

Developing Disaster Mitigation Educational Media Based on Local Folktales: Interactive Books for Children in Disaster-Prone Areas

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ABSTRACT

Background: Indonesia is a disaster-prone region, yet existing disaster mitigation education media are often unengaging and lack contextual relevance for young children.

Objectives: This study aimed to develop an interactive storybook entitled "Children's Disaster Mitigation Preparedness" (SiMBA), integrating local folklore with digital technology as a disaster mitigation education tool for elementary school students in grades 1–3.

Method: This study employed a Research and Development (R&D) approach using the 4D model (Define, Design, Develop, Disseminate). Validation was conducted by three experts in educational psychology, disaster content, and media design. A limited field trial was carried out at SDN Bidaracina 05 Jakarta involving grades 1–3 students as research subjects. Data were analyzed using descriptive quantitative and qualitative methods.

Result: Expert validation yielded an average score of 3.45 (86.45%), categorized as "Very Appropriate." Field implementation demonstrated student comprehension levels ranging from 93% to 100%, indicating that the integration of local folklore narratives (Tangkuban Perahu, Bukit Kelam, and Lake Toba) with QR Code video features effectively enhanced children's engagement and understanding of eruption, earthquake, and tsunami mitigation.

Conclusion: SiMBA successfully integrates cognitive aspects, cultural values, and digital technology, and is recommended as an innovative and child-friendly disaster mitigation learning model.

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INTRODUCTION

Indonesia's geographical location on the Pacific Ring of Fire, an active tectonic zone, places it at a very high risk of natural disasters. According to data from the National Disaster Management Agency (BNPB), 1,685 natural disasters were recorded in the first semester (2025). Floods remain the dominant threat, with 1,048 incidents, followed by extreme weather and landslides. The systemic impact of these disasters not only damages physical infrastructure but also threatens the safety of vulnerable groups, especially young children who have limited capacity to respond to emergency situations. Therefore, disaster mitigation is no longer merely an option but an urgent necessity that must be integrated into the education system from an early age.

A fundamental challenge in disaster education for early childhood is the availability of materials that often do not align with their psychological characteristics. Dewi (2020) emphasized that mitigation information is often delivered through rigid, conventional methods, triggering fear or even indifference in children. However, during their golden age, children need concrete and enjoyable stimulation. Research by Upik (2023) found that interactive visual media significantly improve children's recall of safety instructions compared to purely verbal instructions.

Developing educational media based on local wisdom is one innovative solution. Local folktales have great potential as educational media because they are rich in moral values and closely related to the realities of children's daily lives. Jeremi (2024) argues that local narratives can serve as instruments for a "disaster awareness culture" that connects collective memories of the past with future preventive measures. This effort is supported by Melina's (2023) findings, which show that illustrated storybooks that highlight local wisdom are effective in increasing schoolchildren's flood mitigation knowledge.

However, in today's digital era, print media alone is no longer enough to engage children accustomed to gadgets. Although previous research, such as that conducted by Catya, Anggalih, and Ardani (2024), has developed animated videos, and Dewi (2024) has explored storytelling techniques, a research gap remains regarding the integration of hybrid media. Few mitigation media combine the narrative power of printed books with the flexibility of e-books and the interactivity of videos through QR Code technology in a single package called Siaga Mitigasi Bencana Anak (SiMBA).

SiMBA is designed to bridge the gap between physical and digital literacy needs. By embedding mitigation messages within folklore, children not only learn about self-preservation but also contribute to preserving Indonesia's cultural heritage. Based on this background, this research aims to create valid, practical, and engaging mitigation media for early childhood.

METHODS

This research is a research and development (R&D) study. The development model used is the 4D model adapted from Thiagarajan, Semmel, and Semmel (1974), which includes four main stages: Define, Design, Develop, and Disseminate. This model was chosen because of its systematic structure and its high effectiveness in producing valid and practical instructional products (Sugiyono, 2008). However, in the context of this research, the Disseminate stage was limited to the trial subjects as a form of initial dissemination.

In the Define stage, the researchers conducted a needs analysis to determine the basis for media development. The steps taken included: (a) a literature review of Indonesia's geographic vulnerability and the urgency of disaster mitigation; (b) observation of the curriculum and mitigation education practices in schools; and (c) analysis of the characteristics of early childhood as the end users. Researchers also explored the potential of local folklore as a tool for packaging materials to make them more contextual and engaging for children (Pratama & Hiram, 2024).

The Design stage focused on developing a prototype for the SiMBA (Children's Disaster Mitigation Preparedness) media. Key activities included: (a) Selecting relevant folklore; (b) Storyboarding a story script that included mitigation messages; (c) Designing visual illustrations; and (d) Integrating digital technology in the form of QR codes linked to animated video content on the YouTube platform. The outcome of this stage was Draft I of the educational media in print and digital formats.

The Development stage aimed to produce a final product that had been quality-tested. This process involved two main steps: first, media expert validation, assessed by three experts: (1) an educational psychologist to assess the material's suitability for child development; (2) a material expert (Geography Teacher) to validate the accuracy of the disaster mitigation content; and (3) a media expert (Fine Arts Teacher) to evaluate the visual and aesthetic quality. Assessments were conducted using a four-point scale questionnaire. Second, a field trial. After revisions based on expert advice, the media was tested on a limited basis at

Bidaracina 05 Elementary School in Jatinegara. The subjects were students in grades 1-3 selected using purposive sampling.

The dissemination phase was conducted on a limited scale by distributing the SiMBA product to school libraries and the educational environment of SDN Bidaracina 05. This aimed to assess the effectiveness of the product's implementation in the short term through observations of children's engagement during the learning process.

Data in this study were collected using three types of instruments: an expert validation sheet, a child engagement observation sheet, and a simple comprehension test (post-test). Data analysis techniques used were descriptive quantitative and qualitative. Quantitative data derived from validator scores were calculated using an average score formula to determine the level of media feasibility. According to Arikunto's (2019) standards, a product is considered feasibility if it achieves a minimum average score of 3.00 (on a scale of 4.00). Meanwhile, qualitative data obtained from validator comments and teacher observation notes were analyzed narratively for descriptive purposes.

RESULT AND DISCUSSIONS

Stages of Developing an Interactive Disaster Mitigation Storybook

The interactive storybook we developed in this research serves as a learning medium that combines local folklore with knowledge about disaster mitigation. According to Mayer (2021), in Multimedia Learning theory, humans learn better from words and images than from words alone. The main character in this book is Simba, who acts as both a mascot and a guide for readers. Simba's presence is designed to accompany children throughout the story, introducing various disaster situations and providing simple explanations of the steps to take. Thus, readers are expected to not only follow the engaging story but also feel like they are being accompanied by a friend as they learn to cope with disasters.

The storyline in this book is constructed by combining local folklore legends with knowledge about disaster mitigation. At the beginning, Simba is introduced to readers as a friend who will accompany the learning process. From a developmental psychology perspective, the use of mascots or accompanying characters can reduce children's anxiety levels when learning about potentially frightening material such as natural disasters (Hurlock, 1997). Next, readers are invited to explore a series of local folktales combined with knowledge about disaster mitigation. Pratama (2024) emphasizes that local wisdom is an effective means of knowledge transfer for Indonesian society.

The first story relates the legend of Tangkuban Perahu, which is linked to volcanic eruption mitigation. The second story takes the legend of Bukit Kelam, which is combined with earthquake mitigation. The final story is the legend of Lake Toba, which is linked to tsunami mitigation.

In addition to presenting the main story, this book also features interactive activities on each transition page from the story to the mitigation section. These activities take the form of barcode links that can be scanned to access disaster mitigation learning videos on YouTube. This interactive media aims to enhance children's understanding through more engaging, informative, and easy-to-understand visuals (Hudhana et al., 2025).

This ensures that readers not only enjoy the storyline but also actively engage in understanding the book's content. The language used is light, conversational, and appropriate for elementary school-aged children, ensuring the educational message is well-received without being overwhelming. With this approach, readers are not only entertained but also gain new knowledge that can be applied in their daily lives.

Through the development of disaster mitigation educational media like this, the SiMBA interactive book becomes more than just a storybook but also a fun learning tool. It is hoped that readers will understand that disasters are indeed frightening, but with the right knowledge and a calm attitude, they can protect themselves and help others around them. The main message emphasized in this book is the importance of preparedness, togetherness, and concern for the surrounding environment as provisions for facing disasters from an early age.

Book Creation Process

The book creation process began with the conceptual planning stage. Early on, it was determined that the book should combine local folklore with disaster mitigation knowledge, ensuring that the messages conveyed were not only educational but also relevant to everyday life. The stories were selected by reviewing several well-known local folklore legends. Three main legends were then chosen: Tangkuban Perahu, Bukit Kelam, and Lake Toba. These three legends were

chosen because they can each be associated with different types of natural disasters: volcanic eruptions, earthquakes, and tsunamis. See Figure 4.1.

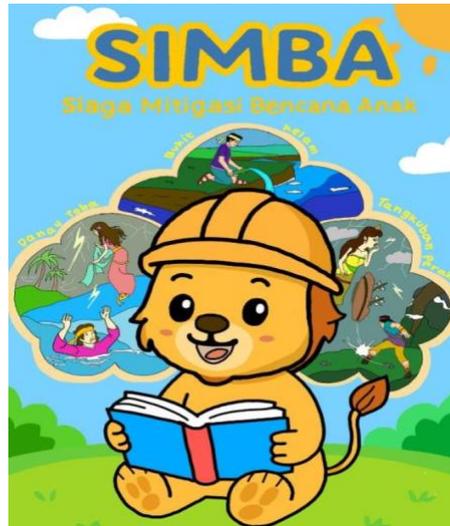


Figure 4.1: Cover of the interactive book "Siaga Mitigasi Bencana Anak" (Children's Disaster Preparedness and Mitigation)

After selecting the concept and story, the next stage is script development. This is done by utilizing information sources to design a simple yet engaging storyline. The main story retains elements of local folklore as they are known to the community, but after each story ends, the plot shifts to the mitigation section, delivered by the main character. Simba appears as the main character and a friendly, cheerful, and affable guide, so readers feel accompanied as they understand the mitigation message. In the Tangkuban Perahu legend, after Sangkuriang threw his boat, which turned it into a mountain, Simba appears to explain the steps to take in the face of a volcanic eruption. In the Bukit Kelam legend, Simba offers guidance on surviving an earthquake. Meanwhile, in the Lake Toba legend, Simba teaches the steps to take when facing a potential tsunami. In this way, the book's manuscript

harmoniously combines elements of entertainment, culture, and mitigation education.

The next stage is creating the visual design and layout in the Canva app. The design was created with children as its primary audience. Bright colors are used, illustrations are drawn simply yet expressively, and text is arranged for easy reading. Simba is visualized with an appearance that is easily recognized and liked by children. To enrich the learning experience, an interactive feature is added at each transition from the legend to the mitigation section: a scannable barcode. This barcode links to an educational YouTube video that presents mitigation steps in audio-visual form, so children can understand the message more easily and enjoyably.

The development process also involved input from experts, particularly on language use, content appropriateness, and visual appeal. The experts suggested simplifying sentences, communicating them more clearly, and adding more illustrations to prevent children from getting bored quickly. Based on this input, the script and design were adjusted to better meet the needs of elementary school children.

The final stage was finalization and preparation of the book, both in print and digital formats. The print version was prepared in a size suitable for children's school reading materials, while the digital version was stored in flipbook format for wider access via barcode-enabled devices (Hidayati, 2022).



Figure 4.2 Barcode of the digital SiMBA book

Thus, the SiMBA book serves as a comprehensive disaster mitigation educational medium, combining local folklore, practical knowledge, engaging illustrations, and interactive features to enhance children's understanding of disaster preparedness (Kartika et al., 2023).

Psychologist Expert Validation

The initial validation of the SiMBA interactive book was conducted by Mrs. Pradita Permatasari Sibagariang, M.Ed, M.Psi, Psychologist. The expert appointed

to provide the assessment is a psychologist with a background in child development in elementary schools. She has experience in research and child support, particularly related to cognitive, emotional, and social development. Therefore, her expertise was deemed appropriate to provide input on the content of learning media materials aimed at children, the primary target audience.

This validation process was carried out after the story script and initial design of the book were completed, in mid-August 2025. The initial draft of the book was presented to the expert for review, with the focus on the appropriateness of the language to the child's developmental level and the clarity of the storyline. The primary objective of this validation was to ensure that the material and content of the book were well-received by readers, both in terms of content and delivery, while maintaining psychological and educational aspects. Therefore, expert validation served as a crucial step in ensuring the book's quality before it was piloted with readers.

The validation results indicated that the material and content of the SiMBA book were appropriate for children's psychological developmental needs. However, the expert provided several suggestions for improvement. One important note was the presence of certain terms deemed difficult for children to understand. The expert suggested adding a simple glossary containing brief definitions of difficult words. Furthermore, the expert suggested supplementing the book with interactive questions to encourage children to be more active in understanding the reading content and to develop their critical thinking skills. The validation results from the psychology expert consisted of 16 questions covering four aspects of appropriateness.

Overall, the expert's comments and suggestions were positive and constructive, with an emphasis on the importance of adapting the language and thought process to the characteristics of elementary school-aged children. This input served as the basis for improvements so that the SiMBA interactive book is not only enjoyable to read but also effective in conveying educational messages about disaster mitigation. With this validation, it is hoped that books will have better quality, be relevant to children's needs, and be able to make a positive contribution to early disaster mitigation learning.

Material Expert Validation

The material validation was conducted by Mr. Singgih Dennysantoso, S.Pd., a geography teacher at the researcher's school who specializes in disaster management, particularly related to geological phenomena such as volcanic

eruptions, earthquakes, and tsunamis. He was selected as a material expert because, in addition to his relevant academic background, he also has experience teaching disaster-related materials to students. Therefore, he was deemed capable of assessing the accuracy, understandability, and suitability of the book's content to the learning needs of the school, particularly for children in disaster-prone areas.

The validation process was conducted in mid-August 2025. The draft was given to Mr. Singgih Dennysantoso for in-depth review. The assessment focused on the accuracy of information regarding disaster mitigation, the suitability of the material to the local context, and the clarity of the steps presented for easy understanding by children. This validation aimed to ensure that all material presented in the book was not only scientifically sound but also relevant to the real-life situations that children might face in disaster-prone areas.

The validation results show that the overall material and content of the book are accurate and in accordance with the principles of disaster mitigation. Geography teachers also expressed their appreciation for the presentation of the story combined with mitigation steps, as it can foster early awareness regarding disaster preparedness. However, the validator provided several constructive suggestions for improving the book's content. One suggestion given was that the explanation regarding the material that comes out of the volcano contained inaccurate information. Therefore, the use of the term has been corrected to avoid misunderstandings among children as readers. Based on other input, related to the addition of sentences and simplification of terms to make it easier for children to understand. We integrated this input in improving the book's content so that the SiMBA book is easier to understand while remaining accurate in terms of disaster material. The validation results from the material experts consisted of 8 questions and 4 aspects of feasibility, which can then be seen as follows:

Overall, the validation results provided crucial input for improving the SiMBA interactive book. Input from disaster experts ensured that the resulting book was not only engaging in its storytelling but also had academic and practical validity. Therefore, this book is expected to be an educational tool that is not only enjoyable but also effective in instilling disaster mitigation awareness from an early age.

Design Expert Validation

The final validation of the SiMBA interactive book was conducted by Michael Yohanes Medianto, S.Pd., a fine arts teacher with experience in graphic design. He was selected as a validator because of his strong understanding of the

principles of layout, illustration, color, and visual appropriateness for children, the primary audience. This expertise was deemed essential for assessing the quality of the book's visual design, ensuring that the developed media was not only aesthetically appealing but also supported children's readability and comprehension of the story.

The validation process was conducted in mid-August 2025. The digital draft of the book was presented to the validator for in-depth review. The assessment focused on visual appeal, the consistency of the Simba character design, and the readability of the text in relation to the illustrations. The validation results showed that the visual design of the SiMBA book essentially met the criteria for interactive learning media for children. However, the expert also provided several suggestions, such as adding varied illustrations to prevent monotony and adjusting the color contrast on some pages to make the text easier to read. Based on this input, the researcher made adjustments to the final design, refining it further in line with the expert input. With validation from the design expert, it is hoped that the SiMBA book will become a more suitable educational medium that not only conveys knowledge related to disaster mitigation but is also visually appealing and appropriate for children's developmental characteristics.

These results indicate that the book's overall design meets the criteria for an innovative, visually appealing, and appropriate educational medium for children. Aspects that received a very good rating included design innovation, clarity of illustrations, legibility of the font, layout, and the relevance of supporting features such as video barcodes (Hidayati, 2022). However, several aspects remained in the "agree" category. This shows that although the book is suitable for use, there is room for improvement to make the media design more optimal and provide a more enjoyable and effective learning experience for children.

The validation results show that the experts averaged a score of 3.45. This figure indicates a "very good" category, with a percentage of 86.45%, indicating that the book design is overall good and able to attract the attention of young readers. The use of the Simba character as a mascot is appropriate because it is easily remembered by children. With expert validation, it is hoped that the SiMBA book will be able to function optimally as an interesting, communicative, child-friendly disaster mitigation learning medium and foster curiosity and enthusiasm for learning in students.

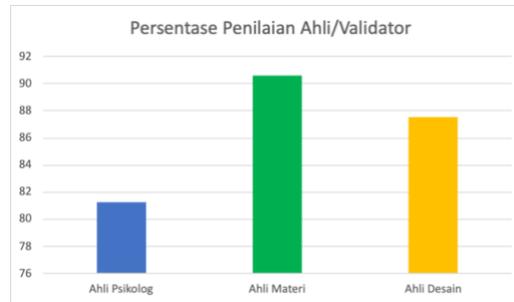


Figure 4.3: Expert Assessment Percentage

The figure above shows the results of expert validation of the SiMBA interactive book. The psychologists' assessment reached 81.25%, categorizing this data as "very appropriate." This indicates that the SiMBA interactive book aligns with children's psychological development. Its language, content, materials, and presentation effectively support children's learning. Furthermore, the material experts' assessment reached 90.62%, categorizing this data as "very appropriate." This indicates that the book's content and materials are relevant, accurate, and appropriate for learning in the context of disaster mitigation education based on local folklore. Finally, the design experts' assessment reached 87.5%, categorizing this data as "very appropriate." This means that the SiMBA book is visually and technically appealing, communicative, and easy for children to use. Overall, the validation results from the three experts met the appropriateness standards across various psychological, material, and design aspects. Therefore, it can be used as an effective teaching medium and can provide a fun learning experience for children.

Interactive Book Implementation and Final Product

After undergoing development and validation by experts, the next stage was to implement the learning media to evaluate the effectiveness of the SiMBA book as a disaster-mitigation education tool based on local folklore for children in flood-prone areas. This implementation aimed to obtain insights into student responses, the level of understanding of the disaster mitigation messages conveyed, and to identify the extent to which the book fostered children's interest in learning. Thus, this implementation will provide information regarding the success of the SiMBA book in achieving its objectives as an interactive disaster mitigation book. This implementation will also help refine the SiMBA interactive book.

Prior to implementation, the researcher obtained permission from the target school, Bidaracina 05 Pagi Public Elementary School. The permit request was submitted officially in a letter to the principal of Bidaracina 05 Pagi Public

Elementary School. After coordination, the school provided approval and full support for the implementation of this learning activity. This support included providing a library space as the activity location, teacher mentoring during the implementation process, and student involvement as the trial subjects.

The implementation activity took place on Monday, September 22, 2025, in the library of Bidaracina 05 Pagi Elementary School, involving elementary school students in grades 1-3. The activity was guided directly by the researcher. Initially, the researcher briefly introduced the meaning and purpose of the SiMBA book to the students. Then, a group reading activity was conducted, in which the researcher read the book aloud, while the illustrations were projected using a projector for students to observe more clearly.

Following the book reading session, the activity continued with an interactive discussion session. During this session, the researcher asked questions about the story, the book's characters, and the disaster mitigation steps demonstrated by Simba. Students were encouraged to actively answer, express their opinions, and share experiences relevant to the theme of flood disasters. This question-and-answer session served as an important tool for assessing students' understanding and developing their critical thinking skills.

Based on observations, students showed high enthusiasm as they followed the story. They understood the message conveyed, particularly regarding disaster mitigation steps. Simba's character as a storyteller has proven effective in fostering closeness with students and encouraging an interactive learning atmosphere. The main objective of this implementation is to assess students' understanding of the material in the SiMBA interactive book, observe their responses to the media, and assess the extent to which the media can foster a pleasant learning atmosphere. The implementation process involved homeroom teachers who supervised the activities and provided assessments of the validation provided by the researcher. The following shows the results of the homeroom teacher validation:

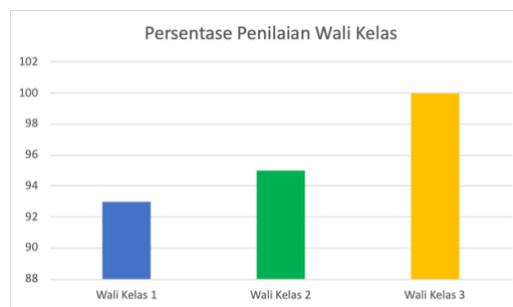


Figure 4.5: Homeroom Teacher Assessment Percentage

Based on the validation results by the first-grade homeroom teacher, the assessment percentage was 93%, which falls into the very adequate category. This score indicates that students have understood the disaster mitigation messages conveyed through the SiMBA interactive book, although there are still some aspects that could be improved. Furthermore, the second-grade homeroom teacher's assessment reached 95%, which falls into the very adequate category. These results indicate that students have quite well understood the disaster mitigation educational material presented, based on local folklore. Finally, the validation assessment from the third-grade homeroom teacher was 100%, placing it in the very adequate category with perfect achievement. This high score is influenced by various factors, such as third-grade students being relatively more mature than those in previous grades, making them easier to direct; a more conducive classroom atmosphere; and a higher level of student understanding. Furthermore, students' more mature learning experiences also contribute to achieving optimal understanding.

Discussion of the Interactive Book on Disaster Mitigation Based on Local Folklore

Indonesia is a country with a high disaster rate. BNPB data shows that thousands of disasters occur each year, with floods among the most frequent. This situation demands greater public awareness of disasters. Therefore, early mitigation efforts are needed not only for adults but also for children, who are the most vulnerable group. The presence of educational media that can convey preparedness messages in a child-friendly manner is crucial. Early mitigation is not limited to providing information but also focuses on how children can understand and internalize the messages through developmentally appropriate learning experiences (BNPB, 2025).

The SiMBA interactive book is designed to address disaster mitigation efforts that can be implemented from an early age, especially for children. This media combines text, illustrations, local folklore, and a video barcode feature accessible on a mobile device. This makes the book not only a reading material but also an interactive platform that engages children in the learning process. Media that combines visual, audio, and child-oriented elements can increase students' attention and understanding of learning materials (Syafira et al., 2024; Wahyuni et al., 2023). Therefore, the SiMBA interactive book is a relevant step in strengthening disaster awareness, especially among children. Mitigation steps include:

Table 4.7 Mitigation steps during a disaster

Volcanic Eruption	Earthquake	Tsunami
<ul style="list-style-type: none"> • Follow evacuation instructions from officials. • Hide in a safe shelter. • Wear a mask and goggles. 	<ul style="list-style-type: none"> • Protect yourself by taking cover under a table if you are still inside the building. • Protect your head with a pillow, helmet, or cover your head with your hands when running out of the building. • Do not use the elevator if you feel shaking; use the emergency stairs to evacuate the building. Once inside the elevator, press all buttons or use the interphone to call the building manager. • Follow evacuation instructions from authorized personnel or an adult. 	<ul style="list-style-type: none"> • Follow evacuation instructions from officials. • Run to higher ground. • Be sure to stay with your group or under adult supervision.

Source: Edited by the author (2025)

In the storyline, the SiMBA interactive book uses a main character who is familiar with the lives of children in flood-prone areas. This character is portrayed as friendly, humble, and a role model in dealing with emergency situations. Through the main character's journey, readers are introduced to the signs of flooding, how to protect themselves, and simple rescue steps. This storyline helps children understand mitigation, not through rigid instructions, but through easy-to-follow narrative experiences. Local wisdom, embodied in folklore, can strengthen children's cultural identity and foster collective awareness of disasters (Lakoro et al., 2019; Wahyuni et al., 2023).

The connection between the storyline and the mitigation message is also evident in the story's moments of crisis. The main character is depicted taking actions such as seeking higher ground, alerting family members, and following directions from adults. This narrative also instills the understanding that in disaster situations, children can play an active role in maintaining their own safety and that of their surroundings. This strategy has proven effective because children more easily internalize values through the role models of characters in the story. This aligns with Vygotsky's view, which emphasizes the importance of companion

figures in the learning process, where characters can serve as social models (Anggraini, 2025; Etnawati, 2022; Ramadan Lubis et al., 2025).

The illustrations in this book also play a central role. The images are presented clearly and colourfully and align with the story's content, thereby enhancing the visual appeal for children. The presence of illustrations helps bridge abstract messages into more concrete ones, especially for students still in the pre-operational thinking stage. The video barcode feature further enriches the learning experience by adding an audiovisual dimension that allows children to see a realistic simulation of mitigation actions. It is stated that images can strengthen children's understanding if they are not confusing and align with the storyline (Jafar & Gawarti, 2025).

From a child development perspective, the SiMBA interactive book has been designed to align with the cognitive stages of elementary school students. According to Piaget, pre-operational children understand information more easily through concrete symbols, while Vygotsky, as quoted in Etnamawati (2022), emphasized the importance of social support in learning. Both are reflected in this book through illustrations, simple narratives, and the presence of main characters who act as role models. Thus, children not only read the story but are also encouraged to practice symbolic mitigation actions in their daily lives.

The effectiveness of the SiMBA interactive book was further strengthened by validation results, which showed a very good rating from psychologists, design experts, material experts, and homeroom teachers. This assessment indicates that the media is easily understood and meets students' needs. Furthermore, the use of local folklore makes disaster messages more contextual and meaningful, as children feel connected to the characters and settings presented. Local wisdom can be an effective means of delivering disaster education because it strengthens children's emotional attachment to the values conveyed (Lakoro et al., 2019).

Thus, in line with Lakoro (2019)'s work on visual culture in disaster education, this discussion confirms that the SiMBA interactive book successfully integrates three important aspects: educational disaster content, suitability to children's developmental stages, and local wisdom values. These three aspects mutually support each other in shaping children's understanding and preparedness for disasters. This media not only provides a new alternative in disaster education but also has the potential to become a local culture-based learning model that can be replicated in various regions. Based on the theoretical foundation and validation results obtained, the SiMBA interactive storybook is worthy of recommendation as

a learning medium in elementary schools in disaster-prone areas (Solfiah et al., 2020).

CONCLUSION

Based on the research objective of developing an interactive storybook "Siaga Mitigasi Bencana Anak" (SiMBA) based on local folklore and integrated with digital technology as a disaster mitigation education tool for elementary school students in grades 1–3, this research successfully produced a valid and suitable learning media product. Using the Research and Development (R&D) method with the 4D development model (Define, Design, Develop, Disseminate), the development process was carried out systematically, starting with needs analysis, content and media design, expert validation, and product refinement. Validation results by subject matter experts, media experts, and psychologists indicate that the SiMBA interactive book is of good quality in terms of content, presentation, developmental suitability for children aged 6–9, and clarity of disaster mitigation messages.

The integration of local values and cultural context strengthens the media's educational power. By linking local legends to mitigation concepts, children learn not only about disasters but also about local wisdom, a sense of responsibility for nature, and the importance of cooperation. Thus, the SiMBA interactive book not only fulfils its development goal as an informative and engaging educational medium for disaster mitigation but also contributes to building resilient character, improving disaster literacy, and strengthening the cultural identity of elementary school students in disaster-prone areas.

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