

Designing an Activity Book as a Batik Educational Media for Children Aged 6-12 at the Batik Museum

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Abstract

The low level of focus among elementary school-aged children when observing static collections at the Museum Batik Indonesia poses a challenge in delivering cultural information effectively. Children tend to overlook complex historical narratives and only interact briefly with the exhibits. This research aims to design an interactive activity book as an adaptive companion educational medium for children aged 6-12 years. The design method employed is the ADDIE model (Analysis, Design, Development, Implementation, Evaluation) using a qualitative approach. The analysis phase identified the visual needs of children, who tend to favor interactive elements and storytelling. During the development phase, an activity book was produced featuring mascot characters, simplified batik motif illustrations, and a bright color palette to maintain audience attention. Field implementation results indicate that the use of the activity book significantly increases children's focus duration and independence in exploring museum collections. Through a series of visual and motor challenges, children are able to understand batik philosophy in a more enjoyable and participatory manner. In conclusion, integrating interactive media into museum visits is proven effective in transforming passive learning patterns into active exploration. This design contributes to the preservation of batik culture through visual communication media that aligns with children's cognitive characteristics.

Keywords: activity book, batik education, museum batik indonesia, children, visual communication.

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1. Introduction

Batik is a cultural identity of the Indonesian nation that has gained global recognition from UNESCO as a Masterpiece of Oral and Intangible Heritage of Humanity in 2003, which promotes batik as a political identity brand for Indonesia [1]. Following the designation of batik as an intangible cultural heritage by UNESCO, Presidential Decree on October 2, 2009, established National Batik Day [2]. One of the reasons for establishing National Batik Day was to increase public awareness regarding the protection and preservation of Indonesian batik [3]. However, amidst the massive penetration of global culture, batik preservation efforts face significant regeneration challenges, particularly in strengthening cultural identity among the younger generation. The continued existence of batik highly depends on the younger generation, who possess the potential and capacity to develop their own culture [4]. Without systematic introduction from an early age, batik risks being viewed merely as a formal clothing commodity

without its spiritual and historical essence being understood.

Museums serve as primary centers for education, preservation, documentation, and cultural development. These institutions function to collect, maintain, present, and preserve the cultural heritage of society for the purposes of study, research, and entertainment [5]. Fundamentally, the educational process is not only limited to formal classroom settings but also occurs through informal education within the community, such as through museums like the Museum Batik Indonesia in Jakarta [6]. As a center for education and conservation, this museum holds a strategic role in bridging the history of Nusantara batik with the wider public.

Despite having a rich collection, delivering educational material to elementary school-aged children requires a visual strategy that aligns with their world. Generally, elementary school children aged 6-12 possess a high degree of curiosity, necessitating educational media that can assist them in satisfying that inquisitiveness

[7]. Through such a selection mechanism, a child's awareness will focus entirely on a specific object while ignoring other surrounding elements. Therefore, educational media must be designed with strong visual appeal to effectively direct the child's focus toward the cultural message without being distracted by excessive information.

Efforts to introduce batik through interactive media, such as activity books, serve as a vital initial step in building a connection with cultural heritage from an early age [8]. This aligns with Piaget's theory [9] which states that children require concrete object stimuli to understand abstract concepts through physical actions. Consequently, integrating batik's cultural values into children's imaginative spaces through a more recreational approach becomes a crucial solution for optimizing the museum's role as an enjoyable learning facility.

From a visual communication design perspective, activity books serve as learning media capable of engaging both a child's cognitive and motor skills at the same time [10]. Unlike static reading media, activity books provide space for children to actively participate in the content, elements such as illustrations, games, motif riddles, and engaging fun facts about batik can enrich the learning process, stimulate interest, and enhance involvement in a more personalized learning experience [11]

Several studies support that learning is more effective when combined with visualization techniques [12]. Imagination collaborates with the visual senses to create a complete harmony and balance [13]. Children can easily understand what they learn through simple interactive educational media that encourage learning by doing [14]. Visual elements, such as line composition, color selection, and illustrative characters, play an important role in creating interactive and engaging learning media that can adapt messages to the user's characteristics [15]. Exploratory activities like coloring patterns and arranging motifs not only introduce batik aesthetics but also train fine motor skills, which are essential for their physical development.

Designing children's activity books requires a precise composition of design elements. A failure to maintain visual balance will result in a disproportionate appearance, thereby reducing the media's appeal to children [16]. Using a dynamic color scheme and simple visual narratives can ease the learning process, thus improving children's understanding [17]. An engaging and enjoyable way of learning will impact the learning outcomes, ensuring that children do not get bored easily while studying [18].

Current factual conditions at the Museum Batik Indonesia indicate challenges regarding the availability of educational media specifically designed for child

visitors. Based on observations, most of the information presented is still dominated by conventional descriptive text panels that tend to be formal, often failing to maintain the limited attention span of children. This can create a gap between children and the museum, where visits become merely a viewing activity without optimal educational understanding. The motivation for museum visits today is no longer determined solely by the value of the collection, but also by the appeal of unique and interactive experiences that the museum offers to its visitors. [19]. Effective media must be able to stimulate attention, motivate learning, and facilitate a comprehensive understanding of concepts [20]. Based on these factors, this research aims to design an interactive activity book as an educational medium capable of increasing the engagement, enthusiasm, and independence of children aged 6-12 in learning about batik culture at the Museum Batik Indonesia. Through this design, it is expected that previous passive communication barriers can be overcome with a visual approach that is more adaptive to a child audience.

2. Methods

The research method applied in the design of this children's activity book is a qualitative method with a Research and Development (R&D) approach, utilizing the ADDIE model. Research and Development (R&D) aims to produce specific products as innovative solutions to educational problems [21]. This approach is used to gain a deep understanding of the educational needs of children within the museum environment.

The design of this educational medium was conducted systematically by adopting the ADDIE development model. The structure of the ADDIE method encompasses five fundamental and interrelated stages: analysis, design, development, implementation, and evaluation [22]. The selection of this model is based on its structured yet flexible workflow, making it suitable for application in visual communication design. The primary advantage of the ADDIE model lies in its sequential component layout, where each phase serves as a foundation for the next to minimize design errors. Compared to other development models, the ADDIE stages are considered much simpler, more practical, and more efficient in mapping specific audience needs, such as those of children. This approach allows the researcher to engage in continuous reflection at every phase transition, ensuring that the quality of the final product is well-controlled from the data collection stage to field effectiveness testing. This is crucial in creating museum educational media, where content accuracy must align with the resulting visual appeal. Visually, the design framework used in this study can be observed through the chart displaying the ADDIE development steps as follows.

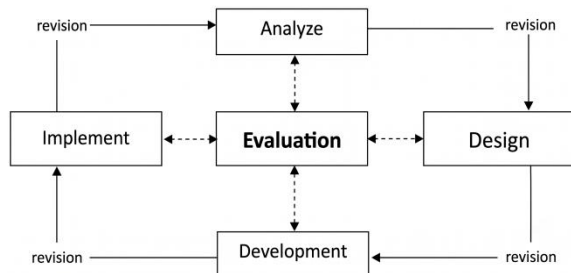


Figure 1. ADDIE development model steps

The research procedure begins with the analysis phase. In this stage, the researcher identifies the root of the problem regarding the suboptimal focus and visit duration of children at the Museum Batik Indonesia [23]. During this phase, the researcher conducts interviews to analyze the cognitive characteristics and visual learning styles of children aged 6-12 years at the Museum Batik Indonesia.

After the analysis phase is completed, the next process is the design phase, which involves developing the ideas analyzed in the previous stage. Planning at this stage consists of designing the flow of educational material, determining the appropriate visual approach for children, and compiling the initial storyboard of the media to be fully realized [23]. The design produced in this phase serves as a blueprint for the next stage of development [22].

The next step is the development phase. At this stage, the previously created designs begin to be realized in visual form. The development phase involves the process of transforming the design into a complete work, which often includes prototype testing by experts to ensure its quality [23].

The implementation phase is the step where the developed product is applied in a real-world setting [23]. At this stage, the activity book is tested as a companion medium for children visiting the Museum Batik Indonesia to ensure that the media is easily understood and capable of providing an interactive learning experience. The researcher directly monitors how the media functions in the field and how the children respond to each challenge presented within the book.

The final stage in the ADDIE model is evaluation, which aims to assess the quality, effectiveness, and efficiency of the product as a whole [23]. The outcome of this evaluation is a revised and refined final product, ready to serve as an innovative and effective educational medium at the Museum Batik Indonesia.

3. Result and Discussions

The design of this activity book is an effort to address the urgent need for more adaptive educational tools for children aged 6-12 in understanding cultural heritage collections during their visit to the Museum Batik Indonesia. The alternative medium chosen by the

author is an activity book. This book is designed as the primary creative medium due to its ability to combine prominent visual elements with game instructions that challenge a child's motor skills. By using simplified batik motif illustrations and engaging guide characters, this medium is designed to be more easily understood by the target audience within the elementary school age range. The author utilizes the ADDIE method in the design process of this children's activity book for the museum.

The analysis phase is a crucial initial step to map the root of the problem and gain a deep understanding of the research's objects and subjects. The author began this stage by identifying the educational needs at the Museum Batik Indonesia, where it was discovered that children are far more interested in interactive media than merely observing batik collections, which they perceive as monotonous. This indicates that their learning process becomes much easier when they interact directly with the materials available in the museum. To identify the design requirements, the author collected data through three primary methods: literature review, observation, and interviews. The results of this entire analytical series serve as the foundation for determining the types of activities and the most effective visual styles to be applied in the book.

In the analysis process, the researcher gathered relevant literature to ensure the content validity and design effectiveness of the activity book. Literature study is the method used to collect data related to the problems addressed in a research project [24]. Based on the results of the literature review regarding the characteristics of children aged 6-12 years, it was found that the most suitable visual or art style consists of engaging and cheerful illustrations. These utilize friendly shapes to build an emotional connection and make it easier for children to recognize objects, aligning with the reference art style used by the author in Figure 2.



Figure 2. The Author's Reference Art Style
(Source: Pinterest, 2025)

As for the color palette, the use of bright colors with high contrast is highly effective for maintaining focus and creating a fun learning atmosphere for a child audience. Each color carries its own message and identity, depending on the information the author wishes to convey. The dominant use of blue was chosen based on color psychology to stimulate cheerfulness while maintaining a sense of calmness during reading. Therefore, the author utilizes the color palette reference as shown in Figure 3, which was provided by the museum management as a guideline for designing the children's activity book.

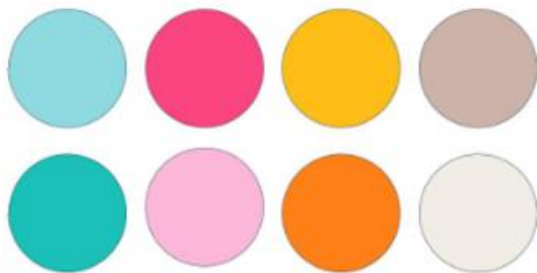


Figure 3. The Author's Reference Color Palette
(Source: Documentation of the Museum Batik Indonesia, 2025)

Regarding the batik educational content, the researcher referred to literature on Indonesian batik motifs to select content suitable for children, such as the introduction of easily identifiable flora and fauna motifs. Examples include the *Kawung* and *Mega Mendung* motifs, which are frequently encountered in daily life. The method of delivery is also a vital consideration in the design of this activity book. The author applies storytelling techniques and concise game instructions to ensure that children can absorb information more easily and effectively, as shown in Figures 4 and 5, which serve as references for creating the content. This approach aims to convey complex historical information and batik techniques narratively, making them accessible to a child's logic. All literature findings were subsequently validated through interviews with experts and museum authorities to obtain accurate, specific data to support the finalization of the design.



Figure 4. The Author's Referenced Material for the Museum Activity Book
(Source: Pinterest, 2025)



Figure 5. The Author's Referenced Material for the Museum Activity Book
(Source: Pinterest, 2025)

The next stage in the analysis is observation. Direct observation was conducted at the Museum Batik Indonesia on August 8, 2025, to map the actual interactions between child visitors and the exhibition collections. Through this observation, it was found that most children tend to move quickly from one area to another without deeply examining the text information on the batik collection labels. However, the researcher discovered an interesting fact, children stop for a significant amount of time and show high enthusiasm at spots that provide interactive media in the form of games. One example of the interactive media provided by the Museum Batik Indonesia is the Interactive Indonesian Batik Map. This medium allows children to interact actively, when a button for a specific region is pressed, the system displays the characteristic batik of that area. This indicates that their learning process is much easier when conducted through direct interaction with the materials in the museum. The visuals and game mechanics proved to be highly engaging to them and represented the only area capable of sustaining their attention for a longer duration.

These findings present a significant opportunity for the author to develop a companion educational medium that possesses an appeal similar to the previously

mentioned games, but in an activity book format. The author noted that children's high curiosity toward unique motifs can be directed through physical challenges within the book. Accordingly, this activity book is designed to adopt the fun elements of a game to guide their visit flow. As a result, the museum experience is transformed from merely viewing collections passively into an active, interactive, and memorable exploration process for children.

In the analysis stage, the interview method was conducted to fulfill the data requirements for the activity book design. Interviews were held directly with the management of the Museum Batik Indonesia to obtain authentic data regarding the history and philosophy of batik motifs. This data will subsequently be adapted into the visual elements of the activity book.

Based on the interview with the management of the Museum Batik Indonesia conducted on August 8, 2025, an urgent need for more interactive media was identified, as children have previously tended to simply pass through the exhibition rooms without fully absorbing the information. This initiative is also expected to help children understand batik more easily and engagingly. A subsequent interview was conducted on August 21, 2025, with a female student from SD Negeri Ancol 01 Pagi who was visiting the museum. The results indicated that she was more interested in interactive media, such as the Interactive Indonesian Batik Map and the Traditional Batik Usage Procedures displayed via an interactive sliding screen. Furthermore, she found it easier to understand the stages of batik-making after watching a process video in the Audio-Visual Room. This student's experience reinforces the assumption that children grasp information more quickly when the material is presented visually and involves direct interaction. This was further supported by an interview on August 21, 2025, with a guardian of a child in the 6-12 year age range during a school group visit. The results highlighted the necessity for more engaging educational tools within the museum environment, as children are proven to understand materials more easily through physical activities or tasks that align with the educational content.

After conducting several processes in the analysis phase, the researcher will analyze the cognitive characteristics and visual learning styles of children aged 6-12 at the Museum Batik Indonesia to ensure that the delivered material aligns with the mission of cultural preservation. Furthermore, a mapping of supporting factors was performed, such as the completeness of the batik motif collection, as well as inhibiting factors in the form of limited interactive media to engage children's interest. The results of this analysis serve as a strategic foundation for determining visual communication concepts, ensuring that the

designed activity book becomes an effective educational solution for the learning process within the museum.

The second stage is the design phase. This process begins with the development of a visual concept through research into design elements derived from the literature study conducted in the previous stage. The author performs an in-depth exploration of typography, selecting typefaces that not only possess high readability for elementary school-aged children but also exhibit a playful character. At this step, the author also develops a color palette dominated by bright and cheerful colors. In line with this, Sans Serif typography is applied to ensure optimal readability of instructions for beginner readers. The selection of these colors aims to evoke positive energy and enthusiasm in children, ensuring aesthetic consistency across every page of the book.



Figure 6. The Author's Moodboard for Material and Narrative Style Inspiration
(Source: Pinterest, 2025)

Marykate Poppins
Minnie Play Hatter
Helvetica Now Display

Figure 7. Font
(Source: Canva, 2025)

The initial stage of design begins with creating rough sketches to outline the visual concept on an A4 layout (21x29.7 cm). A manual process was chosen to allow the author freedom in exploring composition and form before moving into the digitalization phase. It is during this design process that the two primary mascot figures were born, who will accompany the children's adventure within the Indonesian Batik Museum.



Figure 8. Sketch
(Source: Author's Documentation, 2025)

These two characters are designed not merely as decorative elements, but as adventure companions for the children. The presence of these two mascots within the activity book aims to transform the static museum atmosphere into a more dynamic one. Through the guidance of these mascots, children are invited to explore and complete learning missions about the cultural diversity of batik in an enjoyable way. Once the character sketches and layouts were finalized, the author proceeded to the digitalization stage, where the hand-drawn strokes were refined with the color details and typography researched previously. This was done to produce an educational medium that is interactive, authentic, and capable of maximizing the attention of the child audience.

The next stage is the development phase, where all previously designed concepts and sketches are realized into ready-to-use digital assets. This digitalization process was conducted using a Lenovo Ideapad Slim 1 laptop with the aid of Adobe Illustrator 2024 software. The choice of these tools aims to ensure that all illustrative elements possess high flexibility for future exploration and asset development. During this phase, the researcher performed precise coloring based on the researched cheerful color palette to ensure that every character and object has a strong visual appeal for children.

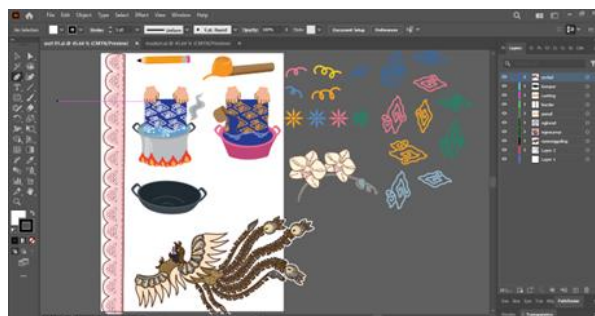


Figure 9. Digitalization Process
(Source: Author's Documentation, 2025)



Figure 10. Digitalization Process
(Source: Author's Documentation, 2025)

Once all digital assets were independently produced, the next crucial step was the integration of elements or the layout arrangement. The researcher utilized the Canva design platform to integrate all illustrative components, typography, and batik educational materials into a complete and harmonious activity book. In this phase, the researcher did not merely arrange text and images statically but conducted an in-depth curation to package complex batik history into a narrative structure that resembles a game.

The layout arrangement was conducted by adhering to the principles of visual hierarchy, where each page is meticulously designed to spark children's curiosity through varied visual challenges. The researcher balanced the composition between white space and graphic elements to ensure visual comfort for children while reading the instructions. This approach requires the audience to interact actively with the book's content ranging from solving visual puzzles to matching batik patterns ensuring that the cultural learning process no longer feels monotonous, but rather becomes more dynamic, interactive, and fun. Through this well-organized arrangement of elements, the activity book transforms into a visual adventure medium capable of sustaining children's attention for a longer duration during their museum visit.



Figure 11. Layout
(Source: Author's Documentation, 2025)

Furthermore, the researcher developed a physical prototype with special attention to paper material selection. The materials were chosen by considering the children's comfort during hands-on activities, such as writing or coloring, to ensure the book remains

durable while being used for 'adventures' within the museum. This development phase concluded with a validation process involving the Museum Batik Indonesia to ensure the accuracy of the batik motif representations and the alignment of the content with the museum's educational standards. Before proceeding to the field testing stage, the medium's feasibility was tested through validation by subject matter experts and media experts to measure its instructional quality and aesthetics. The results of these assessments are presented comprehensively in the following table.

Table 1. Subject Matter Expert Validation Results

No	Assessment Aspect	Score (%)	Category
1	Material Appropriateness	92%	Highly Feasible
2	Content Depth	89%	Highly Feasible
3	Language	93%	Highly Feasible
Average		91,3%	Highly Feasible

Table 2. Media Expert Validation Results

No	Assessment Aspect	Score (%)	Category
1	Illustration Appropriateness	95%	Highly Feasible
2	Layout	90%	Highly Feasible
3	Ease of Use	92%	Highly Feasible
Average		92,3%	Highly Feasible

Based on the scores obtained in Table 1 and Table 2, this activity book is declared valid both educationally and visually, falling under the 'Highly Feasible' category. Having achieved these validity standards, the medium is deemed ready for use as a companion educational instrument during the implementation stage within the museum.

Entering the implementation stage, the digitally refined Children's Activity Book design is now realized into physical form. Prior to the final printing process, the researcher conducted an in-depth exploration of material aspects, including the selection of paper type, thickness, and texture. This material selection is crucial to ensure sharp and high-quality print results, comfort when used for writing or coloring, and the durability of the book to remain sturdy while being carried throughout the museum area. Once the material specifications were approved by the museum management, the activity books were printed and are now ready for real-world testing with children visiting the Museum Batik Indonesia.

During the implementation process, the established mechanism still involves museum guides to provide a comprehensive overview of batik history and

collections to the groups of elementary school students. However, the fundamental difference lies in the post-tour activities. Once the general briefing session inside the museum concludes, the children are given a specific predetermined duration to solve various challenges and puzzles within the activity book. Allocating this dedicated time after the guided tour aims to allow children to reflect on the information they have just received from the guide through independent exploration of the objects previously explained.

During this independent working phase, the researcher positioned themselves as a passive observer to record the interactions between the children and the batik collections within the museum. The observation results showed a significant change in behavior, where the children began to pay much closer attention to each collection than before. The audience's focus, which was initially briefly distributed across static objects, shifted toward directed and detailed observation in order to complete the missions within the activity book. Through this mechanism, the activity book proved effective as an interaction bridge that enhances children's attention and understanding of batik philosophy without relying entirely on oral instructions from their companions.



Figure 12. Printing Process
(Source: Author's Documentation, 2025)



Figure 13. Visual Mockup of the Children's Activity Book
(Source: Author's Documentation, 2025)

Field observation results show a significant transformation in the behavior of child visitors, where they demonstrate higher levels of enthusiasm and independence in learning about batik. Children now appear to be carrying out an 'adventure mission' within the world of batik, packaged through a series of interactive games in the activity book. This approach has proven effective in breaking the monotony of conventional visits, which tend to be passive, making the introduction to batik history and culture far more interactive, enjoyable, and memorable. Through this strategy, children pay much closer attention to each collection within the museum than they did previously. The presence of this activity book has tangibly succeeded in shifting the children's perspective transforming museum collections once considered monotonous into colorful and dynamic objects of exploration.

The final stage in this design series is the evaluation phase, which serves as a final validation step to ensure the quality and effectiveness of the activity book. The researcher conducted a comprehensive review by analyzing the feedback results and direct observations obtained during the field testing. This field data serves as the primary reference for creating targeted refinements, ensuring that the resulting book is truly relevant to the cognitive patterns and behavior of elementary school-aged children.

Field observations during the testing with school groups showed a significant impact on how children interact with the museum. The author witnessed a tangible change in behavior when children entered the museum. Those who were typically passive and merely walked past the exhibits now lingered longer in front of each batik collection. They performed in-depth observations to match the details of the batik motifs they saw firsthand with the instructions provided in the book. This activity sparked discussions among the students, where they exchanged findings regarding the variety of ornaments and batik patterns they were learning through those visual challenges.

The use of this activity book is proven to increase the children's independent focus duration, although they still require guidance from a tour guide. The children appeared highly enthusiastic about completing every mission and game provided in the book, which indirectly led them to read the educational texts of their own volition to solve the challenges. The children's proficiency in completing the field activities indicates that the visual language and the complexity of the materials were designed in accordance with the cognitive abilities of children aged 6–12 years. This confirms that the medium successfully transformed the museum learning process into an active, meaningful, and enjoyable exploration experience.

This evaluation process encompasses refinements to instructions or game flows that were deemed too complex for children, as well as adjustments to the layout composition to make it more ergonomic and legible while children are moving through the exhibition space. The final result of this series of processes is a finished product that has undergone in-depth curation and improvement. Consequently, it is ready to be utilized as an innovative educational medium that is not only visually appealing but also effective in instilling an awareness of batik cultural preservation in the younger generation from an early age.

The design of this activity book has several limitations that should be considered when interpreting the results. The primary focus of this research remains limited to the collection and educational context of the Museum Batik Indonesia, therefore, the materials presented do not yet cover the depth and diversity of batik motifs from all over Indonesia. Furthermore, testing was conducted exclusively with children aged 6–12 years within a physical museum environment; thus, the responses from audiences in different age ranges or in self-directed learning environments might yield varied results.

Based on these limitations, there remain extensive opportunities for future development. Future researchers are encouraged to explore the expansion of educational materials by highlighting the unique characteristics of batik from specific regions that are not yet represented in this medium. Furthermore, the integration of digital technologies such as Augmented Reality (AR) or the development of a mobile-based activity book application could serve as an innovative step to enhance interactivity and broaden the reach of batik education to children online, without being restricted by the physical space of the museum.

4. Conclusions

Based on the results of the design and testing conducted, it can be concluded that the development of an interactive activity book serves as an effective educational solution in bridging the communication

gap between static museum collections and the cognitive characteristics of elementary school-aged children. This research successfully proves that an adaptive visual communication approach utilizing relevant illustrations, ergonomic layouts, and a fluid flow of challenges is capable of increasing children's focus duration and independence in exploring cultural information at the Museum Batik Indonesia. The primary contribution of this design lies in the transformation of information delivery methods from one-way communication into a participatory and enjoyable learning experience for children. Practically, this medium functions not only as a museum guide's tool but also as an instrument to reinforce children's visual memory of Indonesian batik ornaments through motor activities such as writing and coloring. Research findings indicate that student enthusiasm increased significantly when given an active role in solving visual challenges aligned directly with the exhibits, as evidenced by their ability to complete all missions without disengagement. Theoretically, this study strengthens the argument that the effectiveness of educational media in a museum environment depends heavily on the alignment between material complexity and the visual literacy skills of the target audience, where simplifying information through child-friendly design language is the key factor. Nevertheless, this study is limited in content scope, focusing on specific collections within one museum. This presents a significant opportunity for future researchers to explore the integration of digital technologies, such as augmented reality, or to expand materials to include regional batik motifs not yet represented in this book. Through continuous refinement, this activity book is expected to serve as a standard prototype for developing educational media in similar museums across Indonesia, supporting sustainable cultural preservation efforts from an early age.

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