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Digital Comics for Differentiated Learning: A Strategy to Enhance Elementary Reading Skills

Nanang Rohmat Hidayat[1(*)], Roemintoyo[2], Leo Agung Sutimin[3]
[1,2,3]Master of Educational Technology, Faculty of Teacher Training and Education, Sebelas Maret University, Surakarta, Indonesia

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Abstract

The Covid-19 pandemic has had a profound impact on the education sector, particularly in rural areas, and this effect continues to be felt. The transition to online learning technologies during this period was not effectively implemented. This situation underscores the necessity for accessible and effective media literacy resources to support reading skills. This study aims to enhance the reading abilities of elementary school students through the development of differentiated digital comics (KODI), specifically designed to cater to diverse learning needs. Employing a Research and Development (R&D) approach based on the ADDIE model, the study involved one media expert, one content expert, and 30 fourth-grade students. Data collection was conducted through observations, interviews, and questionnaires, which were analyzed using both qualitative and quantitative methods. The needs analysis revealed significant variations in students' reading abilities and preferences, highlighting the urgency for differentiated media. Expert validation indicated that KODI met the eligibility criteria, achieving an average validity score of 84.9%, categorizing it as "valid." Effectiveness testing using a T-test demonstrated a significant improvement in students' reading skills, with the posttest score differences between the experimental and control groups reaching a significant level ($p < 0.05$). The average posttest score for the experimental group was higher than that of the control group, confirming that KODI is effective in enhancing students' reading skills. These findings affirm the potential of KODI as an engaging and adaptive medium for improving reading skills at the elementary education level.

Keywords: Comics, Digital, Differentiated, Reading, Skills

(*) Corresponding Author: nanagrohmat@student.uns.ac.id

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INTRODUCTION

The coronavirus disease pandemic in 2019 (COVID-19) has significantly impacted various sectors, particularly education. This impact was especially pronounced in rural areas (Yacob, 2020). During the pandemic, school activities were severely limited, and learning was shifted to online platforms (Sablić et al., 2021; Aini et al., 2020). However, implementing online learning in rural areas proved to be highly challenging due to several factors: (1) limited internet access, (2) inadequate supporting facilities and infrastructure, and (3) a lack of technological literacy among both students and parents (Hatta et al., 2020; Lassoued et al., 2020). These challenges resulted in minimal communication between teachers, students, and parents in these areas. Furthermore, the quality of online

learning was compromised by poor internet connectivity, which is a critical requirement for successful online education (Chiu, 2022; Herwin et al., 2021). This limitation has highlighted the ineffectiveness of online learning in such contexts. Previous studies have shown that several barriers hindered the effectiveness of online learning, including the lack of access to devices like smartphones or laptops among some parents (Majid & Fuada, 2020; Sabharwal et al., 2018). Consequently, these challenges significantly impaired the implementation of online learning, particularly in rural regions where both internet coverage and public understanding of technology were limited.

Moreover, the rapid development of technology in the digital age has not been easily adopted by all communities, especially in rural areas, where various challenges exist (Kaoud & El-Shihy, 2021; Gonçalves & Capucha, 2020). This digital divide made the transition to technology-driven education particularly difficult during the COVID-19 pandemic. For nearly two years, children in rural areas faced significant barriers to learning, particularly those living with grandparents while their parents worked away from home (Ambarita, 2021; Sari, 2020). As a result, these children received minimal educational support, which adversely impacted essential skills, including reading.

Recent studies on reading skills in Indonesia highlight persistent challenges. PISA results indicate that Indonesia consistently scores below the OECD average, ranking 72nd out of 79 countries in 2018 (Santi et al., 2022). Several factors contribute to these low reading scores, including parental education levels, available home resources, and student behavior (Santi et al., 2022; Iin et al., 2022). Additionally, low reading interest is attributed to both internal factors, such as a lack of motivation, and external factors, such as inadequate infrastructure. This lack of interest in reading not only hinders students' literacy development but also negatively impacts overall learning outcomes, ultimately affecting the quality of human resources in the country. Addressing these issues is critical for improving literacy and fostering a more skilled and capable workforce.

Government initiatives, like the School Literacy Movement was aimed to address these literacy issues (Nugrahanto & Zuchdi, 2019). However, challenges remain, including misperceptions about reading ability and limited use of diverse instructional methods (Ortlieb & Schatz, 2020). Reading skills are crucial for academic success and engagement, with low reading skills linked to reduced performance (Wani & Hanim Ismail, 2024). Environmental factors, including family socioeconomic status and parental involvement, significantly impact the development of reading skills (Usman & Ningsih, 2020). Teachers' own reading habits and instructional strategies also influence students' reading abilities (Wani & Hanim Ismail, 2024). To improve reading skills, schools implement various programs such as classroom reading corners, book swaps, and parent-teacher partnerships (Sahiruddin & Herminingrum, 2021). Self-efficacy plays a vital role in the development of reading skills and academic success (Ortlieb & Schatz, 2020). Overall, cultivating a love for reading and maintaining consistent reading habits are essential strategies for enhancing students' academic performance and reading skills.

Meanwhile, observations conducted in grades 1-4 of elementary school students reveal that many children still exhibit low reading skills. For instance,

students currently in grade 4 in 2024 would have been in kindergarten or grade 1 during the Covid-19 pandemic, a period that severely disrupted their learning. The lack of proper learning facilities and mentoring during this critical phase resulted in minimal educational support, leading to gaps in their literacy development. Consequently, these students still struggle with foundational reading skills, which are essential for academic success. In today's rapidly changing world, strong reading abilities are crucial for students to effectively observe, analyze, and interpret information from written texts. Without solid reading skills, students face significant challenges in understanding concepts, which can hinder their overall educational progress and future success (Yaghoobi & Razmjoo, 2016; Tsuei et al., 2020). Another fact is alos came from a 2023 survey in rural districts of Central Java revealed that 45% of grade 4 students struggled with basic reading comprehension, unable to read simple paragraphs fluently. This issue was exacerbated by the COVID-19 pandemic, during which nearly 50% of students had limited or no access to online learning due to poor infrastructure and lack of parental support. These challenges highlight the urgent need for targeted interventions.

Due to the importance of these reading skills, collaborative efforts between parents, teachers, and policy makers are needed to create a supportive learning environment and cultivate reading habits. Good reading skills enable students to recognize valid information and avoid inaccurate information (Ha, 2023). Therefore, it is important for children to develop good reading skills in order to participate actively and effectively in the learning process in the classroom.

In the learning process, the optimization of educational media can serve as a valuable option for educators to achieve learning objectives and build the soft skills in students. One notable example is the development of animation-based learning media rooted in local wisdom for elementary school levels (Bulkani et al., 2022). In rural areas, the use of online media in the learning process tends to be less effective due to the necessity of a stable internet connection to achieve educational objectives (Parimita Dewi & Bayu, 2022). Therefore, the development of media in this study focuses on effective learning media, namely friendly to the limitations of internet connections, easy to apply, and interesting for children's development in the digital era.

The results of previous studies show that the use of digital comic-based learning media in various elementary education contexts has proven effective in improving students' academic achievement and their critical thinking skills (Arafik et al., 2021). Interactive digital comics also offer several advantages for elementary students' learning. They can increase student engagement and learning outcomes in online education (Setyowati et al., 2023), improve creativity and writing skills (Mohseni, 2021), and enhance reading interest in children's literature (Arafik et al., 2021). Digital comics have been shown to boost students' understanding of concepts (Ghifary et al., 2024) and improve literacy skills (Mustikasari et al., 2020), they are effective in motivating students and increasing their interest in thematic learning. Furthermore, digital comics can enhance scientific literacy when designed with appropriate content and context (Fitria et al., 2023). When combined with project-based learning, digital comics can significantly improve learning outcomes in subjects like social studies (Ulandari & Sujana, 2023). The body of research indicates that interactive digital comics serve as adaptable, captivating, and

impactful resources for improving multiple facets of elementary students' education across a range of subjects. The uniqueness of this research lies in the combination of differentiated strategies with digital comics, a method that has not been widely implemented in the context of primary education.

The originality of this research is rooted in the provision of differentiated reading resources through digital comics that are customized to meet the diverse abilities of students. By creating this differentiated digital comic medium, the research seeks to enhance students' reading proficiency significantly and motivate educators to adopt innovative, student-focused materials in their instructional methodologies. This strategy offers a novel approach to educational literature by presenting an engaging and effective means specifically aimed at improving reading skills among elementary school students. This study is particularly significant given the limited consistent empirical data and the lack of structured implementation of digital comic media in elementary education, while technological advancements present new challenges and opportunities that have yet to be fully explored. Consequently, this research aims to develop and assess the effectiveness of differentiated digital comics (KODI) in enhancing the reading capabilities of elementary school students.

METHODS

This research is a type of Research and Development (R&D) that uses the ADDIE development model. The ADDIE model, introduced by Branch in 2009, consists of five development stages: Analysis, Design, Development, Implementation, and Evaluation (Molenda, 2003). This model was selected because it provides a flexible yet systematic sequence of development phases, with each stage including evaluation steps that developers can use to refine the media (Widyaningsih et al., 2020). The following is figure 1, an illustration of the development model used in this research.

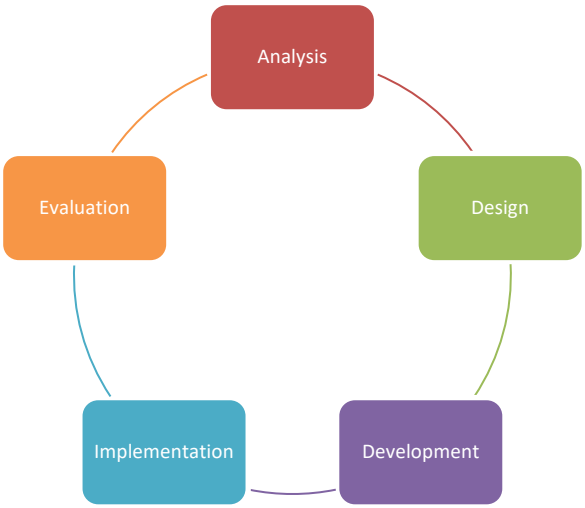

Figure 1. ADDIE Model

The research subjects included media experts, material experts, three teachers, and 30 fourth-grade students. The media experts evaluated KODI's design, interactivity, and functionality, ensuring it met educational technology standards. The material experts assessed the content's accuracy, relevance, and curriculum alignment. The three teachers implemented KODI in the classroom and provided feedback on its effectiveness in improving reading skills. The 30 students were divided into an experimental group (using KODI) and a control group (using traditional printed materials). Their performance and engagement were analyzed to assess KODI's impact on reading skills (Sugiyono, 2016). In this study, cluster sampling was employed to select the research participants. This method was used because the study involved groups of students within a specific grade level, rather than selecting individual students randomly. The 30 fourth-grade students were drawn from a larger population of students in one school. The school was divided into clusters based on class groupings, and then one class (the experimental group) was selected to use KODI, while another class (the control group) continued with traditional printed materials. This approach ensured that the participants were representative of the typical classroom setting and minimized bias in the selection process (Sukmadinata, 2012).

Meanwhile, data was collected through several techniques, including interview guidelines and observation sheets for the analysis stage, media validation by validators, and effectiveness testing on students (Sugiyono, 2018). The validation process was conducted using instruments shown in Table 1 and Table 2, where validators provided assessments based on a Likert scale of 1 to 5 (1: very poor, 2: poor, 3: fair, 4: good, 5: very good). This validation instrument includes aspects relevant to the quality of the media and learning materials (Sulistio & Qohar, 2020). The assessment of students' responses was based on a rubric that evaluated three key aspects: comprehension, critical thinking, and clarity and structure. These criteria were used to assess how well students understood the material, analyzed the text, and organized their ideas. The scores were then used to analyze improvements in students' reading skills after using KODI. The detailed assessment criteria are summarized in the table 1.

Table 1. Reading Skills Criteria

Assessment Criteria	Indicators
Comprehension	Ability to identify and explain key concepts in text.
Critical Thinking	Ability to analyze, evaluate, and synthesize information from text.
Clarity and Structure	Organization and clarity in presenting ideas in answers.

As mentioned, the effectiveness of KODI was evaluated using pretest and posttest data analyzed with an independent t-test in SPSS (Sugiyono, 2016) . This test compared the reading skill improvements between students using KODI and those using printed materials.

The evaluation instruments for media experts, content experts, and users (teachers and students) assessed aspects such as design, interactivity, and content alignment with the curriculum and learning objectives. Tables 2, 3, and 4 provide the specifications of the validation instruments used for each group of evaluators.

Table 2. Media Expert Instrument Grid

Aspect	Indicator
Appearance and Design	Attractive video visual design
	Appropriate use of colors, fonts, and visuals
	Image and video quality
Functionality	Loading speed on YouTube
	Responsive on various devices (smartphone, tablet, laptop)
	No system errors or bugs
Interactivity	Interactive features in the video (e.g., timestamps, comments, polls)
	Clarity of instructions delivered in the video
	Ease of access for users through descriptions or additional links

Adaptation of research (Yusuf et al., 2022)(Rahman et al., 2022)

Table 3. Material Expert Instrument Grid

Aspect	Indicator
Material Suitability	Aligns with the biology curriculum, learning objectives, and student needs; presented in depth.
Depth of Material	Difficulty level matches students' capabilities; covers multiple perspectives.
Clarity and Presentation	Easy-to-understand language; well-organized; clear examples and illustrations; summary at the end of each chapter.
Evaluation	Practice questions aligned with the material; varied question types; feedback for exercises; comprehensive final evaluation.

Adaptation of research (Susantini et al., 2021)(Sary et al., 2023)

Table 4. User Instrument Grid (Teachers and Students)

Aspect	Indicator
Ease of Use	Simple navigation, clear instructions, accessible on various devices.
Interactivity	Interactive features (quizzes, simulations), fast system response, engaging interactions.
User Satisfaction	Relevant and interesting material, attractive design, enjoyable learning experience.

Adaptation of research (Rahman et al., 2022)(Motamedi, 2019)

Each validator, including media experts, content specialists, and student representatives, evaluates the Project-Based Learning (PjBL)-based instructional video according to their respective expertise (Hasyim et al., 2021).

Data from these evaluations, primarily gathered through questionnaires during the product trials, are analyzed descriptively by calculating the average percentage of the validation results (Pujawan, 2019). For the instructional video to be considered feasible as a learning medium, it must achieve a minimum feasibility score of 63% (Bustanil S et al., 2019). Table 5 below outlines the feasibility criteria for interactive multimedia, adapted from various studies.

Table 5. Product eligibility criteria

Percentage	Qualification	Decision
82 – 100%	Very good	Very Eligible
63 – 81%	Good	Eligible
44 – 62%	Enough	Less Eligible
25 – 43%	Deficient	Not Eligible
0 – 24%	Very Deficient	

The effectiveness of video-based learning utilizing Project-Based Learning (PjBL) in this study will be evaluated through the assessment of n-gain scores, which reflect the enhancement of students' collaborative skills. The questionnaire employed to measure these reading skills is derived from indicators and aspects identified in several prior studies, including those conducted by Pertiwi et al. (2023), Afelia (2023), and Braathen (2022). Subsequently, the n-gain scores will be classified according to predetermined levels. The categories of n-gain utilized in this research are presented in the table 6.

Table 6. N-Gain Criteria

N-Gain (g)	Interpretation
$g \geq 0,7$	High
$0,3 \leq g < 0,7$	Medium
$g < 0,3$	Low

Adapt from (Wandani et al., 2023)

RESULTS & DISCUSSION

Result

In an effort to improve elementary students' reading skills, the KODI was developed as differentiated instructional media that can be tailored to meet the diverse needs of students. According to the Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia, differentiated learning is an approach in which teachers are required to understand that strategies, methods, and ways of imparting knowledge to students must be adapted to each student's individual needs. The implementation of differentiated learning involves three main aspects: students' abilities, interests, and varied learning styles.

Observations in early elementary grades revealed significant variations in reading abilities, with some students struggling with comprehension while others, though interested, still needed specific strategies. This highlights the need for learning media that accommodates these differences, allowing students to learn according to their individual needs.

Interviews with several elementary school teachers also revealed strong support for developing KODI as differentiated learning media needed in classrooms. Table 7 below summarizes the interview results with three elementary school teachers.

Table 7. Identify Key Points from Interview Results

Teacher	Key Points
Teacher A	Significant differences in students' reading abilities; varied interests in reading materials; supports differentiated media to address individual needs.
Teacher B	High need for media adapting to visual, kinesthetic, and auditory learning styles; believes KODI could help tailor content to diverse learning preferences.
Teacher C	Recognizes diverse learning preferences, with some students preferring text-only and others benefiting from visuals; fully supports KODI development for meeting diverse classroom needs.

The needs analysis shows that responsive learning media tailored to students' individual needs is crucial in early elementary education. Variations in students' abilities, interests, and learning styles pose significant challenges in reading instruction. KODI was developed as a solution to address these needs. Insights from observations and teacher interviews further emphasize the importance of KODI as a differentiated learning tool to enhance reading skills. The next step is to develop a KODI prototype based on the needs analysis, designed with student characteristics and differentiated learning principles to ensure its effectiveness and relevance. Figure 1 is the initial display of KODI.

Figure 1. Initial Display of KODI

After the prototype was developed, a validation process was conducted to ensure its feasibility. This validation involved two experts: a Media Expert and a Content Expert. The results of the assessment of the media and content validation instruments are presented in Table 8.

Table 8. Expert Validation Results

No	Validator	Percentage Score (%)	Criteria
1.	Media Expert I	83,1%	Valid
2.	Media Expert II	83,5%	Valid
3.	Material Expert I	87,7%	Valid
4.	Material Expert II	85,3%	Valid
Average Total Expert Test Results		84,9%	Valid

The validation results in Table 8 show that KODI was evaluated by two media experts and two content specialists, all rating it as "Valid." The media experts gave scores of 83.1% and 83.5%, while the content specialists rated it 87.7% and 85.3%,

with an average validation score of 84.9%. This confirms that KODI meets the necessary criteria as a valid educational resource, excelling in design, functionality, and content relevance. Based on differentiation principles, KODI is suitable for elementary school use.

After expert evaluations, KODI was trialed in three stages: individual (3 students), small group (9 students), and field trials (30 students). These trials helped identify media usage issues and provided valuable insights into its effectiveness in improving reading skills. Detailed trial results are presented in Table 9.

Table 9. Product Test Results by Students

No	Test Stage	Percentage Score (%)	Criteria
1.	Individual Test	84,1%	Valid
2.	Small Group Test	89,3%	Valid
3.	Field Trial	91,7%	Valid
Average Test Results		88,37%	Valid

The product test results presented in Table 9 show that KODI achieved high validity at each testing stage. The individual test scored 84.1%, the small group test scored 89.3%, and the field test scored 91.7%. The overall average score of 88.37% categorizes KODI as valid. These findings confirm that KODI is consistently deemed feasible by students, supporting its readiness for implementation in elementary school to enhance reading skills. Figure 2 shows the developed media after validation and student testing.

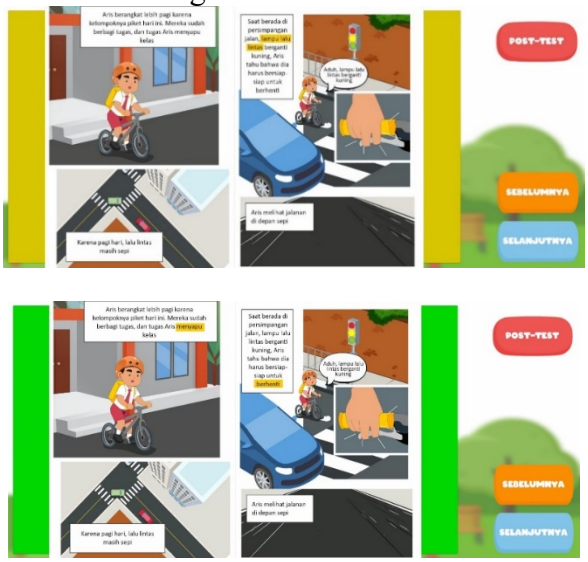

Figure 2. Display of KODI

The effectiveness of KODI in improving students' reading skills was evaluated with pretest and posttest scores from 30 fourth-grade students, analyzed using SPSS. Both tests, consisting of 10 essay questions on reading comprehension, were validated for reliability. Cronbach's Alpha was used to assess internal consistency, with values above 0.7 indicating good reliability. The reliability test yielded a Cronbach's Alpha value of 0.931, confirming the instrument's excellent internal consistency and making it a valid and reliable tool for measuring students' reading skills.

Table 10. Results of Instrument Validity and Reliability Analysis

Test Type	Number of Items	Significance Level (Sig.)	Reliability Coefficient (Cronbach's Alpha)
Pre-Test	10	< 0.05	0.931
Post-Test	10	< 0.05	0.931

Furthermore, this study also measures the level of effectiveness of the developed digital comics by comparing the results of students' pre-test and post-test related to improving reading skills. After the pre-test, students received treatment in the form of using this digital comic product, then worked on the post-test as a final evaluation. To get a more accurate picture of student responses, prerequisite tests were conducted, namely the homogeneity test and the data normality test. The results of these two tests will be explained in detail through analysis using the SPSS application as shown in table 11.

Table 11. Data Normality Test Results

Test	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre Test	0.130	30	0.391	0.940	30	0.392
Post Test	0.151	30	0.473	0.955	30	0.451

The analysis in Table 11 shows that both the pretest and posttest data meet normality requirements, with Shapiro-Wilk significance values of 0.392 (pretest) and 0.451 (posttest), both above the 0.05 threshold. This indicates normal distribution and supports further statistical analysis. Additionally, the homogeneity test using Levene's Test yielded a significance value of 0.275, confirming homogeneous variance and allowing for further analysis with equal variance across groups. The homogeneity test results are presented in Table 12.

Table 12. Homogeneity Test Results

Test	Levene Statistic	df1	df2	Sig.
Based on Mean	1.25	1	28	0.275
Based on Median	1.1	1	28	0.31
Based on Median and with adjusted df	1.1	1	27.5	0.31
Based on Trimmed Mean	1.3	1	28	0.265

After the data meets the prerequisite test, the next step is to test the level of product effectiveness by referring to the previously determined hypothesis. The results of this analysis are a comparison of students' reading abilities before and after using digital comics, which are summarized in Table 13 and 14.

Table 13. Test Score Distribution Analysis

Class	Average Score (Pre-Test)	Min. Score (Pre-Test)	Max. Score (Pre-Test)	Average Score (Post-Test)	Min. Score (Post-Test)	Max. Score (Post-Test)
Experimental	72	65	78	80	73	85
Control	70	60	75	75	70	80

Table 14. Comparison of Post Test Results

Class	Average Score (Pre-Test)	Average Score (Post-Test)	Std. Deviation	Significance	Trend
Experimental Class	72	80	4.56	Significant	Improvement
Control Class	70	75	5.12	Not Significant	Moderate Improvement

Tables 13 and 14 show the analysis of test scores measuring reading skills in both the experimental and control groups. In the pretest, the experimental group had an average score of 72 (range 65–78). After using KODI, their posttest average rose to 80 (range 73–85), indicating a significant improvement. In contrast, the control group, which did not use KODI, had a pretest average of 70 (range 60–75) and a posttest average of 75 (range 70–80), showing a more modest increase.

These results suggest that the experimental group's score increase was greater, highlighting KODI's more significant impact on improving reading skills compared to traditional methods. This supports the effectiveness of KODI as a learning tool to enhance students' reading abilities.

The data analysis shows that the KODI digital comic media, based on differentiated learning, is valid and feasible for improving elementary students' reading skills. KODI was designed to support differentiated learning, where teachers can adapt methods based on students' abilities, interests, and learning styles (Natasya, 2024). KODI is is particularly relevant in the digital era, where engaging and interactive media can enhance reading skills and boost student engagement (Aikaterini & Makrina, 2022).

Differentiated learning media is crucial for several reasons: it provides more effective support for diverse student needs, accounts for varying student characteristics, and adjusts the learning process to meet individual needs (Kanapathy, 2024). Given the varied abilities in a classroom, implementing differentiated learning is essential. KODI aligns well with these needs, meeting key criteria for multimedia learning, including content relevance, interactivity, user interface, and pedagogical effectiveness (Suciati et al., 2023). Therefore, KODI is a suitable tool for enhancing reading skills in elementary education.

The KODI underwent a rigorous validation process to ensure its quality and effectiveness as educational media (Yuningtyas et al., 2023). Validation is crucial for ensuring both the design and content accuracy align with the competencies of elementary school students (Chu et al., 2018). In this study, KODI was evaluated by two experts: one in media and one in content, using instruments tailored to meet the needs of students with varying abilities.

The importance of content validation is emphasized in literature, which stresses that educational media must not only be well-designed but also relevant, engaging, and effective (Ghofur, 2022). The validation results confirm that KODI is both appealing and aligned with student competencies, supporting a more meaningful learning experience.

In addition to content validity, KODI also meets key requirements for

effective learning media, such as interface design, navigation, pedagogy, and resilience (Habiddin et al., 2022). The validation results confirm that KODI is an effective tool for enhancing reading skills among elementary students, making it a suitable adaptive learning resource that aligns with student needs and characteristics. Meanwhile, Previous studies have shown that digital comics can effectively strengthen understanding and improve various learning outcomes (Damopolii et al., 2021). The use of digital comics is particularly effective in children as it can (1) enhance critical thinking, (2) boost motivation, and (3) improve learning outcomes (Susanti & Wibawa, 2022). Therefore, KODI is likely to be an effective medium for improving elementary students' reading skills, (Kartika Sari et al., 2022) also supports this, showing that historical comics can significantly enhance critical thinking skills, with students engaging with comics showing greater improvement compared to those using traditional textbooks.

The use of digital comic media has a significant impact on students' reading skills, as indicated by a notable effect size. Research shows that instruction integrating both visual and verbal elements enhances reading literacy (Heyne et al., 2023). Visual media, such as comics, not only boosts motivation but also fosters a stronger desire to read and learn (Luo et al., 2019). Additional studies have also demonstrated that educational content is more effectively conveyed through visual means, such as in comic form (Habiddin et al., 2022). This research contributes to the advancement of educational technology by promoting digital comics as an innovative tool, tailored to the needs of schools and students.

This research highlights the potential of differentiated digital comics in enhancing elementary students' reading skills. By integrating interactive multimedia through Android devices, this approach boosts student interest and engagement in reading activities, emphasizing the role of technology in creating dynamic, enjoyable learning experiences.

Differentiated KODI allows students to progress at their own pace, adapting to individual levels of understanding and reading skills. As students master lower levels, they can seamlessly move to more challenging ones, promoting personalized skill development.

While this study offers valuable insights, its small sample size and single-school setting may limit the generalizability of the findings. Future research should include larger, more diverse samples to validate the broader applicability of these results. Additionally, the short duration of the intervention suggests the need for further exploration of its long-term impact on reading skills. Investigating potential effects on other literacy areas, such as writing and comprehension, could provide a more comprehensive understanding of the benefits of this approach.

CONCLUSION

Based on the development research conducted, it can be concluded that differentiated learning media in the form of digital comics has been successfully developed and validated, making it suitable for improving elementary students' reading skills. The T-test analysis using the paired samples test yielded a t-value of 10.43 > t-table 1.99, with a significance level of <0.05 (0.000 <0.05), indicating a

positive impact of KODI on reading skills improvement. In line with these findings, it is recommended that KODI media be implemented more broadly in elementary reading instruction. Further research is suggested to examine the long-term effects of KODI on reading comprehension and other literacy skills. Collaboration with educators to refine and adapt KODI for various learning contexts is also important, and developing similar differentiated digital media for other subjects is encouraged to support diverse student learning styles.

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