low vision integrates several design elements specifically tailored to the sensory and cognitive needs of the target audience. Each component plays a significant role in enhancing accessibility, comprehension, and user engagement.

a) Guide Character

A guide character is included in the book to prevent confusion when interacting with the audio assistance features. This character also serves a psychological function—addressing the fear children may feel during an earthquake, especially if they are alone. Children aged 6 to 11 are in a developmental stage where imagination is essential; thus, a familiar, friendly figure can provide comfort and reduce panic. The guide character also functions as an auditory identifier, helping children distinguish book narration from environmental noise. The character is designed to be relatable, wearing a commonly recognized outfit—a red and white school uniform.

b) Illustration

Illustrations are created based on the narrative script, focusing on key earthquake mitigation actions such as taking cover under a table, using objects to protect the head, and other critical responses. These visuals are kept simple and are rendered in raised tactile form using paper clay to support visual and tactile learning.

c) Braille

Braille is integrated into the book for users whose low vision prevents them from reading conventional printed text. It serves as an alternative reading method to support literacy and access to information. Braille is placed after the Atkinson Hyperlegible font, enabling children to touch and read the content through tactile exploration. This dual-format approach ensures inclusivity across different levels of visual impairment.

d) Atkinson Hyperlegible Font

The Atkinson Hyperlegible font is selected for its clear, unambiguous letterforms. It avoids decorative elements that might confuse readers with low vision. The font is rendered in bold white, placed over high-contrast navy blue and dark pink backgrounds, chosen to enhance readability for users with reduced visual sensitivity.

e) Color

Color plays a critical role in distinguishing objects and enhancing visibility. For children with low vision, especially those who struggle to differentiate between similar hues, the use of high-contrast color combinations becomes essential. Colors are selected based on brightness and contrast, aiding in object recognition and spatial understanding.

f) Tactile Illustrations with Paper Clay

Paper clay is chosen for its malleability, safety, and realism. Composed of clay mixed with paper fibers, it produces a material that is lightweight, durable, and less prone to cracking. This tactile medium is ideal for children, as it allows for the creation of realistic textures while maintaining the book's manageable size and weight.

The tactile elements created include:

1) Buildings with wall-like textures
2) Open fields with firm, flat textures
3) Human skin with smooth, voluminous forms
4) Helmets with smooth, hard textures

The textures are kept flat to align with the child-friendly book dimensions and ensure ergonomic handling.

6. Design and Production Process

Sketch Development (Figure 1)

Initial concept sketches were created using Clip Studio Paint to define the layout and critical visual elements. These sketches helped determine color contrasts, simplified objects, and the integration of tactile elements and QR codes for audio narration.

Final Illustration (Figure 2)

Final illustrations were completed in Adobe Illustrator as vector graphics. The book was designed in a 23 × 23 cm board book format, with tactile elements crafted from paper clay and affixed to specific illustrations. Page 0 includes a QR code linking to a clearly narrated audio version of the book.

Tactile Element Production (Figure 3)

Tactile components were handcrafted using paper clay, following printed templates of key illustrations. Details were sculpted using hand tools, and the pieces were air-dried. Other tactile surfaces were made using various materials such as flannel fabric for clothing, wooden sticks for furniture, and textured plastic sheets for tents

These materials were chosen to replicate the authentic feel of the depicted objects while ensuring safety and durability.

Braille Creation (Figure 4)

Braille text was manually created using a riglet. The process involved cutting cardstock to the appropriate size, positioning it in the riglet, and punching inverted Braille dots using a stylus. This method allowed for custom Braille inscriptions aligned with the book's printed content.

6. User Testing and Evaluation

The user test was conducted on June 18, based on the availability of participants. While the initial plan was to involve two children, Child 2 was unable to attend, resulting in evaluation data from Child 1 and a blind teacher (a totally blind respondent) being collected instead.

The teacher's insights offered a broader understanding of accessibility, as their ability to conceptualize content without sight serves as an upper threshold of usability.

If a totally blind user can grasp the book's purpose and narrative, it suggests even greater ease for partially sighted users.

During the test, both participants interacted freely with the prototype. Child 1 explored the tactile elements and read the Braille, although minor typographical errors were noted due to manual Braille creation. The child expressed enjoyment in engaging with the tactile features, though there were difficulties in visually interpreting the illustrations, relying mostly on touch and audio guidance.

When testing the audio feature via the QR code, the background sound of the earthquake enhanced the atmosphere and thematic clarity. However, the character voice ("Umi") was perceived as too soft, which reduced the overall effectiveness of the narration.

In terms of illustration comprehension, Child 1 demonstrated an understanding of key visuals, such as the cover image depicting Umi as a guide character and a partially visible globe. The child responded with interest and excitement, indicating that the content was engaging despite their severe visual limitations. Color perception was limited, with Child 1 only able to distinguish light and dark contrasts, such as between bright blue and dark green when focusing their vision.

Discussion

The development of an earthquake disaster mitigation illustration book tailored to children with low vision aged 6–11 years addresses a critical gap in inclusive educational media, particularly in the context of disaster preparedness. As a vulnerable group, children with low vision often face structural, sensory, and cognitive barriers that limit their access to crucial information in emergency scenarios. This research confirms that adopting a Design

Thinking approach emphasizing empathy, iterative development, and user centered design offers an effective framework to meet such needs through practical, creative, and contextually sensitive solutions.

The book's design integrates visual, tactile, and auditory modalities, enabling children with varying degrees of vision loss to interact meaningfully with its content. Multisensory learning has long been identified as beneficial for children with sensory impairments (D'Angiulli et al., 1998; Ferreira & Albuquerque, 2017). In this project, the tactile illustrations made with paper clay provide a textured, engaging interface that encourages touch-based learning. These elements were crucial for Child 1, the primary test subject, who relied heavily on touch to interpret content due to their severe visual limitations.

The use of audio narration through QR codes provided additional cognitive reinforcement. The recorded narration helped the child follow sequences of action and interpret abstract concepts such as danger, safety, and structural shelter. However, the imbalance between background sound effects and the narrator's voice reduced the intelligibility of key instructions. This indicates a need for better sound engineering to maintain a clear hierarchy of audio information. Future revisions should ensure that instructional audio remains foregrounded, possibly with adaptive volume control or multi-layer audio files separated by function (instructional voice, ambient sound, and effects).

The typographic choice of Atkinson Hyperlegible font, designed for low vision readability, is supported by research from the Braille Institute (2019) and was positively received in the field test. The font's clarity, coupled with high-contrast color schemes (white on navy blue or dark pink), contributed to visual legibility for users with moderate vision. However, Child 1, who was classified under severe low vision, could only differentiate between light and dark areas. This highlights the necessity of combining visual with tactile and auditory cues, especially when designing for a broad spectrum of visual abilities.

The Braille component, added as a translation of the printed text, played an essential role in improving accessibility for users who cannot perceive even highly legible fonts. Nonetheless, the manually created Braille using a riglet led to inconsistencies and minor typographical errors, which impacted the reading flow. While the child was still able to explore and enjoy the tactile Braille, this finding underscores the importance of using standardized embossing tools or digital Braille production techniques for future editions to ensure consistency and accuracy.

In addition to its educational function, the book was designed with psychosocial support in mind. The inclusion of a guide character named *Umi*, depicted in a recognizable red-and-white school uniform, helps reduce anxiety by serving as a reassuring presence during earthquake scenarios. Literature on disaster communication for children (Oliver, 1980; Genika et al., 2023) highlights the need for emotionally resonant, age-appropriate guidance during simulations or actual events. By embedding such a character into both the narrative and the audio content, the book helps create an emotional anchor, which is especially important for children navigating fear or confusion in emergencies.

Feedback from the test indicates that the guide character not only provided comfort but also helped children focus and follow instructions more attentively. This supports the hypothesis that familiar visual or narrative elements can enhance learning outcomes by reducing cognitive overload and increasing emotional connection.

While the prototype demonstrated clear potential, several practical challenges emerged:

a. Production limitations

The use of handcrafted tactile elements and manually punched Braille, while appropriate for prototyping, presents scalability issues for mass production. Future iterations should explore industrial fabrication methods (e.g., 3D printing, thermoforming for tactile surfaces, or standardized Braille embossers) to ensure durability, precision, and broader distribution potential.

b. Material safety and durability

Although paper clay proved suitable for tactile design due to its malleability and texture, its long-term durability in the hands of children, especially in classroom or disaster-prone environments, must be evaluated further. Protective coatings or alternative flexible, washable materials might be considered.

c. Cross-disability inclusiveness

While this study focused specifically on low vision, future development could consider multi-disability accessibility, such as incorporating sign language videos, simplified language layers, or voice commands for children with both visual and mobility impairments.

This project also contributes to broader discourses in inclusive education and disaster literacy. Children with disabilities are frequently overlooked in national and local disaster risk reduction strategies (Savitri et al., 2024). The creation of tools like this book not only helps fill that gap but also advocates for the mainstreaming of disability-responsive education materials in public policy and curriculum planning.

Moreover, the use of Design Thinking has proven to be a valuable methodology in navigating this complexity. Its iterative, user-centered nature allowed the designer to remain responsive to real-time challenges, adapt based on field feedback, and create a solution grounded in the lived experience of the intended users. This reinforces the growing recognition of design as a tool for social equity and empowerment, especially for underserved populations.

CONCLUSION

The design of this illustrated book aims to provide an accessible educational medium for children with low vision aged 6–11 years in understanding earthquake disaster mitigation. Employing the Design Thinking methodology, the design process followed five systematic stages: empathize, define, ideate, prototype, and test—each intended to produce a user-centered solution that aligns with the unique sensory and cognitive needs of children with visual impairments.

The final product integrates multimodal elements including visual and tactile components. Key features consist of simplified illustrations enhanced with paper clay-based tactile representations, high-contrast color schemes, Atkinson Hyperlegible font for improved readability, Braille transcriptions, and an audio narrative accessible through a QR code. The inclusion of a guiding character further facilitates cognitive and emotional engagement, particularly in emergency contexts where psychological reassurance is necessary.

Evaluation of the prototype revealed that children with low vision were able to engage with and comprehend the book's content through a combination of tactile and auditory feedback. While overall responses were positive—demonstrating excitement and comprehension—some technical adjustments are necessary, particularly in enhancing audio clarity and correcting Braille inaccuracies due to manual production using riglet tools.

This design project affirms the potential of inclusive design strategies to support independent and interactive disaster literacy among children with low vision. By fostering equitable access to crucial information, this illustrated book not only contributes to educational inclusivity but also raises public awareness regarding the importance of disability-conscious communication tools in disaster preparedness. Future iterations may benefit from cross-disciplinary collaboration to refine production quality and expand implementation in formal education settings.

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