DEVELOPMENT OF INTERACTIVE DIGITAL PICTURE STORY MEDIA TO ENHANCE FIFTH-GRADE STUDENTS' READING LITERACY IN MENGWI DISTRICT

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ABSTRACT

Rendahnya literasi membaca siswa sekolah dasar di Indonesia masih menjadi tantangan serius, sebagaimana tercermin dalam hasil PISA 2022 yang menunjukkan skor membaca Indonesia masih berada di bawah rata-rata OECD. Kondisi ini menuntut inovasi media pembelajaran yang mampu meningkatkan keterlibatan dan pemahaman membaca siswa. Penelitian ini bertujuan untuk mengembangkan media pembelajaran interaktif berbasis cerita bergambar digital yang valid, praktis, dan efektif dalam meningkatkan literasi membaca siswa kelas V sekolah dasar. Penelitian menggunakan pendekatan Research and Development dengan model ADDIE yang meliputi tahap analysis, design, development, implementation, dan evaluation. Subjek penelitian terdiri dari 28 siswa kelas V dan satu guru di SD Negeri 2 Mengwi. Data dikumpulkan melalui lembar validasi ahli, angket kepraktisan guru dan siswa, serta tes literasi membaca. Hasil penelitian menunjukkan bahwa media yang dikembangkan memiliki tingkat validitas sebesar 88,6% (sangat layak) dan tingkat kepraktisan sebesar 88,7% (sangat praktis). Uji efektivitas menunjukkan peningkatan signifikan pada kemampuan literasi membaca siswa dengan rata-rata nilai meningkat dari 65,21 pada pretest menjadi 82,43 pada posttest (p < 0,05). Kebaruan penelitian ini terletak pada pengembangan media cerita bergambar digital interaktif yang mengintegrasikan elemen visual, narasi, dan aktivitas evaluatif dalam konteks budaya lokal Bali untuk meningkatkan keterlibatan dan pemahaman membaca siswa sekolah dasar.

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INTRODUCTION

Reading literacy is a fundamental competency that supports students' academic success across all learning areas in elementary education (Rahma dkk., 2025; Sari & Mahendra, 2025). Literacy involves not only the ability to decode written words but also the capacity to comprehend, interpret, and reflect critically on textual meaning (Kemendikbudristek, 2023). However, empirical evidence indicates that reading literacy among Indonesian elementary school students remains relatively low. The Programme for International Student Assessment (PISA) 2022 reported that Indonesia ranked 69th out of 81 participating countries with an average reading score of 359, significantly

below the OECD average of 476 (OECD, 2019). These findings highlight a substantial gap between expected literacy competencies and students' actual performance.

Preliminary observations conducted in Cluster 2 of Mengwi District revealed similar challenges in classroom practice. Among 28 fifth-grade students observed, only 9 students (32%) were able to correctly answer inferential comprehension questions, while the remaining students struggled to identify main ideas, interpret implicit meanings, and connect textual information to real-life contexts (Pramesti & Cahyaningtyas, 2025; Pratama, 2025). Teachers also reported that students often lose interest when reading long passages in thematic textbooks due to monotonous presentation and the absence of engaging visual elements (Catalano dkk., 2025; Himawati dkk., 2025a). This situation indicates the need for innovative learning media that can enhance students' engagement and comprehension during reading activities.

In response to these challenges, the Merdeka Curriculum emphasizes meaningful and student-centered learning experiences supported by digital technology (Kemendikbudristek, 2022). One promising approach is the use of interactive digital picture stories that combine text, illustrations, narration, and interactive activities to support reading comprehension. According to Mayer's Multimedia Learning Theory (2021), learning becomes more effective when information is presented through complementary visual and verbal channels. Integrating visual illustrations with textual information can therefore support students' cognitive processing and facilitate deeper comprehension of reading materials (Özdemir dkk., 2025).

Several previous studies have explored the use of picture-based and digital storytelling media to support reading development. Leite dkk. (2018) and Pramesti & Cahyaningtyas (2025) found that picture story media improved elementary students' reading comprehension. Bus et al. (2025) reported that interactive digital storybooks containing narration and animation features increased children's engagement and comprehension (Catalano dkk., 2025; Liu dkk., 2024). Similarly, Setyawati (2024) demonstrated that digital storytelling contributes to improved critical thinking and reading comprehension skills among elementary students, while Yundari dkk (2025) showed that picture story e-books enhance students' motivation and learning autonomy (Rahma dkk., 2025).

Despite these findings, several limitations remain in existing research. First, many studies focus primarily on lower elementary grades (grades 1–3), while research targeting upper elementary students particularly fifth grade, where students transition from "learning to read" to "reading to learn" is still limited (Pratama, 2025). Second, many existing digital story media remain linear or non-interactive, offering limited opportunities for students to actively engage with the reading content (Himawati dkk., 2025). Third, few studies have developed digital storytelling media that integrate local cultural contexts, which may play an important role in increasing students' engagement and relevance of learning materials (Lestari, 2025; Maryati Rina Sari & Yasinta Mahendra, 2025).

Therefore, this study aims to address these gaps by developing an interactive digital picture story-based learning media designed specifically for fifth-grade elementary students. The media integrates visual illustrations, narration, and interactive reading activities within a culturally relevant context. By applying the ADDIE development model, this study seeks to produce learning media that is valid, practical, and effective in improving students' reading literacy.

RESEARCH METHODS

This study employed a research and development (R&D) approach using the ADDIE model, which consists of five stages: analysis, design, development, implementation, and evaluation. The ADDIE model was selected because it provides a systematic and flexible framework for developing instructional media and has been widely used in educational technology research (Branch, 2009; Peterson, 2003). The study was conducted at SD Negeri 2 Mengwi in Cluster 2 of Mengwi District and involved 28 fifth-grade students and one classroom teacher. The product developed in this study was an interactive digital picture story-based learning media designed to enhance students' reading

literacy, as digital storytelling media have been shown to support reading comprehension and learning engagement among elementary school students (Himawati dkk., 2025b; Rahma dkk., 2025).

During the analysis phase, data were collected through classroom observations, teacher interviews, and curriculum document analysis to identify students' needs and learning difficulties, which are common procedures in educational development research (Richey & Klein, 2014). The design and development stages involved creating the storyboard, visual illustrations, narration, and interactive activities using multimedia authoring tools. The integration of multimedia elements such as images, narration, and interactivity is recommended to enhance cognitive processing and learning effectiveness (Mayer, 2020).

To evaluate the developed media, several research instruments were used, including expert validation sheets, teacher and student practicality questionnaires, and reading literacy tests administered through a pretest–posttest procedure. Expert validation assessed three aspects: content accuracy, language appropriateness, and media design, which are commonly evaluated dimensions in instructional media validation (Leite dkk., 2018; Richey & Klein, 2014). Practicality questionnaires measured usability, visual attractiveness, and instructional usefulness from both teacher and student perspectives. The effectiveness of the media was tested using a one-group pretest–posttest design, which is frequently used in development research to examine learning improvement after product implementation (Allen, 2017).

RESULTS AND DISCUSSION

This research produced an interactive digital picture story-based learning media designed to enhance reading literacy among fifth-grade elementary students. The development followed the ADDIE model, and the final product underwent three primary assessments: validity testing, practicality testing, and effectiveness testing. Validity testing was conducted by three experts media specialist, language specialist, and Indonesian language content specialist using a 5-point Likert scale to evaluate content, linguistic accuracy, and visual design aspects. Table 1 presents the validation results.

Table 1, *Validity Test Results of the Interactive Digital Picture Story-Based Learning Media*

Aspect Assessed	Expert 1 (%)	Expert 2 (%)	Expert 3 (%)	Mean (%)	Category
Content validity	90	88	90	89.3	Very Valid
Language validity	86	88	89	87.7	Very Valid
Media/display validity	99	90	88	88.7	Very Valid
Overall Mean	-	-		88.6	Very Valid

Source: Research data (2025)

The overall validity score of 88.6% (>80%) categorized the media as "very valid" for classroom implementation. Reliability analysis using Cronbach's Alpha yielded a value of 0.91, indicating excellent inter-rater consistency among expert judgments. Descriptive statistics from SPSS version 26 confirmed a mean score of 4.43 (SD = 0.22) across all validation items.

Practicality testing assessed the media's usability and acceptance from both teachers' and students' perspectives following a four-session implementation period. Four teachers and 28 fifth-grade students completed practicality questionnaires evaluating material alignment, interface usability, visual attractiveness, narrative clarity, and comprehension support. Table 2 summarizes the practicality assessment results.

Table 2, *Practicality Test Results by Teachers and Students*

Respondents	Aspect Assessed	Max Score
Teachers	Material alignment with learning objectives	20
Teachers	Interface usability and visual design	20
Teachers	Student engagement and media attractiveness	20

Respondents	Aspect Assessed	Max Score
Teachers Average	-	-
Students	Learning enjoyment and visual appeal	40
Students	Narrative clarity and interactivity	40
Students	Reading comprehension support	40
Students Average	-	-
Overall Mean	-	-

Source: Research data (2025)

The overall practicality score of 88.7% demonstrated that both teachers and students found the media highly usable, engaging, and supportive of reading comprehension processes. SPSS analysis revealed mean scores of 4.42 (SD = 0.18) for teachers and 4.46 (SD = 0.20) for students, with an overall Cronbach's Alpha of 0.93 confirming high reliability of practicality measurements.

Effectiveness testing employed a one-group pretest–posttest design with 28 fifth-grade students to measure improvements in reading literacy skills, specifically the ability to identify main ideas, interpret word meanings, and draw conclusions from texts. Paired sample *t*-test analysis using SPSS version 26 compared pretest and posttest scores. Table 3 presents the effectiveness results.

Table 3, *Effectiveness Test Results on Students' Reading Literacy*

Statistic	Pretest Mean	Posttest Mean	Mean Difference	t-value	*p*-value (2-tailed)	Interpretation
Mean score	65.21	82.43	17.22	12.45	0.000	Significant
Standard deviation	6.82	5.74	-	-	-	-
Sample size (N)	28	28	-	-	-	-

Source: Research data (2025)

The statistical analysis yielded $t = 12.45$, $p = 0.000$ (< 0.05), indicating a statistically significant improvement in reading literacy scores after media implementation. Normalized gain (*N*-gain) calculation produced a value of 0.49, categorized as "medium" improvement according to Hake's criteria, confirming meaningful enhancement in students' text comprehension abilities.

CONCLUSION

This study successfully developed an interactive digital picture story-based learning media using the ADDIE development model to enhance reading literacy among fifth-grade elementary school students in Cluster 2 of Mengwi District. The results indicate that the developed media meets the criteria of validity, practicality, and effectiveness. Expert validation showed a score of 88.6%, categorized as very valid, while practicality testing resulted in an average score of 88.7%, indicating that the media is highly usable and engaging for both teachers and students. Effectiveness testing using a paired sample t-test demonstrated a significant improvement in students' reading literacy scores, increasing from a mean score of 65.21 in the pretest to 82.43 in the posttest ($p < 0.05$). These findings confirm that the integration of visual illustrations, narration, and interactive learning activities can support students' comprehension and engagement in reading.

The findings also support the Cognitive Theory of Multimedia Learning (Mayer, 2020), which suggests that combining visual and verbal information can enhance cognitive processing during learning. Furthermore, the integration of culturally relevant narratives within the digital story contributes to meaningful learning experiences and encourages active student participation. The developed media therefore provides an innovative instructional alternative that can help teachers improve reading literacy instruction in elementary schools. Future research is

recommended to test this media in broader educational contexts and explore the integration of additional interactive features, such as gamification, to further enhance student engagement and literacy development.

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