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Exploring Geo-Pedagogy Role through Thematic Playmat Media for Early Childhood Disaster Mitigation

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ABSTRACT

The disaster vulnerability of Indonesia is intensified by its complex physiographic conditions which place early childhood at significant risk. This study aimed to develop Bencatala Playmat as an educational medium for introducing disaster mitigation in early childhood education. The research applied a Research and Development approach by adapting Plomp's model. Data were collected through classroom observations, guided interviews with teachers and parents, and field documentation during the use of the Bencatala Playmat. The media integrates a physical playmat with visual symbols and sensor-based audio to support interactive based on multimodal disaster learning. The results indicate high learner engagement, accurate image–action associations, and improved observable preparedness behaviors. These responses indicate that the integration of spatial elements grounded in geo-pedagogical principles makes disaster concepts more concrete and meaningful for children. The study demonstrates practical and educational impacts by enhancing early childhood disaster awareness, preparedness behaviors, and strengthening teacher and parent involvement in disaster education.

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1. INTRODUCTION

Indonesia is an archipelagic country that is geologically and climatologically situated in a disaster-prone region. Its location along the Ring of Fire and exposure to tropical atmospheric dynamics increase its vulnerability to geological hazards such as earthquakes, volcanic eruptions, and tsunamis, as well as hydrometeorological hazards including floods, landslides, and droughts (BNPB, 2023). One of the regions with a high level of disaster risk is Malang. This vulnerability is influenced by complex physiographic conditions, including mountainous terrain, hilly areas, and the southern coastal zone that directly faces the Indian Ocean (Rusli & Ulya, 2018). The high frequency of natural disasters has resulted in significant physical and social losses (Khan et al., 2022). In 2022, Malang recorded 639 disaster events, with around 416 affected individuals and estimated economic losses reaching IDR 163.1 billion (BPBD Jawa Timur, 2023; BPS Jawa Timur, 2023).

Early childhood typically ranging from ages 3 to 5 years, constitutes a group that structurally faces high risk in disaster situations. Each year, around 40–60% of disaster-affected victims in Indonesia are dominated by individuals in early childhood (BNPB, 2019b; UNICEF, 2020). The high vulnerability of this age group is influenced by several factors, including physical limitations, emotional immaturity, and early-stage cognitive development. In disaster scenarios, children often exhibit responses of confusion and fear due to insufficient cognitive capacity to understand emergency conditions or recognize potential threats in surroundings (Anindhita et al., 2024). Physical limitations also contribute to a lack of bodily resilience to withstand external pressure, which increases the risk of serious injury in emergencies (Craig & Nejat, 2025). Therefore, there is an urgent need for developmentally appropriate disaster education that introduces mitigation concepts at an early age, that supporting children to build foundational awareness, adaptive responses, and preparedness behaviors before disaster events occur.

As a preventive action, disaster risk education has become a core component of the early childhood education curriculum. A study by Azzahra (2023), indicates that disaster education at the early childhood level still faces multiple challenges in practice. One of the main barriers is the limited capacity of teachers to deliver content related to natural disaster mitigation. Research conducted by Laili & Ningrum (2023), also shows that most early childhood educators have not received specialized training in disaster education, and the available learning materials lack coherence with early children's developmental stage.

The limited implementation of disaster mitigation education for early childhood frequently reduces the effectiveness of learning. This condition also restricts the growth of resilience and adaptive responses needed in disaster situations. Geo-pedagogy offers a constructive framework by linking geographical understanding with pedagogical practices. Through this approach, children can develop basic spatial literacy, awareness of the surrounding environment, and the ability to recognize disaster risks in ways that align with developmental stages (Alkouri, 2022).

Another significant challenge in implementing disaster mitigation education at the early childhood level is the limited availability of appropriate learning media. Interviews with the Badan Penanggulangan Bencana Daerah (BPBD) in Malang City, revealed that disaster mitigation efforts have been implemented across various educational levels, yet the execution at early childhood education level continues to face obstacles. These challenges are primarily due to the lack of concrete learning media, considering that early childhood learners are not yet able to conceptualize abstract events such as natural disasters without tangible or visual support. According to Cahyani et al. (2020), educational media in early

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childhood education should be intentionally designed to deliver concepts in a simple, communicative, and age-appropriate way.

Various disaster mitigation learning media have been developed to support disaster education for early childhood. The *lift-the-flap* book by Ubaidillah et al. (2024), was designed to introduce flood mitigation concepts to children aged 5–6 years. However, the material could be further refined to provide safety guidance that aligns more closely with the developmental characteristics of early childhood learners. Another disaster education media was introduced by Rahiem & Husna (2020) in the form of a picture storybook focusing on volcanic eruption mitigation for early childhood. However, this media still presents limitations in terms of visualization, material quality, and linguistic appropriateness, which reduces its effectiveness in engaging learners and supporting their understanding.

Another disaster mitigation media was developed by Yusmaniar & Munawwarah (2024) that introduced a digital pop-up book designed to deliver content through visual and audio elements. This media tends to create a passive learning experience and lacks the direct interaction required by early childhood learners. In addition, reliance on digital devices and technological infrastructure can pose implementation challenges in early childhood education settings with limited access to facilities. Most of these media remain one-directional, provide limited opportunities for exploration, and are not fully aligned with the learning styles of early childhood learners. Children aged 3–5 years generally exhibit visual, auditory, and kinesthetic learning preferences, which require concrete media that can be touched, seen, and explored (Lersilp et al., 2024).

Based on the aforementioned issues in disaster education, an innovation emerged in the form of Bencatala Playmat, a disaster mitigation learning media designed for early childhood. A playmat is a commonly used instructional tool in early childhood education that consists of a soft mat featuring illustrations and activities that encourage children to learn through interactive play. According to Wang et al. (2023), the use of playmats in early childhood learning activities can enhance both motor and cognitive engagement simultaneously. Another study by Wynberg et al. (2022), indicates that thematically designed playmats help children understand learning concepts, activity sequences, and visual symbols related to real-life situations. In disaster mitigation learning, this media can be adapted to deliver educational messages through play-based activities. Game-based learning media can significantly improve attention, motivation, and conceptual understanding in early childhood learners (Hibana et al., 2024).

This playmat innovation is equipped with props and technologies such as sensory audio and augmented reality, allowing children to explore disaster experiences in an interactive way. The integration of these technologies can enhance children's engagement and help reinforce their memory of key information delivered during learning. Guidance provided by teachers and parents also supports the optimal implementation of this media in both school and home settings. Based on this description, this study aims to examine the role of the Bencatala Playmat as a innovation medium to support disaster mitigation understanding in early childhood.

2. METHODS

This study employed a Research and Development (RnD) framework. The development model was adapted from Plomp (2013), which consists of three main phases, namely preliminary research, prototyping phase, and assessment phase. The Plomp model was

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selected due to its orientation toward the learning context and its emphasis on a development process that focuses on implementation to evaluate the functionality and acceptability of the product directly by users. Data collection techniques include classroom observation of early childhood activities, guided interviews with teachers and parents, and documentation in the form of field notes and photographs during the use of the Bencatala Playmat.

The instruments used consist of a child engagement observation sheet, guided interview protocols for teachers and parents, field notes and photo documentation during the learning process, as well as expert validation forms for content and design-illustration aspects. Data were analyzed using a qualitative-descriptive approach through data reduction, data display, and conclusion, with information from interviews, observations, and documentation organized into concise findings.

Quantitative data were used to evaluate the validity of the content and the appropriateness of the design and illustrations through expert assessments of the Bencatala Playmat. Content evaluation by subject-matter experts employed a four-point Likert scale: (1) Not feasible, (2) Less feasible, (3) Feasible, and (4) Highly feasible. The average scores from each item served as the basis for determining the validity and feasibility of the developed media, in accordance with the four-point scale standards (Pradana & Mawardi 2021). The design and illustration evaluation employed a five-point namely (1) Not Feasible, (2) Slightly Feasible, (3) Moderately Feasible, (4) Feasible, and (5) Highly Feasible. The media development process is illustrated in **Figure 1**.

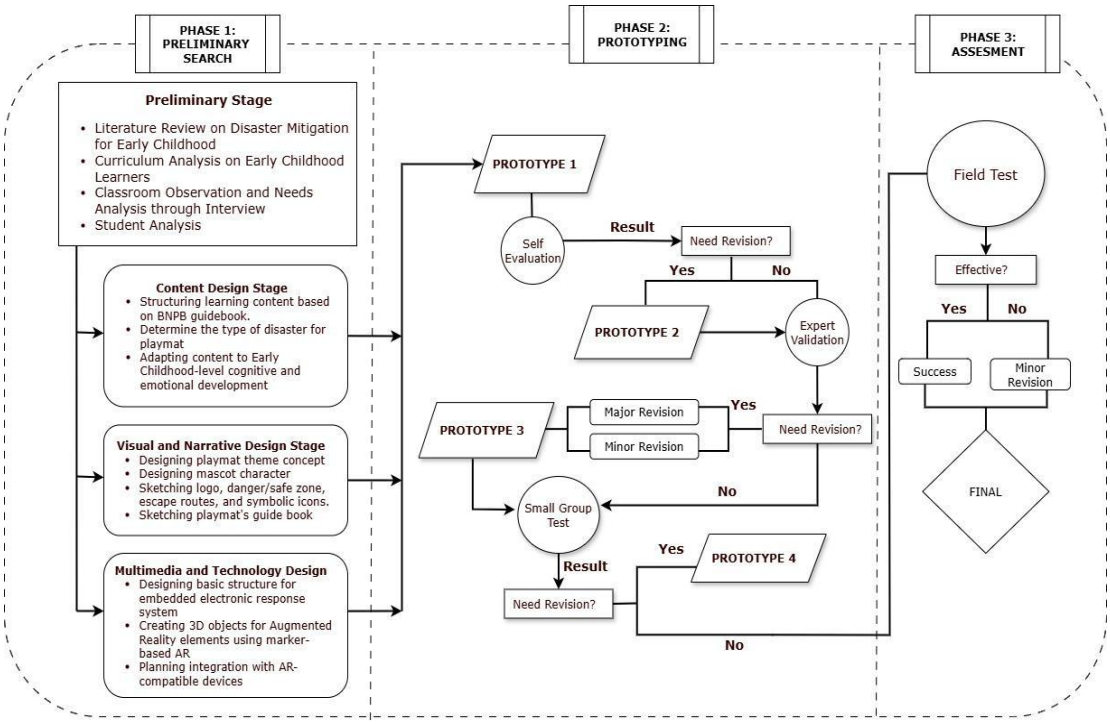

Figure 1. Conceptual framework of the development process

2.1. Phase 1: Preliminary Search

The preliminary research stage represents the initial phase of the Plomp development model, which aims to formulate the theoretical foundation and contextual framework prior to the development of the learning media. Activities conducted during this phase include a comprehensive literature review on disaster education for early childhood, as well as an analysis of the early childhood education curriculum to ensure the alignment of disaster

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related themes with the targeted learning competencies. This phase also involves classroom observations and interviews with teachers to examine the existing learning environment, teacher perceptions, and instructional challenges related to disaster topics. Furthermore, an analysis of learner characteristics is carried out to gain insights into cognitive levels, learning interests, and children's emotional responses.

2.2 Phase 2: Prototyping

The prototyping phase was conducted progressively with continuous evaluation. Prototype 1 was developed from the initial design and reviewed through self-evaluation to check content relevance, structure, and functionality. Prototype 2 was revised accordingly and validated by experts in education learning media and educational illustration design. Prototype 3 integrated these inputs and was tested in a small group of five early childhood learners to examine clarity, engagement, and effectiveness in delivering disaster mitigation messages. Feedback from this trial refined Prototype 4, resulting in the final prototype that fulfilled standards of validity, visual quality, and pedagogical appropriateness.

2.3 Phase 3: Assessment

This phase centers on summative evaluation to assess the final quality of the product developed through previous iterative stages. The evaluation aims to measure the effectiveness of the media in achieving learning objectives, the relevance of its content to the needs of early childhood learners, and its feasibility for implementation in early childhood education. The final product is tested in two early childhood education institutions with different learner characteristics to represent the diversity of early learning environments. The evaluation focuses on identifying children's engagement, affective responses such as enthusiasm, interest, and empathy, as well as their understanding of simple actions related to disaster mitigation. The summative evaluation process involves nationally external reviewers with expertise in early childhood education and educational media development. The assessment emphasizes the effectiveness of implementation, the alignment of content with developmental stages, and the media's potential for broad application in disaster mitigation education practices.

3. RESULTS AND DISCUSSION

3.1. Phase 1: Preliminary Research

The development of the Bencatala Playmat as a disaster mitigation medium for early childhood began with the Preliminary Investigation phase. Disaster education is formally included in national guidelines, such as the *PPPRB Module* and character education documents embedded in the 2013 Curriculum. However, its implementation in early childhood institutions remains limited, as many educators lack resources, training, and participatory strategies suited to early learners (Talango et al., 2025). This situation reflects a significant gap between regulatory frameworks and actual instructional practices in the field. The Merdeka Curriculum, highlights outcomes including environmental awareness, safety rules, and self-protection skills (Kemdikbud RI, 2019). These outcomes align with disaster education principles such as risk recognition, safe zone identification, and emergency response. The integration of disaster education has yet to be strengthened by media specifically designed to match the developmental characteristics of young children across cognitive, socio-emotional, and motoric domains.

Classroom observations and interviews with teachers and parents revealed the limited availability of concrete media that effectively support early children's active engagement in

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understanding disaster risk and response concepts. Most teachers rely on verbal storytelling and drawing activities, which are insufficient in facilitating multisensory experiences needed for children to recognize danger zones, evacuation routes, and safety zone. These findings are further supported by student analysis, which indicates that children aged 3 to 5 years show a strong interest in interactive media and play-based learning approaches. The results of the questionnaire on children's needs and interests are presented in **Table 1**.

Table 1. Summary of Needs Assessment

Aspect	Statement	Likert Scale (%)			
		Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**
1. The Role of Learning Media in Early Childhood Education	Instructional media assist teachers and parents in facilitating early childhood learning.	0,8	0,8	23,6	78
	Teachers and parents regularly use media to enhance learning activities.	0,8	5,7	51,2	42,3
2. The Need for Interactive Learning Media	Children quickly lose interest in learning without interactive media.	0,8	5,7	41,5	52
3. The Potential for Media Development	The Bencatala Playmat supports disaster mitigation education for early childhood learners.	0	1,6	52,8	45,5

Source: Researcher analysis (2025)

The needs analysis presented in Table 1 served as the foundation for designing content, visual illustrations, technological integration, and the structural framework of the playmat media. This approach aims to address the preferences, limitations, and implementation potential of the learning media. The Content Design stage focused on developing disaster mitigation content based on the *Buku Saku Bencana* published by Badan Nasional Penanggulangan Bencana (BNPB, 2019a). The selected disaster types comprised earthquakes, droughts, volcanic eruptions, tsunamis, landslides, and floods. These disasters were chosen due to their high relevance to Indonesia's geographical context (BPBD, 2022) and the ease of symbolic visualization for early childhood learners.

The content includes the identification of danger signs, protective objects, and disaster response behaviors in three key phases of the disaster cycle namely the pre-disaster phase, the disaster phase, and the post-disaster phase. Each phase is designed to help children recognize and understand what actions to take in various emergency situations. The development process was adjusted to match the cognitive and emotional developmental levels of early childhood by using simplified vocabulary, visual representations, story-based narratives, and easily recognizable symbols.

In the Visual and Narrative Design phase, the thematic concept of the playmat was developed based on familiar environments such as home and school. The main mascots were designed as male and female child characters symbolizing helper roles, safety, trust, and emotional connection for early learners (Ardhianto et al., 2024; Nasruddin et al., 2025). Visual elements, including safe zones, danger zones, and evacuation icons, were simplified for easy recognition, and a guidebook was created to provide instructions,

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parental and teacher guidance, and song lyrics to reinforce safety messages. The development further advanced into Multimedia and Technology Design, incorporating audio responses through sound-activated buttons and marker-based Augmented Reality (AR) technology to present disaster scenarios in 3D formats accessible via smartphones, thereby offering an interactive and immersive learning experience (Zhu & Li, 2021).

3.2 Phase 2: Prototyping

Bencatala Playmat is a circular learning media with a diameter of two meters. The base material uses taslan coating fabric, with characteristics for being lightweight, flexible, water-resistant, and safe for both indoor and outdoor use (Jauhari, 2019). The inner layer of the playmat is padded with dacron to provide a soft surface that enhances comfort during children's activities. The choice of material reflects the principle of *child-centered safety* design, which prioritizes safety, comfort, and the suitability of media for early childhood developmental needs (Lu et al., 2021; Shaw et al., 2024). The Bencatala Playmat is illustrated in **Figure 2**.

Figure 2. Components of the Bencatala Playmat

The circular design of the Bencatala Playmat is inspired by the Beyond Center and Circle Time (BCCT) learning approach. This approach emphasizes center-based activities and group interaction during circle time in early childhood education (Werdiningsih & Rochmah, 2023). BCCT-based games encourage active participation, strengthen children's social and emotional skills, and stimulate cognitive and motor development (Aulia, 2024; Bili et al., 2024). Each circular layer includes touch sensors that allow children to play audio narratives and instructional questions voiced by child characters Beni and Lala. According to Cuadrado et al. (2020), the use of audio stimuli in learning help increases children's attention and emotional engagement.

The Bencatala Playmat illustrates six disaster mitigation stages through two layered surfaces, with pre-disaster icons on the first layer and actions during and after a disaster on the second. The use of high-contrast colors, simple characters, and recognizable symbols supports children's responsiveness to visual cues and symbolic representation during early development (Greenburg et al., 2020). These visual elements also help build initial cognitive schemas of cause-and-effect, particularly in understanding the sequence of actions required before, during, and after a disaster (Subarno & Dewi, 2022) .

The playmat also includes miniature physical props representing essential items needed during a disaster that help children build conceptual understanding through familiar and concrete objects, while guided narratives by mascots Beni and Lala provide meaningful

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contextual learning. Physical play supports fine motor skills as children sorting and moving items (Ashwini et al., 2021). Augmented Reality (AR) features enrich disaster scenarios such as earthquakes and floods, offering concrete visualization that improves comprehension and imagination (Nisa et al., 2024).

In the preliminary research phase, the Bencatala Playmat was developed into a physical prototype and analyzed through self-evaluation by the development team. Findings revealed that disaster-related content was still incomplete and required simplification to align with early childhood cognitive development. Visual components also needed improvement to represent disaster types more clearly. Several technical problems emerged, including printing errors, malfunctioning sensors, disproportionate dimensions, limited royalty-free audio, low sound quality, and poor cable arrangement. Revisions addressed these issues by refining content and illustrations, adjusting print dimensions, reorganizing the electronic system, and enhancing the audio design. After these improvements, the prototype was validated by experts in instructional media and visual design, as presented in **Table 2**.

Table 2. Summary of Expert Validation for the Bencatala Playmat Media

Aspect	Total Item	Total Score	Max. Score	Percentages (%)	Category
Content	7	22	28	78.6	Feasible
Language	3	8	12	66,7	Quite Feasible
Visual	2	6	8	75	Feasible
Total	12	36	48	75	Feasible

Source: Researcher analysis (2025)

The expert validation results indicated that the Bencatala Playmat was considered feasible as a disaster mitigation learning tool for early childhood, requiring only minor revisions. The content was judged relevant and developmentally appropriate, while the visual design was found to align with early childhood characteristics. The main area requiring improvement was the language aspect, which needed adjustments in sentence structures, vocabulary, and terminology to better match the linguistic abilities of young children. These results highlight the importance of refining language features to maximize the accessibility and effectiveness of the playmat in early childhood learning. Consistent with these findings, the design and illustration aspects also supported the overall feasibility of the media, as summarized in **Table 3**.

Table 3. Expert Feedback on the Design and Illustrations of the Bencatala Playmat

Aspect	Total Item	Total Score	Max. Score	Percentages (%)	Category
General Appearance	5	24	25	96	Very Feasible
Key Visual Elements	3	15	15	100	Very Feasible
Media Layout	6	28	30	93,3	Very Feasible
Total	14	67	70	95,7	Very Feasible

Source: Researcher analysis (2025)

The validation results for design and illustration in Table 3 show that the Bencatala Playmat achieved a feasibility percentage of 95.7 percent and was classified as highly feasible. The general appearance, key visual elements, and layout were considered highly appropriate for early childhood characteristics. The engaging illustrations, joyful color use,

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and structured elements were found to enhance children's understanding and engagement in disaster mitigation learning. The revised media was then used in a small group test to gather data on its functionality and learners' responses during the learning process. The documentation of the small group test implementation is presented in **Figure 3**.

Figure 3. Small Group Test Session

Based on Figure 3, various non-verbal responses reflected active involvement throughout the learning process using the Bencatala Playmat. Attention was directed toward following the narrative flow, pointing at visual elements related to disaster mitigation, and singing the mitigation song together. These forms of interaction indicated that the media successfully stimulated attention and facilitated both visual and auditory comprehension (Sumardi & Mulyadi, 2022). The inclusion of characters and contextual disaster narratives enhanced emotional engagement in understanding mitigation messages. Observations also identified a technical issue involving the non-functioning tsunami audio component. Additional demonstration tools, such as essential items for emergency situations, were needed to support more active role-play of the narrative. Improvements included replacing the damaged audio component and adding relevant props to the Bencatala Playmat media.

3.3 Phase 3: Assessment

In the final assessment stage, the Bencatala Playmat media was tested through a field test at two partner schools as implementation sites within educational settings. The test was conducted at an integrated Islamic early childhood institution and TK ABA 3. This trial aimed to evaluate the overall effectiveness of the media, covering technical aspects, pedagogical value, and user responses. The field test process is presented in **Figure 4**.

Figure 4. Field Test Session

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The implementation of the Bencatala Playmat provided children with hands-on learning through interactive activities. The thematic playmat was designed as a simple map depicting homes, schools, rivers, mountains, and evacuation routes, making geographical concepts more accessible to early learners. Visual media helped transform abstract situations into concrete representations, while also enhancing attention and imagination (Jankowska et al., 2019; Thibodeau-Nielsen et al., 2021). Teachers acted as facilitators by reviewing the guidebook and guiding children to match narrated passages with corresponding images on the playmat. This process strengthened recognition, classification, and visual-verbal associations (Khotimah, 2020). Observation results revealed an interactive and enthusiastic classroom atmosphere, showed by active participation in locating and pointing at appropriate images on the playmat surface. This activity supported the development of focus and the ability to associate images with stories, which is essential in early cognitive development (Greenburg et al., 2020).

The narrative delivery concluded with children touching number sensors on the playmat to activate audio explanations about the stages of disaster mitigation from pre-disaster to post-disaster. Information delivered through audio reinforced memory retention through the auditory pathway, which contributes to the functioning of long-term memory systems (Sepp et al., 2019). During playback, facilitators guided children through motor activities such as retrieving an emergency bag and sheltering under a table, directly demonstrating appropriate disaster responses. Simulations help stimulated motor development and strengthened preparedness through practical engagement (Zaini et al., 2020). The inclusion of spatial elements on the playmat reflected geo-pedagogy by helping children identify spaces, directions, and environmental relationships (Khalawati et al., 2025).

The Bencatala Playmat supported the formation of episodic memory in early children. Episodic memory stores experiences, event sequences, and emotional responses (César & Cansino, 2024). This process enhanced deeper encoding, allowing information to be transferred more easily into long-term memory and accessed when needed in real-life situations (Smith, 2019). These findings indicate that the Bencatala Playmat successfully created a supportive and enjoyable learning environment while stimulating cognitive, social, and motor development. The effectiveness of the Bencatala Playmat media is demonstrated through user responses presented in **Table 4**.

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Table 4. User Response

Aspect	Statement	Likert Scale (%)			
		(Strongly Disagree)	(Disagree)	(Agree)	(Strongly Agree)
Effectiveness of Bencatala Playmat	The use of Bencatala Playmat support children's interest in the disaster mitigation learning process.	0	0,8	24,4	74,8
	The availability of visuals and illustrations helps children better understand the disaster mitigation content.	0	0,8	37,4	74,8
	The integrated audio feature supports disaster mitigation learning for early childhood.	0,8	0,8	24,4	74
Feasibility of Bencatala Playmat for Early Childhood	Bencatala Playmat is feasible for early childhood to understand disaster mitigation.	0	1,6	52,8	45,5
	The visual representation of disaster mitigation is easily understood by children.	0,8	5,7	37,4	56,1
User Interest	I am interested in using Bencatala Playmat as a learning medium for children's disaster mitigation education.	0	0,8	45,5	53,7
	I support the use of Bencatala Playmat in early childhood disaster mitigation education	0,8	4,1	34,1	61

Source: Researcher analysis (2025)

The evaluation results in Table 4 show that the Bencatala Playmat media received highly positive responses from teachers and parents. The media was considered effective in creating meaningful learning experiences for early childhood through the integration of visual, audio, and motor activities. Teachers noted that the playmat facilitated thematic learning in a concrete and enjoyable manner, making it easier for children to understand disaster mitigation messages. Activities designed to be interactive and responsive to developmental characteristics further enhanced the effectiveness of the media in early childhood education.

Parents also expressed appreciation for the usefulness of the media in supporting children's learning within the home environment. The Bencatala Playmat was considered effective in bridging the role of families in disaster preparedness education through more active and participatory involvement. The media was viewed as enriching children's play activities while strengthening awareness of the importance of emergency response from an early age. Positive support from teachers and parents served as an indicator that the media is relevant and applicable for broader implementation in disaster mitigation learning within early childhood education settings. Evaluation was also assessed by the Badan Penanggulangan Bencana Daerah (BPBD) of Malang City and the Head of the Malang City Education and Culture Office in **figure 5**.

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Figure 5. Evaluation by the BPBD of Malang City and the Head of the Malang City Education and Culture Office.

The assessment process was conducted to ensure that the content, design, and pedagogical approach were aligned with disaster management standards as well as local education policies. The involvement of BPBD provided legitimacy in terms of technical disaster aspects, while the approval from the Education and Culture Office strengthened its relevance to early childhood learning within school contexts. The assessment results from both institutions confirmed that the media is feasible to be used as an educational tool for disaster mitigation, being relevant, safe, and aligned with the learning needs in Malang City.

The Bencatala Playmat media received positive responses from reviewer, yet field findings also revealed several limitations that require consideration in future development. The large physical size of the media posed challenges during implementation, particularly in early childhood education institutions with limited classroom space. Optimal placement of the media required sufficient room to allow unrestricted movement and interaction. In addition, the content currently focuses on only six types of disasters commonly occurring in Indonesia, which limits the potential for more diverse learning scenarios.

4. CONCLUSION

The findings highlight the contribution of geo-pedagogy in reinforcing disaster mitigation education at the early childhood level. By integrating spatial concepts such as location, direction, and environmental interconnections, the playmat effectively linked geographical understanding with disaster preparedness practices. The thematic design functioned as a highly engaging medium that merged visual, auditory, and kinesthetic modalities, thereby supporting cognitive encoding while simultaneously fostering practical readiness. These findings confirmed the initial research objective, which emphasized the need for a concrete and developmentally suitable learning media that could bridge the gap between conceptual disaster knowledge and practical readiness in early childhood settings. The application of Plomp's model also proved effective in guiding the iterative development process based on user feedback. However, this study was limited by its restricted implementation scope and short-term evaluation, relying mainly on qualitative indicators of engagement and preparedness. Future research may focus on expanding the types of disaster scenarios included in the media, as well as evaluating its long-term impact on children's preparedness and resilience in real-life situations.

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6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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