



# Development of a Digital Storybook Based on Lebak Culture to Foster Critical Thinking Skills in Early Childhood

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## ABSTRACT

Critical thinking is a vital 21st-century skill that should be nurtured from an early age. One effective approach is through the use of digital storybooks based on local culture. Despite its rich cultural heritage, including the traditions of the Baduy people, integration of local culture into early childhood education in Lebak Regency remains limited. A survey of 40 kindergarten teachers found that only 7 schools had access to reading materials related to Lebak's local culture. This study aimed to develop a digital storybook titled "*Hitam Putih Pakaian Adat Suku Baduy*" using the ADDIE model. Validation results from media experts (95%), early childhood education experts (83%), communication experts (93%), and prospective users (91%) indicated that the product was highly feasible. Field trials with 10 children aged 5–6 years showed that the most developed critical thinking skills were evaluation and self-regulation, with average scores across six aspects ranging from 2.6 to 3.8 on a 4-point scale. Interpretation and inference were also strong, while analysis and explanation required additional support. These findings suggest that culturally based digital storybooks can effectively foster critical thinking in early learners, but teacher involvement remains essential to enhance deeper reasoning and understanding.

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## 1. Introduction

Critical thinking is one of the essential skills that needs to be developed in 21st-century learning. Given its importance, critical thinking must and can be taught and learned (Moseley et al., 2005), as it does not emerge automatically. Education serves to facilitate children in honing and developing their critical thinking abilities (Priyanti & Warmansyah, 2021; Thayer-Bacon, 2020). Teachers, as the frontliners of education, must be capable of carrying out the mandate to foster students' critical thinking skills (Zubaidah et al., 2017). Elder and Paul (2020) argue that if educators are to teach children how to think critically, they must possess a clear and explicit understanding of what they are teaching and be able to communicate it effectively to their students.

According to UNESCO (2007) the preschool and primary school years are critical periods in which children acquire creative and critical thinking skills. There are numerous strategies that can be employed to cultivate critical thinking in learners. One such strategy is the use of story-based approaches, which have been identified as effective in enhancing children's critical thinking. A study found that the most effective mediators in developing critical thinking skills include: (1) classroom interactions such as dialogue and questioning techniques; (2) the use of cognitive or "thinking" language; and (3) story-based approaches (O'Reilly et al., 2022). Critical thinking can also be fostered by encouraging preschoolers to analyze content delivered through folktales, fairy tales, and games (Papadopoulos & Bisiri, 2020). Storytelling has also been found to function as a mediator in promoting critical thinking (Fisher, 2017; Landrum et al., 2019).

Various types of content can be utilized in stories designed to stimulate children's critical thinking. One of them is local culture. Local culture refers to the way of life, customs, traditions, practices, arts, values, work ethics, and distinctive modes of thinking of a particular community or ethnic group (Sugianti, 2012). Moreover, cultural context influences children's cognitive, social, and emotional development, as well as their approaches to learning (Genishi & Goodwin, 2008). The National Association for the Education of Young Children (NAEYC, 2009) states that effective and developmentally appropriate teaching must recognize children's cultural backgrounds and incorporate cultural elements into daily instruction. It is further emphasized that "development and learning occur within and are influenced by multiple social and cultural contexts."

Indonesia is home to a rich diversity of cultures, including those originating from Lebak Regency, one of the regions in Banten Province. However, the potential of local culture in this area has not yet been fully utilized in school-based learning (Astuti et al., 2021). A review of existing literature using Google Scholar indicates that there is a lack of research on storybooks based on local culture—specifically Lebak culture—for the development of children's critical thinking skills. Two relevant studies identified include *The Use of Local Wisdom-Based Storybooks to Enhance Pancasila Values in Kindergarten* (Adipta et al., 2023), and *Innovative Storytelling Through Storybooks as a Means of Building Interaction and a Reading Literacy Culture* (Isnaniah et al., 2022). These studies were conducted in Kp. Rawa Beureum RT12/07, Lebak Wangi Village, East Sepatan District, Tangerang, Banten. Other related articles found were community service projects, such as *Digital Media-Based Reading Education at TK Kasih Bunda, Narimbang Village, Rangkasbitung – Banten* (Tirza & Cendana, 2023) and *Children's Reading Literacy in the Coastal Area of Sawarna Beach, Lebak, Banten* (Suraya et al., 2019). To date, no digital storybooks with content based on local culture have been identified.

Furthermore, based on a survey conducted in March, only 7 out of 40 respondents reported the availability of reading materials related to Lebak culture in their schools, while the remaining 33 stated that such materials were unavailable. Among the 7 respondents who reported having such materials, the books mentioned included storybooks on the Baduy tribe, the history of Multatuli, Curug Munding, and Baduy Batik culture. These books were obtained by teachers from the Lebak regional library, the local education department, or borrowed from teachers at other schools. The aim of this study is to develop and provide a culturally relevant storybook based on the local culture of Lebak to support the critical thinking development of children in early childhood education (kindergarten) settings.

## 2. Method

This study is a developmental research project aimed at producing a storybook that can be used by kindergarten teachers to enhance their understanding of how to stimulate children's critical thinking skills. The research was conducted using the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model development procedure. The ADDIE model is a widely adopted framework in creating instructional materials and training programs. It offers educators a structured and systematic set of phases that support the effective delivery of learning experiences (Peterson, 2003).

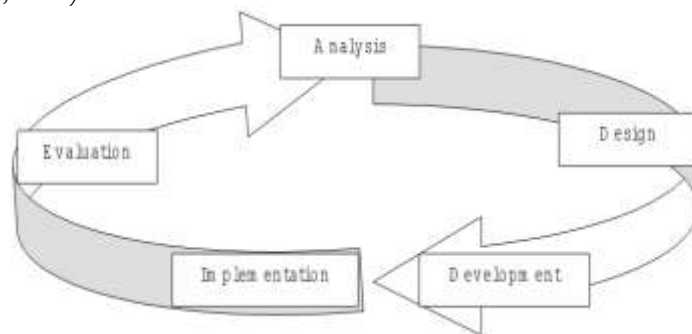


Figure 1. The ADDIE Development Model

Data for this study were collected through expert validation, as well as the distribution of questionnaires to practitioners and parents. The sampling technique used was purposive sampling, taking into account the participants' active involvement in early childhood education and their understanding of local culture. The participants consisted of three expert validators, each representing the fields of media, communication science, and early childhood education; and five kindergarten teachers. In addition, ten children aged 5–6 years were involved in the field testing to observe their responses to the developed digital storybook.

Data were collected through interviews, validations, and questionnaire distribution. The data obtained from the study were classified into two categories: quantitative and qualitative data. Quantitative data were gathered using Likert-scale questionnaires ranging from 1 to 5, where a score of 1 indicates "strongly inappropriate/strongly disagree" and a score of 5 indicates "strongly appropriate/strongly agree." The questionnaire was divided into two types: one for validators and one for respondents consisting of practitioners. The practitioner questionnaire contained 28 items, with a minimum possible score of 28 and a maximum of 140.

Based on the scores obtained, data analysis was then conducted. Quantitative data were analyzed using descriptive statistics, in which scores from expert and practitioner validations during the large-scale implementation were processed and presented in tabular form. This presentation was further enriched with qualitative data to provide a comprehensive overview of the resulting digital storybook. The scale and detailed criteria are presented in the following table, based on a modified score-to-rating conversion adopted from Putra (2017).

Table 1. Assessment of media suitability

Score Range	Percentage	Criteria	Description
28–50.4	20%–36%	Highly Inappropriate	Requires complete revision
50.4–72.8	36%–52%	Inappropriate	Requires partial revision and content review
72.8–95.2	52%–68%	Fairly Appropriate	Requires partial revision without content review
95.2–117.6	68%–84%	Appropriate	Revision if necessary
117.6–140	84%–100%	Highly Appropriate	No revision needed

### 3. Result And Discussion

#### 3.1 Analysis

##### a. Analysis of Children's Critical Thinking Skills

In this stage, a survey and classroom observation were conducted to identify issues related to the critical thinking abilities of kindergarten-aged children as well as the teaching strategies used to support such skills. The survey results indicated that 76% of teachers experienced difficulties in developing children's critical thinking abilities. Among them, 90% reported that the challenges stemmed from the children themselves, including difficulty focusing, low engagement, reluctance to express ideas, and lack of self-confidence. Meanwhile, teacher-related issues included lack of skill in developing instructional media, less conducive classroom environments, and inadequate digital facilities. Observations conducted over three days in a kindergarten in Gunung Kencana District, Lebak, Banten, revealed that among the three aspects of critical thinking (interpretation, analysis, evaluation) consisting of 16 indicators, 81% of children were categorized as "emerging" (Mulai Berkembang), while 19% were in the "expected development" (Berkembang Sesuai Harapan) category. Specifically for the analysis aspect, 100% of the children were at the "emerging" level, indicating they could complete tasks only with teacher assistance. For the aspects of inference, explanation, and self-regulation, also comprising 16 indicators, 50% were categorized as "emerging" and the remaining 50% as "expected development."

##### b. Needs Analysis

The survey conducted in March 2023 revealed that only 7 out of 40 respondents stated that reading materials related to Lebak culture were available in their schools, while the remaining 33 indicated none were available. Among the 7 respondents who had such materials, the books mentioned included stories about the Baduy tribe, the history of Multatuli, Curug Munding, and Batik Baduy culture. These books were obtained from the Lebak regional library and the local education office, and in some cases, borrowed from other teachers. However, observations at the Saija Adinda Library did not find any storybooks that incorporated critical thinking components.

##### c. Curriculum Analysis

Curriculum analysis was conducted based on the learning outcomes for the foundational phase, particularly within the elements of Early Literacy, Mathematics, Science, Technology, Engineering, and Arts. The targeted learning outcomes include: (1) children being able to express their opinions using words or phrases in a voice audible to the listener, and (2) being able to identify similarities and differences from the information they receive in their surroundings. Based on these goals, indicators for critical thinking were developed in alignment with the six aspects of critical thinking proposed by (Facione, 1990).

Table 2. Aspects and Indicators of Critical Thinking Skills Reflected in the Digital Storybook

No	Aspect	Critical Thinking Skill Indicator
1	Interpretation	Identifying the parts of an introduced object
2	Analysis	Identifying similarities or differences between introduced objects
3	Evaluation	Distinguishing between facts and opinions
4	Inference	Drawing conclusions based on the introduced material
5	Explanation	Expressing opinions along with justifications about an introduced object
6	Self-Regulation	Making decisions based on available choices along with the reasoning behind them

#### 3.2 Design

At this stage, product design and its usage plan were carried out through the following steps:

- Collecting references: Relevant articles were gathered to obtain information about traditional Baduy clothing. Interviews were also conducted with a local cultural figure, the village secretary of Kanekes, Lebak, Baduy
- Drafting the manuscript: Based on the information collected, a story script was written, accompanied by photographs to support certain explanations that required visual representation.
- Creating the storyboard: A storyboard was developed to visualize the manuscript clearly through images or graphic designs using Adobe Illustrator. The book dimensions are 20 cm x 20 cm, with the following font specifications: cover title uses "Hey Louie" at 35px, headlines use "Juicy Fills" at 15px, and body copy uses

"Song" at 13px. The paper type selected is art paper. The design, color, images, and illustrations were carefully considered to ensure they are suitable for early childhood readers.

- d. Developing a usage plan for the digital storybook: The usage plan was designed with attention to the availability of supporting facilities such as laptops, projectors, screens, and a conducive space to maximize children's engagement and comprehension during storytelling activities. To ensure that the introduction of Lebak culture supports the development of children's critical thinking skills, a user guide for teachers was also prepared to facilitate the implementation.

### 3.3 Develop

The development of the digital storybook media was carried out based on the storyboard that had been previously designed.

#### a. Validation:

Validation was conducted to assess the feasibility of the product. This process involved media experts, technology experts, subject matter experts, and kindergarten teachers in Rangkasbitung District as prospective users, totaling five individuals. The selection of teacher respondents was based on their willingness to participate, including both school principals and classroom teachers.

Table 3. Validation Results from Prospective Users

Assessment Aspect	Score Obtained	Total Score	Percentage	Category
Content Aspect	138	150	92%	Highly Appropriate
Presentation Aspect	158	175	90%	Highly Appropriate
Design Aspect	161	175	92%	Highly Appropriate
Graphic Standards	181	200	91%	Highly Appropriate
<b>Average Total Score</b>			<b>91%</b>	<b>Highly Appropriate</b>

Table 4. Validation Results from Media Expert

Assessment Aspect	Score Obtained	Total Score	Percentage	Category
Content Aspect	26	30	87%	Highly Appropriate
Presentation Aspect	34	35	97%	Highly Appropriate
Design Standards	34	35	97%	Highly Appropriate
Graphic Standards	39	40	98%	Highly Appropriate
<b>Total for All Aspects</b>			<b>95%</b>	<b>Highly Appropriate</b>

Table 5. Validation Results from Early Childhood Education Expert

Assessment Aspect	Score Obtained	Total Score	%	Category
Content Aspect	32	35	91%	Highly Appropriate
Presentation Aspect	28	35	80%	Appropriate
Design Standards Aspect	28	35	80%	Appropriate
Graphic Standards Aspect	32	40	80%	Appropriate
<b>Overall Score</b>			<b>83%</b>	<b>Appropriate</b>

Several notes were given by cultural leaders while reviewing the digital storybook based on the culture of Lebak. Some of the comments include: The cartoon image of the Baduy people does not reflect their original character; The black lurik cloth (Aros) for Baduy men is slightly above the knee. The Komprang (plain black) cloth is also slightly above the knee; The headband for Baduy men is called Lomar/Koncer; The men's shirt is called Kampret/Jamang Hideung; The women do not use a Koja, but rather a blue bag; The image of the Poleng motif cloth and the Pokek Cele image; Baduy Dalam women do not wear Aros, but a Samping Lunas in black; The cloth is worn slightly above the knee; The Baduy Luar people have two bags: the Koja bag with a long strap and the Jarog bag with a wide strap; Meanwhile, the prospective users did not provide significant suggestions except that the font size should be increased.

#### b. Product Revision:

Based on the feedback provided, product revisions were made to improve the accuracy and quality of the images and other elements in the storybook. One of the revisions made was to improve the image of the cloth worn by the Baduy Dalam women.



Figure 2. Cover before and after revision



Figure 3. Outer Baduy and Inner Baduy Tribe Trousers before and after revision



Figure 4. Outer Baduy women's bags before and after revision

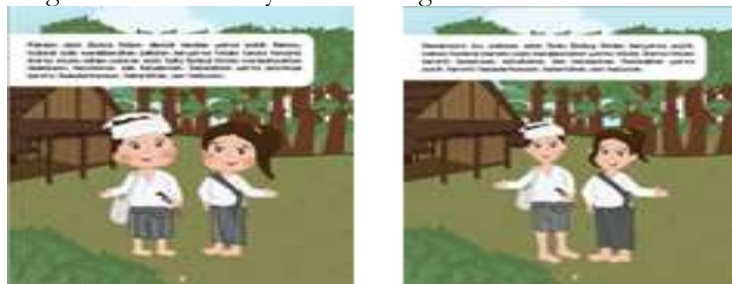


Figure 5. Inner Baduy women's cloth before and after revision

c. Product Digitization:

The printed product was then converted into a digital format using the Flip Builder application. This digital product can be accessed online at <https://online.flipbuilder.com/ygrxn/unz/>. In this digital storybook, each section of the narrative is accompanied by audio that reads the story and includes relevant questions. This aims to provide additional stimulation for children, not only through listening but also by honing their critical thinking skills.

Before implementation, the digital product was validated by technology experts from Al Azhar University, Indonesia. There are 6 assessment aspects with a total of 22 indicators. The results of the validation are displayed in the table below.

Table 6. Results of validation by Communication Science experts

Aspects of Evaluation	Score Obtained	Total Score	Percentage	Category
Material Aspect	10	10	100%	Highly Appropriate
Presentation Aspect	15	15	100%	Highly Appropriate
Design Aspect	10	10	100%	Highly Appropriate
Graphic Standards Aspect	27	30	90%	Highly Appropriate
<b>Average Overall Score</b>			<b>93%</b>	<b>Highly Appropriate</b>

### 3.4 Implementation

The fourth phase of the ADDIE model is the implementation phase, which aims to evaluate the outcomes after product validation. The activities carried out in this phase are as follows:

- a. **Material Delivery.** Teachers were introduced to the digital book media and explained the purpose and goals of presenting the audiobook to children. This aims to ensure that teachers understand how to make the most of this media in the learning process.
- b. **Teacher Training.** Providing information to teachers on how teachers use audio books and how to ask questions to children to bring out children's critical thinking skills. Teachers are also given the opportunity to read the story first, so that they understand what will be conveyed and asked to the children. In addition, teachers are also asked to prepare the equipment that will be used to display audio books, such as laptops, speakers, and tables so that children can watch at a distance and height that is at the same level as the children.
- c. **Testing.** The testing was conducted twice, first with 3 children and then with 10 children. The purpose of this testing was to observe the kindergarten children's responses to the material presented and the development of their critical thinking skills based on the questions asked about the story that had been read. The activity took place on Thursday, November 7, 2024, at the principal's office of TK Insan Karima, Rangkasbitung, Lebak, Banten.



Figure 6. Digital Storybook Trial with 3 TK Group B Children

Based on reflections and evaluations from the small group test, several improvements were made on the following aspects:

- 1) **Audio button placement:** The audio button was repositioned to avoid being too close to the page-opening section, making navigation easier.
- 2) **Button layout:** The layout of the buttons was improved for a cleaner and more accessible design.
- 3) **Voice speed:** The speed of the narration was adjusted to ensure it wasn't too fast, giving children enough time to clearly listen to the story.
- 4) **Questions during the story:** After the story narration, children were given relevant questions based on the material presented.
- 5) **Opportunities to answer:** Teachers were directed to give all children a chance to answer the questions in the digital storybook.
- 6) **Responding to questions:** If a child asks a question, the teacher asks another child to provide an answer. If no one can or wants to answer, the teacher can give a reasonable answer.
- 7) Furthermore, a trial was conducted on a medium group with 10 children on Tuesday, November 12, 2024.



Figure 7. Digital Storybook Trial with 10 TK Group B Children

- d. **Feedback** was collected from both the teacher and the children regarding their experience with the digital storybook. The teacher stated that the story was good and engaging, and appropriate for the children. However, the teacher mentioned that the sentences were too long. On the other hand, the children expressed enjoyment with the digital storybook, appreciating the colors and the images.

Table 7. children's responses to critical thinking questions

Critical thinking ability aspects	Question	Child 1	Child 2	Child 3	Child 4	Child 5	Child 6	Child 7	Child 8	Child 9	Child 10
Interpretation	Try to mention the parts of the Baduy tribe's traditional clothing?	blue, black, white, headband, machete, pants (bottoms)	blue, white, black, bag, machete, hat (headband)	blue, white, black, machete	black, white, blue tie here (headband)	white, black blue, there is a house	white, black, blue, bag, machete, hat (headband)	black, white, headband, bag	white, blue, black, bag, machete	black, white, blue, bag, machete	white, black, blue, bag, hat (headband), machete
Analysis	What is the difference between the traditional clothing of the Outer Baduy tribe and the traditional clothing of the Inner Baduy tribe?	the shirt is different, the back is different, the bottom is different	the clothes are different	the clothes are white and black. White is the inner tribe, black is the outer tribe	the pants are different	the clothes are different, white is the inner Baduy, black is the outer	did not answer	white and black.	did not answer	did not answer	did not answer
Evaluation	Are Baduy tribal clothes easy to make or difficult to make?	easy because it is made from cotton	easy	easy	easy, because it does not use cloth, use cotton	easy	easy	easy	easy	easy	easy
Inference	If you wear Baduy tribal clothes, do you feel comfortable or not?	comfortable	soft comfortable	comfortable	comfortable, because it uses cotton	comfortable	comfortable, because it is cold	comfortable, because it uses cotton	comfortable	soft comfortable	comfortable
Explanation	Why don't the Baduy tribe's clothes use buttons, zippers, and pockets?	because you can't	forbidden	no answer	It'll be difficult to use later	no answer	because you can't	because you can't	he said he couldn't	no answer	no answer
Self-Regulation	Do you want to wear clothes like the Baduy people?	I want, comfortable, cold	I want because the clothes are loose	I want, because comfortable	I want, because the clothes are not tight	I want because cold	I want because cold	I want, not hot	I want, because cold	I want	I want, because soft

### 3.5 Evaluation

In this phase, both formative and summative evaluations were conducted. The formative evaluation took place while the children were listening to the digital storybook. During the process, the children appeared enthusiastic and focused as they watched and listened to the story presented via the projector. The children were seated in rows, with the boys sitting in the front and the girls in the back. The questions posed in the story were well-received by the children, although their answers tended to be similar and were delivered in unclear voices. Despite this, all the children remained seated until the entire story was presented.

Meanwhile, the results of the summative evaluation, it can be said that among the ten children observed, the most developed critical thinking skills were found in the aspects of evaluation and self-regulation. The aspects of interpretation and inference also showed strength, because children were able to recognize and draw conclusions from concrete information. The average score in all aspects ranged from 2.6 to 3.8 on a 4-point scale, indicating that culture-based digital storybooks are quite effective in stimulating critical thinking in early childhood learners. However, the aspects of analysis and explanation still need further support, especially in helping children distinguish information and articulate logical reasons.

Regarding the digital storybook, the images were displayed clearly, and the audio was crisp. However, there was an issue with the audio settings, as it played twice before transitioning to the next part of the narration. This audio setting could not be altered, even though attempts were made to resolve it. The teacher played an essential role in emphasizing the questions posed through the digital storybook and clarifying the expected answers.

The evaluation results from potential users of the digital storybook based on Lebak culture showed an average percentage of 89%, while media experts rated it at 91%, indicating a "very feasible" category for aspects such as content, presentation, design standards, and graphic standards. This reflects that the Lebak cultural-based digital storybook met the high expectations of both teachers as users and media learning experts.

On the aspect of content. The assessment indicates that the content of the storybook aligns well with the needs of early childhood education, both in terms of its relevance to local culture and its effectiveness in fostering critical thinking skills. The relevant and contextual material is believed to facilitate more meaningful learning, as emphasized by Vygotsky's constructivist learning theory (Vygotsky, 1978). Media experts also assess the content as highly relevant to the educational needs of young children, both from the perspective of local cultural content and critical thinking development. According to Mayer's Cognitive Theory of Multimedia Learning (Mayer, 2016) good content should support the integration of text and visuals, making it easier to understand and retain learning.

On the aspect of presentation. The presentation, which was rated as very feasible, demonstrates that the storybook has a clear, logical, and engaging structure for young children. This is important for maintaining children's attention and helping them understand the story more easily. Research by Ratminingsih et al. (Ratminingsih & Budasi, 2018) states that the use of storybooks in reading, supported by both text and images, can build a stronger mental model. Students not only imagine vocabulary through their perceptions but also benefit from images that give them a clearer vision of the concept.

The highly rated presentation shows that the story is designed with a logical and engaging flow, supporting interactivity and motivating children to engage more deeply. The book's design also applies the principles of multimodal literacy, integrating text, visuals, and interactive elements. Images and language interact to construct meaning within the text. As McCloud (McCloud, 1993) explained, there are four categories of image-text relationships: (a) images and text deliver the same message, (b) text amplifies or explains the image or vice versa, (c) images and text follow different paths without interacting, and (d) images and text complement each other to convey an idea that cannot be delivered by one modality alone.

On the aspect of design standards. The design of the storybook, including the use of color, fonts, layout, and illustrations, plays a significant role in capturing children's interest. The high percentage in this aspect indicates that the visual elements in the book have been designed in line with the characteristics of young children, supporting their engagement in reading. This is in line with Reyna's research (Reyna, 2016), which states that design and aesthetics profoundly impact how users understand information and learn, ultimately enhancing their experience. The quality of the design, such as layout, color usage, and illustrations, contributes to the aesthetic appeal, which is crucial for children's media.

In terms of graphic standards, visual qualities such as image clarity, resolution, and digital compatibility are considered very adequate. These aspects are very important to ensure that digital storybooks can be used optimally on various devices, thus supporting accessibility and user convenience. As Shabiralyani et al., (2015) noted, the proper use of visual aids helps to remember more concepts permanently; fosters accurate imagery; provides complete examples for conceptual thinking; creates an engaging environment; enhances vocabulary; and gives children direct experiences.

Research conducted by Nurseptyani et al. (2023) demonstrated that the use of digital picture storybooks with high-quality illustrations significantly improves students' learning outcomes. Similarly, a study by Jalel et al., (2023) emphasized that digital storytelling, when designed with engaging and interactive visuals, strengthens digital literacy and enhances children's reading engagement. According to Cahyanti and Nuroh (2023), effective visual design in digital learning media not only improves understanding of the material but also enriches the overall learning experience. They emphasize that high graphic quality, including image clarity and digital compatibility, is essential to ensure that digital storybooks can be used optimally on various devices, supporting accessibility and user convenience. This shows that high graphic quality plays an important role in improving students' learning experience.

### **3. Conclusion**

The research concludes that the development of a digital storybook based on Lebak culture is highly feasible and relevant for fostering critical thinking in early childhood education. The validation results from media and technology experts demonstrate that the product meets educational standards in terms of content, presentation, design, and graphics, with consistent scores reaching or exceeding 80%—classified as "very feasible." The integration of cultural accuracy, supported by feedback from traditional leaders, significantly enhances the authenticity of the materials, which is crucial for ensuring cultural preservation through education. Revisions made in response to this feedback, particularly in terms of visuals, reinforce the product's alignment with local wisdom and child-centered design principles. Through field testing, children responded positively to the storybook's engaging visuals and interactivity, while teachers appreciated its educational value, despite noting the need for simpler sentence structures. These findings affirm that the storybook not only captures children's interest but also supports their emerging critical thinking through embedded questions and guided narration, consistent with constructivist and multimedia learning theories.

This research suggests that digital media rooted in local culture can serve as an effective tool in early childhood education by blending cultural literacy with cognitive development. Future research can explore broader implementation in diverse cultural contexts, comparative effectiveness with other pedagogical tools, and longitudinal impacts on children's thinking skills and cultural awareness. Furthermore, the integration of adaptive digital features and multilingual accessibility could enhance the inclusivity and reach of such educational resources. However, this study is still limited to one cultural area and has not measured the long-term impact on child development. Future research is recommended to explore broader applications across cultural contexts, compare effectiveness with other media, and develop more adaptive and multilingual versions to increase inclusivity and reach of learning.

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