

## DEVELOPMENT OF AN INTERACTIVE DIGITAL STORYBOOK BASED ON LOCAL WISDOM TO ENHANCE ELEMENTARY SCHOOL STUDENTS' READING LITERACY

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### Abstract

*This study aims to develop, evaluate the feasibility, and analyze the effectiveness of a local wisdom-based interactive digital storybook in improving elementary school students' reading literacy. This research is motivated by the low level of students' reading literacy and the limited use of innovative and contextual instructional media. The study employed a Research and Development (R&D) approach using the 4D model, which consists of define, design, develop, and disseminate stages. The participants were 25 third-grade students of MI Ar-Rahman Rawa Kalong, Bogor Regency. Data collection techniques included expert validation questionnaires (material, media, and language), student response questionnaires, pretest and posttest, and observations. The data were analyzed using descriptive quantitative and inferential statistics through percentage calculation, N-Gain, and paired sample t-test. The results show that the developed product is a local wisdom-based interactive digital storybook in flipbook format, equipped with audio, animations, and interactive quizzes. Expert validation results indicate that the media is categorized as very feasible, with an average percentage of 89.96%. In addition, student responses demonstrate a very high level of practicality, with a percentage of 90.8%. The effectiveness test results reveal a significant improvement in students' reading literacy, as indicated by an average N-Gain score of 0.64 (moderate category) and statistically significant t-test results ( $p < 0.05$ ). In conclusion, the local wisdom-based interactive digital storybook is proven to be valid, practical, and effective in improving students' reading literacy, and it has strong potential as an innovative instructional medium that aligns with the needs of 21st-century learning in elementary education.*

**Keywords:** reading literacy; interactive digital storybook; local wisdom; research and development

### Abstrak

Penelitian ini bertujuan untuk mengembangkan, menguji kelayakan, dan menganalisis efektivitas buku cerita digital interaktif berbasis kearifan lokal dalam meningkatkan literasi membaca siswa sekolah dasar. Penelitian ini dilatarbelakangi oleh rendahnya kemampuan literasi membaca siswa serta terbatasnya penggunaan media pembelajaran yang inovatif dan kontekstual. Metode yang digunakan adalah Research and Development (R&D) dengan model 4D yang meliputi tahap define, design, develop, dan disseminate. Subjek penelitian terdiri dari 25 siswa kelas III MI Ar-Rahman Rawa Kalong, Kabupaten Bogor. Teknik pengumpulan data meliputi angket validasi ahli (materi, media, dan bahasa), angket respon siswa, tes pretest dan posttest, serta observasi. Data dianalisis menggunakan teknik deskriptif kuantitatif dan inferensial melalui perhitungan persentase, N-Gain, dan uji paired sample t-test. Hasil penelitian menunjukkan bahwa produk yang dikembangkan berupa buku cerita digital interaktif berbasis kearifan lokal dalam format flipbook yang dilengkapi dengan fitur audio, animasi, dan kuis interaktif. Hasil validasi ahli menunjukkan bahwa media memperoleh kategori sangat layak dengan rata-rata persentase sebesar 89,96%. Selain itu, respon siswa terhadap media menunjukkan tingkat kepraktisan yang sangat baik dengan persentase sebesar 90,8%. Hasil uji efektivitas menunjukkan adanya peningkatan signifikan pada kemampuan literasi membaca siswa, dengan nilai rata-rata N-Gain sebesar 0,64 (kategori sedang) serta hasil uji t yang signifikan ( $p < 0,05$ ). Dengan demikian, buku cerita digital interaktif berbasis kearifan lokal terbukti valid, praktis, dan efektif dalam meningkatkan literasi membaca siswa, serta berpotensi menjadi alternatif media pembelajaran inovatif yang relevan dengan kebutuhan pembelajaran abad ke-21 di sekolah dasar.

**Kata Kunci:** literasi membaca; buku digital interaktif; kearifan lokal; R&D

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## Introduction

Reading literacy is a fundamental competency that plays a strategic role in supporting learning success at the elementary school level, as it not only functions as a tool for understanding information but also serves as a foundation for developing students' critical, analytical, and creative thinking abilities. In the context of 21st-century education, reading literacy is recognized as a key indicator of the quality of human resources capable of competing globally. However, empirical evidence from international assessments indicates that the reading literacy level of Indonesian students remains relatively low. The results of the Programme for International Student Assessment (PISA) show that Indonesian students' reading performance is below the average of OECD member countries, indicating the need for systematic efforts to improve the quality of literacy learning. In addition, UNESCO has also highlighted the low reading interest among Indonesian society, which directly impacts students' literacy achievement from an early age.

The low level of reading literacy among elementary school students is influenced by both internal and external factors, with reading interest identified as one of the most dominant determinants. Students' limited engagement with reading materials often leads to the perception that reading is a monotonous and less enjoyable activity, causing them to prefer digital entertainment media over conventional textbooks (Casteleiro-Pitrez, 2021). From the instructional perspective, the learning process is still dominated by traditional media that are less interactive and have not optimally accommodated diverse student learning styles. This is consistent with research findings indicating that the use of less varied instructional media can hinder students' active engagement in the learning process (Aisyah et al., 2024). On the other hand, teaching materials also lack the integration of local wisdom, resulting in limited emotional and contextual connections between students and the learning content.

These conditions highlight the urgent need for innovative instructional media that are capable of simultaneously increasing students' engagement and improving their reading literacy skills. One potential solution is the development of interactive digital storybooks, which integrate text, images, animations, audio, and interactivity to create a more meaningful learning experience (Sujatmiko et al., 2026). In the digital era, the integration of information and communication technology (ICT) in education is no longer optional but essential, as it supports more adaptive and student-centered learning environments. Teachers' technological literacy is also significantly correlated with pedagogical competence in managing effective learning (Siregar & Sari, 2023). Therefore, the development of digital-based instructional media represents a relevant and strategic effort to improve the quality of elementary education.

Interactive digital storybooks offer significant advantages over conventional printed materials, particularly in providing a multimodal learning experience that enhances student engagement. Students not only read texts but also interact with content through animations, sounds, and interactive quizzes, which aligns with contemporary learning principles emphasizing active participation. Research has shown that the use of digital media, such as e-flipbooks, can enhance students' understanding and interest in learning materials (Rohima & Nugraheni, 2025). Furthermore, technology-based media have been proven effective in significantly improving students' literacy, as demonstrated in meta-analytic studies on the effectiveness of e-media in education (Dousti & Amirian, 2023).

In addition to technological innovation, the integration of local wisdom into learning materials is a crucial component in creating contextual and meaningful learning experiences. Local wisdom refers to cultural values, traditions, and knowledge that develop within communities and are transmitted across generations. Its integration in education plays a strategic role in strengthening students' character and cultural identity. Through culturally relevant storytelling, students are more likely to understand learning content because it is closely connected to their daily experiences. Moreover, values embedded in local wisdom such as cooperation, honesty, and responsibility can be effectively internalized through storytelling media. Previous research has shown that strengthening cultural values in education can have a positive impact on students' character development (Ismaya & Gunawan, 2025).

Despite its importance, the availability of instructional media that integrates local wisdom, particularly in interactive digital formats, remains very limited. Most existing learning media have not optimally incorporated elements of local culture, indicating a clear research gap. Several previous studies have examined the development of digital-based instructional media, such as e-flipbooks (Kustiarini et al., 2025) and pop-up books based on scientific approaches (Ibrahim S et al., 2022), which have been proven to improve students' literacy. Additionally, other studies indicate that interactive learning media can enhance students' motivation and creativity in learning (Muthmainnah et al., 2022; Rosyadi, S, et al., 2024).

Furthermore, various instructional approaches such as experiential learning and innovative models have been proven effective in improving students' learning outcomes, yet their integration with digital media and local wisdom remains underexplored. Experiential learning has been shown to enhance students' understanding through direct involvement (Rosyadi, Ibrahim S, et al., 2024), while models such as problem-based learning and mind mapping can significantly improve academic achievement (Ibrahim et al., 2025). However, most of these studies have not specifically combined reading literacy, interactive digital media, and local wisdom within a unified framework. Therefore, research that integrates these three aspects is still needed.

Based on the above discussion, a significant research gap can be identified in the limited development and implementation of local wisdom-based interactive digital storybooks aimed at improving elementary students' reading literacy. Moreover, studies examining the feasibility and effectiveness of such media in real classroom contexts, particularly at the Madrasah Ibtidaiyah level, are still scarce. Therefore, this study focuses on developing a local wisdom-based interactive digital storybook implemented for third-grade students at MI Ar-Rahman Rawa Kalong, Gunung Sindur District, Bogor Regency.

The objectives of this study are clearly defined to ensure a systematic research direction, namely: (1) to develop a local wisdom-based interactive digital storybook that aligns with the characteristics of elementary school students; (2) to evaluate the feasibility of the product through expert validation and field testing; and (3) to examine the effectiveness of the interactive digital storybook in improving students' reading literacy. Thus, this study is expected to contribute both theoretically and practically by providing an innovative, contextual, and culturally relevant learning medium that enhances reading literacy while strengthening local cultural values.

## **Research Methods**

This study employed a Research and Development (R&D) approach with the primary objective of developing and evaluating an interactive digital storybook based on local wisdom to improve elementary school students' reading literacy. The R&D approach was selected

because it provides a systematic framework for producing educational products and testing their feasibility and effectiveness through iterative processes of design, validation, and implementation. This approach is widely recognized as appropriate for instructional media development as it integrates theoretical design with empirical validation in real learning contexts (Plomp & Nieveen, 2020; Sugiyono, 2019). The development model applied in this study was the 4D model (Define, Design, Develop, Disseminate) proposed by Thiagarajan et al. (1974), which is considered effective for producing structured and validated learning media.

The development procedure followed the four stages of the 4D model, each representing a distinct and systematic phase in the product development cycle. The Define stage involved a comprehensive needs analysis, curriculum analysis, and identification of student characteristics, particularly third-grade students at MI Ar-Rahman Rawa Kalong, Gunung Sindur District, Bogor Regency. This stage is crucial to ensure that the developed product aligns with learners' cognitive levels, curriculum demands, and contextual learning needs. The Design stage included the preparation of storyboards, interface design, selection of local wisdom-based materials, and the construction of research instruments. The Develop stage consisted of producing the interactive digital storybook, conducting expert validation involving material, media, and language experts, and revising the product based on feedback. Subsequently, a limited trial was conducted to evaluate the practicality of the product. The Disseminate stage was implemented on a limited scale as an initial step to introduce the product in a real classroom setting.

The subjects of this study consisted of 25 third-grade students of Madrasah Ibtidaiyah (MI), selected as the target users of the developed instructional media. The selection of participants was based on their relevance to the research objective, namely improving reading literacy at the elementary level. Data collection techniques were designed to comprehensively measure the feasibility, practicality, and effectiveness of the product. These included expert validation questionnaires to assess the quality of content, design, and language; student response questionnaires to evaluate usability and attractiveness; reading literacy tests in the form of pre-test and post-test to measure learning outcomes; and classroom observations to analyze students' engagement during the learning process. All research instruments were validated prior to their implementation to ensure reliability and validity in data collection.

The data analysis techniques combined descriptive quantitative and inferential statistical methods to provide a comprehensive evaluation of the developed product. Validation data were analyzed using percentage scores to determine feasibility categories, which is a common approach in instructional product evaluation studies. The effectiveness of the product was measured using the N-Gain score to identify the magnitude of improvement in students' reading literacy, as well as a paired sample t-test to examine the statistical significance of the differences between pre-test and post-test results. This combination of analysis techniques allows for both practical interpretation and statistical justification of the findings. Therefore, the applied analytical framework ensures that the developed interactive digital storybook meets the criteria of validity, practicality, and effectiveness as an innovative instructional medium.

## **Result and Discussion**

### **Product Development Results**

This section presents the empirical results of the product development in the form of a local wisdom-based interactive digital storybook designed for third-grade students. The developed product is a digital flipbook that can be accessed through laptops and smartphones, enabling flexible use in both classroom and independent learning contexts. The content of the

storybook is based on local folklore from the Bogor region, which contains moral values such as cooperation, honesty, and environmental awareness.

The design of the product is adjusted to the cognitive characteristics of elementary school students, particularly those at the concrete operational stage. The language used is simple, communicative, and easy to understand, while the visual elements employ bright colors and engaging illustrations to support students' attention during reading activities.

The developed media includes several interactive features that support user engagement, namely audio narration, animated illustrations, and interactive quizzes. These features are embedded to facilitate comprehension and provide immediate feedback on students' understanding. The detailed specifications of the developed product are presented in Table 1.

**Table 1.** Specifications of the Interactive Digital Storybook

Component	Description
Product Type	Interactive digital storybook (flipbook)
Platform	Laptop and smartphone
Format	HTML5 / Flip PDF
Content	Local wisdom-based folklore from Bogor
Language	Simple and communicative Indonesian
Target Users	Third-grade MI students
Interactive Features	Audio narration, animation, interactive quizzes
Visual Design	Bright and attractive illustrations
Learning Objective	Improve reading literacy and text comprehension
Evaluation	Comprehension quiz at the end of the story

The interface of the developed product is presented in Figure 1.



**Figure 1.** Main Page Display of the Digital Storybook

Figure 1 shows the main page of the digital storybook, which includes navigation menus such as “Start,” “Guide,” “Collection,” “Settings,” “About Us,” and “Quiz,” along with culturally relevant illustrations.



Figure 2. Interactive Story Page Display

On the content page, the story text is presented along with animated illustrations. There is an audio button to listen to narration, as well as interactive icons that students can click to view additional animations. This provides a more engaging and less monotonous reading experience.



Figure 3. Interactive Quiz Display

The final section of the story includes multiple-choice quizzes based on the story content. Each answer provides immediate feedback, allowing students to directly assess their level of understanding.

Based on the product development results, the digital storybook contains integrated components of content, design, and interactivity, which are systematically developed according to the predefined design framework.

### Expert Validation Results

This section presents the empirical results of expert validation conducted to evaluate the feasibility of the developed product. The validation involved material experts, media experts, and language experts using Likert-scale instruments.

The results of material expert validation are presented in Table 2.

**Table 2.** Material Expert Validation Results

Assessment Aspect	Maximum Score	Obtained Score	Percentage	Category
Content Relevance	25	23	92%	Very Feasible
Language Appropriateness	20	18	90%	Very Feasible
Local Wisdom Integration	15	14	93%	Very Feasible
<b>Total</b>	<b>60</b>	<b>55</b>	<b>91.6%</b>	<b>Very Feasible</b>

Table 2 shows that the total score obtained is 55 out of a maximum score of 60, resulting in a percentage of 91.6%, which falls into the “very feasible” category.

The results of media expert validation are presented in Table 3.

**Table 3.** Media Expert Validation Results

Assessment Aspect	Maximum Score	Obtained Score	Percentage	Category
Visual Appearance	25	22	88%	Feasible
Interactivity	20	18	90%	Very Feasible
Accessibility	15	14	93%	Very Feasible
<b>Total</b>	<b>60</b>	<b>54</b>	<b>90%</b>	<b>Very Feasible</b>

Table 3 indicates that the total score obtained is 54 out of 60, with a percentage of 90%, categorized as “very feasible.”

The results of language expert validation are presented in Table 4.

**Table 4.** Language Expert Validation Results

Assessment Aspect	Maximum Score	Obtained Score	Percentage	Category
Text Readability	20	18	90%	Very Feasible
Sentence Clarity	20	17	85%	Feasible
Grammar Appropriateness	20	18	90%	Very Feasible
<b>Total</b>	<b>60</b>	<b>53</b>	<b>88.3%</b>	<b>Very Feasible</b>

Table 4 shows that the total score obtained is 53 out of 60, resulting in a percentage of 88.3%, which is categorized as “very feasible.”

The overall validation results are summarized in Table 5.

$$\frac{91,6 + 90 + 88,3}{3} = 89,96\%$$

**Table 5.** Recapitulation of Expert Validation Results

Validation Type	Percentage	Category
Material Expert	91.6%	Very Feasible
Media Expert	90%	Very Feasible
Language Expert	88.3%	Very Feasible
<b>Average</b>	<b>89.96%</b>	<b>Very Feasible</b>

The average percentage score from all validators is 89.96%, indicating that the developed product meets the feasibility criteria.

### Product Trial Results

This section presents empirical findings from the limited trial conducted with 25 students. The trial aimed to measure product practicality and user responses through questionnaires and observations.

The results of student responses are presented in Table 6.

**Table 6.** Student Responses to the Interactive Digital Storybook

No	Assessment Aspect	Maximum Score	Obtained Score	Percentage	Category
1	Visual Attractiveness	100	92	92%	Very Good
2	Ease of Use	100	88	88%	Good
3	Content Clarity	100	90	90%	Very Good
4	Media Interactivity	100	91	91%	Very Good
5	Reading Motivation	100	93	93%	Very Good
<b>Total</b>		<b>500</b>	<b>454</b>	<b>90.8%</b>	<b>Very Good</b>

Table 6 shows that the total score obtained is 454 out of 500, resulting in an average percentage of 90.8%, which is categorized as “very good.”

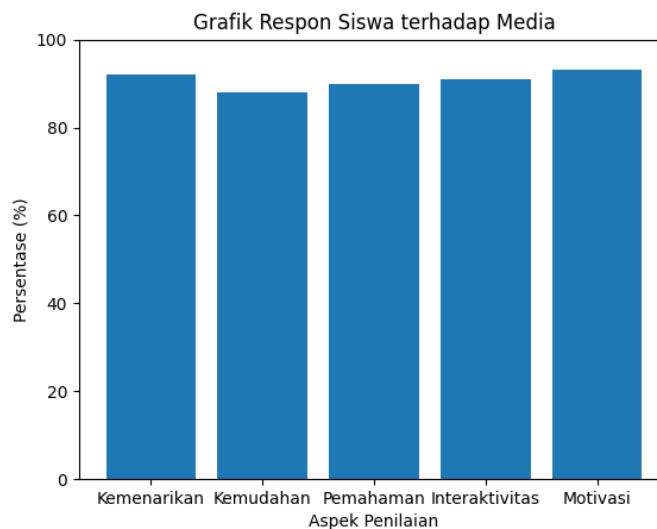
The observation results are presented in Table 7.

**Table 7.** Observation Results of Student Activities

No	Activity Indicator	Number of Active Students	Percentage	Category
1	Reading the story with focus	23	92%	Very Good
2	Using interactive features	24	96%	Very Good
3	Answering quizzes enthusiastically	22	88%	Good
4	Asking questions or discussing	20	80%	Good
<b>Average</b>			<b>89%</b>	<b>Very Good</b>

Table 7 indicates that the average level of student activity reached 89%, which falls into the “very good” category.

The visualization of student responses is presented in Figure 5. Figure 5 shows that all assessed aspects fall within the “good” to “very good” categories, with the majority in the “very good” category.



**Figure 5.** Student Response Graph toward the Media

Overall, the empirical data from questionnaires and observations indicate that the product demonstrates a high level of practicality in classroom use.

**Effectiveness Test Results**

This section presents the results of effectiveness testing using pretest and posttest data.

The calculation of N-Gain was used to measure the improvement in students’ reading literacy. The detailed results are presented in Table 8.

**Table 8.** Complete Data of Pretest, Posttest, and N-Gain Results

No	Student	Pretest	Posttest	Difference (d)	N-Gain	Category
1	S1	60	85	25	0.62	Moderate
2	S2	55	80	25	0.55	Moderate
3	S3	50	82	32	0.64	Moderate
4	S4	58	86	28	0.66	Moderate
5	S5	57	84	27	0.63	Moderate
6	S6	59	85	26	0.63	Moderate
7	S7	56	83	27	0.61	Moderate
8	S8	54	82	28	0.61	Moderate
9	S9	52	80	28	0.58	Moderate
10	S10	58	87	29	0.69	Moderate
11	S11	60	88	28	0.70	High
12	S12	55	83	28	0.62	Moderate
13	S13	57	85	28	0.65	Moderate
14	S14	53	81	28	0.60	Moderate
15	S15	59	86	27	0.66	Moderate
16	S16	56	84	28	0.64	Moderate
17	S17	54	82	28	0.61	Moderate
18	S18	58	87	29	0.69	Moderate
19	S19	57	85	28	0.65	Moderate
20	S20	55	83	28	0.62	Moderate
21	S21	53	81	28	0.60	Moderate
22	S22	52	80	28	0.58	Moderate
23	S23	56	84	28	0.64	Moderate
24	S24	57	86	29	0.67	Moderate
25	S25	58	88	30	0.71	High

The summary of descriptive statistics is presented in Table 9.

**Table 9.** Descriptive Statistics Recapitulation

Component	Value
Number of Students (n)	25
Mean Pretest Score	57.2
Mean Posttest Score	84.6
Mean Difference	27.4
<b>Mean N-Gain</b>	0.64
<b>Category</b>	Moderate

Tables 8 and 9 show that the mean pretest score is 57.2 and the mean posttest score is 84.6, with an average N-Gain of 0.64, categorized as “moderate.”

The results of the paired sample t-test are presented in Tables 10, 11, and 12. The formula used is:

$$t = \frac{\bar{d}}{S_d/\sqrt{n}}$$

Where:

$\bar{d}$  = mean difference (posttest – pretest)

$S_d$  = standard deviation of the differences

$n$  = sample size

**Table 10.** Paired Samples Statistics

Variable	N	Mean	Std. Deviation	Std. Error Mean
Pretest	25	57.20	2.87	0.57
Posttest	25	84.60	2.58	0.52

**Table 11.** Paired Samples Correlations

Variable Pair	N	Correlation	Sig.
Pretest & Posttest	25	0.872	0.000

**Table 12.** Paired Samples Test

Paired Differences	Mean	Std. Deviation	Std. Error Mean	95% CI Lower	95% CI Upper	t	df	Sig. (2-tailed)
Pretest – Posttest	-27.40	5.80	1.16	-29.80	-25.00	-23.62	24	0.000

Table 12 shows that the significance value is 0.000 ( $p < 0.05$ ), indicating a statistically significant difference between pretest and posttest scores. Additionally, Table 11 shows a correlation value of 0.872, indicating a strong relationship between the two variables.

### Discussion

The findings of this study provide strong evidence that the development of a local wisdom-based interactive digital storybook contributes meaningfully to improving elementary school students' reading literacy, particularly when instructional media are designed by integrating technological features with contextual and cultural elements relevant to students' lived experiences. The feasibility results, which reached an average of approximately 90% across material, media, and language validation, indicate that the developed product meets the essential standards of instructional media in terms of content accuracy, design quality, and linguistic appropriateness, thereby confirming that the development process aligns with the principles of educational design research that emphasize validity, practicality, and effectiveness (Patricia et al., 2024; Samsudin et al., 2024).

From a pedagogical perspective, this high level of feasibility suggests that the integration of simple and communicative language, visually engaging illustrations, and structured content based on local wisdom enhances the relevance of learning materials to students' cognitive development, especially for those at the concrete operational stage, where learning is more effective when supported by concrete representations and contextualized experiences. Furthermore, the effectiveness results, as indicated by the average N-Gain score of 0.64 (moderate category) and statistically significant t-test findings ( $p < 0.05$ ), demonstrate that the use of the interactive digital storybook leads to measurable improvements in students' reading literacy, thereby reinforcing the argument that digital-based instructional media can produce significant learning gains when properly designed and implemented.

These findings are theoretically supported by Mayer's Multimedia Learning Theory, which posits that learners process information more effectively when it is presented through multiple modalities such as text, images, and audio allowing for deeper cognitive processing and improved comprehension, particularly in reading activities that require both decoding and meaning construction (Mayer, 2009). In addition, Vygotsky's constructivist theory provides further explanatory power by emphasizing that knowledge is actively constructed through interaction with learning tools and social contexts; in this case, the interactive features of the digital storybook, including audio narration, animations, and quizzes, function as mediational tools that scaffold students' engagement and support the internalization of knowledge through active participation (Homayouni, 2022; Sarmiento-Campos, 2022).

The integration of local wisdom within the story content also emerges as a critical factor contributing to the effectiveness of the media, as culturally relevant narratives enable students to establish meaningful connections between the text and their everyday experiences, thereby

facilitating comprehension and increasing reading motivation; this finding is consistent with the principles of contextual learning, which assert that learning becomes more meaningful when instructional content is closely related to students' real-life environments and cultural backgrounds. Moreover, the inclusion of moral values such as cooperation, honesty, and environmental awareness within the stories not only supports literacy development but also contributes to character education, aligning with previous findings that emphasize the role of culturally grounded learning materials in fostering both cognitive and affective learning outcomes (Gunawan et al., 2022).

The results of this study are also in line with previous empirical research demonstrating the effectiveness of interactive learning media in improving student engagement and understanding, such as studies by Astuti et al. (2026), which found that interactive media enhances conceptual understanding, and Susanta et al., (2023), which highlighted the role of problem-based learning in developing critical thinking skills; however, the present study extends these findings by integrating interactive digital technology with local wisdom and focusing specifically on reading literacy at the elementary level, thereby offering a more comprehensive and contextually grounded approach.

Additionally, the findings support prior research on digital instructional media, including the development of e-flipbooks and other interactive formats, which have been shown to improve students' learning outcomes and motivation (Malik & Zhu, 2023; Wu et al., 2023), while also reinforcing the importance of teachers' technological competence in facilitating effective digital learning environments (Baharuddin et al., 2025). The novelty of this study lies in its simultaneous integration of three key dimensions interactive digital media, reading literacy, and local wisdom within a single instructional product, which not only addresses existing gaps in the literature but also responds to the demands of 21st-century education that require the incorporation of technology, cultural relevance, and student-centered learning approaches (Ruliani et al., 2025).

Despite these contributions, several limitations should be acknowledged to provide a balanced interpretation of the findings; first, the relatively small sample size of 25 students limits the generalizability of the results, as the findings may not fully represent broader student populations with diverse characteristics, and second, the short duration of the implementation restricts the ability to assess the long-term impact of the media on students' reading literacy development, particularly in terms of retention and transfer of learning.

Therefore, future research is recommended to involve larger and more diverse samples, extend the duration of implementation, and explore the integration of additional features such as adaptive learning systems or gamification elements to further enhance the effectiveness of interactive digital storybooks. In addition, future studies could examine the impact of such media across different grade levels or subject areas to determine its broader applicability within elementary education. Overall, the findings of this study confirm that local wisdom-based interactive digital storybooks represent an effective and innovative instructional solution that not only improves students' reading literacy but also enhances engagement, supports character development, and aligns with the evolving demands of technology-integrated and culturally responsive education in the 21st century.

## **Conclusion**

This study concludes that the development of a local wisdom-based interactive digital storybook represents an effective instructional innovation for improving elementary school students' reading literacy. The product, developed through a systematic Research and

Development (R&D) approach using the 4D model, has met the criteria of feasibility, practicality, and effectiveness as a learning medium. The feasibility of the product is evidenced by expert validation results in the aspects of content, media design, and language, which indicate that the developed storybook aligns with instructional standards and is appropriate for elementary-level learners. In terms of practicality, the implementation results show that students responded positively to the use of the digital storybook, as reflected in their high level of engagement, motivation, and active participation during the learning process. These findings indicate that the integration of interactive elements such as audio narration, animations, and quizzes successfully creates an engaging and student-centered learning environment. Furthermore, the effectiveness of the product is demonstrated by a significant improvement in students' reading literacy skills. This is supported by the moderate N-Gain score (0.64) and statistically significant differences between pretest and posttest results, confirming that the use of the developed media has a measurable impact on learning outcomes. Overall, the integration of interactive digital technology with local wisdom not only enhances students' reading literacy but also promotes cultural awareness and character development. Therefore, this study highlights the potential of contextually relevant and technology-based instructional media as an innovative solution to support 21st-century learning in elementary education.

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