

Development of Local Wisdom-Based Instructional Materials to Enhance Reading Skills of Fifth-Grade Elementary School Students

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ABSTRACT

Indonesia is currently experiencing a critical literacy crisis, particularly in frontier, outermost, and disadvantaged regions. Contributing factors include limited access to reading materials, ineffective library management, and declining student engagement in literacy activities. This study aimed to develop Indonesian language teaching materials incorporating local wisdom stories to enhance the reading skills of fifth-grade elementary students. A Research and Development (R&D) approach was adopted, utilizing the ADDIE model encompassing five phases: analysis, design, development, implementation, and evaluation. The study was conducted at SD Negeri 15 Melayang, involving 21 students and 3 teachers. Data were collected using observations, interviews, questionnaires, and standardized reading tests. Analytical techniques included descriptive statistics, normality and homogeneity tests, paired sample t-tests, and independent sample t-tests. The developed teaching materials received favorable evaluations, with content experts rating them at 83.32% and media experts at 80.31%. Practical implementation scores were also high, with students giving 83.55% and teachers 90.97%. Statistical analysis revealed a significant improvement in students' reading skills following the intervention, with a p-value of 0.001. These results demonstrate that Indonesian language teaching materials infused with local wisdom effectively enhance reading proficiency among fifth-grade students. The integration of culturally relevant narratives supports improved engagement and learning outcomes, offering a promising solution to Indonesia's literacy challenges.

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1. INTRODUCTION

Fundamentally, the reading process involves comprehending and interpreting the meaning embedded in written texts (Wu et al., 2023; Latini et al., 2020). To understand the implicit messages within reading materials, one must first grasp the meaning of words in a specific context (McKoon & Ratcliff, 2018). Reading is also considered a receptive skill, as it enables individuals to acquire information, expand knowledge, and experience new things through reading activities (Gonzalez et al., 2024; Pollard-Durodola et al., 2016). The classroom plays a crucial role as a structured learning environment, offering daily exposure to various pedagogical methodologies. One of the primary pedagogical approaches recognized for enhancing students' reading skills is Cooperative Learning (Rodríguez et al., 2017). Through group work, students can engage in discussions, share insights, and support each other in understanding texts, thereby improving their reading comprehension. Additionally, Cooperative Learning fosters analytical skills through activities such as group discussions and problem-solving, which enhance critical thinking abilities (Wati & Anggraini, 2019; Marcos dkk., 2020; Marwan et al., 2023). This collaborative approach boosts reading motivation by creating an enjoyable learning atmosphere, reinforced by positive social interactions.

Reading involves a series of complex activities encompassing various components, extending beyond mere literal text decoding (Francois & Hood, 2021; Mak, Faber, & Willems, 2023). It includes aspects of visual perception, cognitive processes, psycholinguistic comprehension, and metacognitive activities (Y. Wang et al., 2022). Fundamentally, reading involves the transformation of written symbols into orally comprehensible words (Rasna, 2019; Wati & Anggraini, 2019). As a cognitive process, reading consists of a series of activities, ranging from word recognition to literal comprehension, interpretation, critical analysis, and creative understanding (Lim et al., 2021). Reading comprehension skills are crucial for academic success, as reading serves as the primary tool for delivering lesson materials and raising students' awareness of the importance of reading skills in academic achievement (Bangeni, 2024). Recognizing the significance of reading skills for success in academic settings, adequate reading practice is essential to develop proficient reading abilities and an understanding of the demands of reading tasks in writing contexts (Damaianti, 2021; Stoller & Nguyen, 2020).

Experts have diverse perspectives on levels of reading comprehension (Kimhi et al., 2022; Zhang & Pérez-Paredes, 2024). This comprehension can be categorized into four types (Singh et al., 2024). The first level is literal comprehension, which involves a basic understanding of the text. The second level, inferential comprehension, requires interpreting information that is not explicitly stated but implied within the text. The third level is critical comprehension, and the fourth level is creative comprehension. Listening comprehension is a skill often overlooked in the development of reading proficiency. Listening activities play a crucial role in language learning and communication, as they are considered an active process, despite often being perceived as a passive activity by students (Mahmudah, 2016; Mäkipää, 2024).

The quality of the teaching and learning process is measured by the extent to which students master the fundamental skills of a subject (Adams et al., 2023; Attig et al., 2024). These skills include knowledge, abilities, and attitudes. However, not all students achieve the expected level of performance. To improve reading skills, it is essential for teachers to select appropriate teaching strategies, strengthen students' learning abilities, utilize effective instructional materials, and ultimately enhance their academic performance (Li & Yan, 2023; Griffiths et al., 2023). One of the key competencies of a teacher is their ability to manage the classroom during the learning process, which involves expertise in employing various teaching strategies, models, and instructional materials that can stimulate students' interest in learning and, consequently, improve their reading skills. Based on comparative studies of teacher education in developed countries with well-established systems, teacher education programs aim to bridge theory and practice through high-quality reflective work design and the integration of clinical practice (Bashith, 2017; Wiziack & dos Santos, 2021).

According to Charalambous et al., (2012) the challenges mentioned above include several difficulties faced by students, such as: (1) difficulty understanding the content of a story, (2) difficulty identifying the main idea in each paragraph, (3) difficulty expressing thoughts, and (4) difficulty connecting words into coherent sentences when summarizing a story. These obstacles indicate that students often become passive in the learning process (Chan et al., 2024; Tanimura et al., 2023). Several factors have been identified as contributing to these issues, including teachers' limited understanding of various Indonesian language teaching strategies, students' lack of interest in reading texts, inadequate school facilities, and the lack of encouragement from schools to promote reading activities. To assess learning success, a passing grade is established based on the Minimum Mastery Criteria (MMC), which typically requires a score of 65% or higher. However, a study conducted at SD Negeri 15 Melayang in Sintang Regency found that 60% of students scored below the MMC, meaning that 12 out of 21 students did not meet the expected standard, and only half of the students achieved or exceeded the MMC. Reading comprehension is defined as a complex intellectual process that involves two main abilities: understanding word meanings and analyzing verbal concepts. Furthermore (Rahimi et al., 2022; Inoue, 2023), state that reading comprehension encompasses various types of reading skills, including understanding literary norms, providing critical reviews, interpreting printed dramas, and analyzing fictional patterns.

According to (Nurgiyantoro, 2010), reading is a fundamental skill that influences students' ability to master learning materials. One of the factors contributing to low reading skills is students' lack of interest in reading (Murtiningsih, 2018). One approach to increasing reading interest is by fostering students' motivation. A study conducted by (Valentri, Rahayu, & Ariestika, 2024), demonstrated the positive impact of local wisdom-based teaching materials on elementary students' writing literacy skills. Keunggulan cerita lokal adalah menghadirkan pengalaman langsung dengan budaya dan kehidupan sehari-hari anak. The advantage of local stories is that they provide students with direct experiences related to their culture and daily lives. Furthermore, a study by (Yaqin, Gloriani, & Maschita, 2024), found that local wisdom-based learning can enhance students' appreciation for local culture, build strong moral character, and equip them to navigate challenges in the digital cultural landscape.

The implementation of local wisdom-based learning is crucial for teachers, as it can expand students' knowledge and understanding while serving as a tool to instill a love for local culture (Fawaid, 2021). Teachers are expected to design local wisdom-based learning to foster positive character development in alignment with local values and to prepare students for challenges beyond the school environment. Teachers can apply local wisdom-based learning through the following steps: (1) assessing local conditions and potential, (2) determining functions and objectives, (3) establishing criteria and materials to be learned, and (4) designing lesson plans that integrate local wisdom (Shufa, 2018). According to Hek & Kraaykamp (2023), teaching materials are a key factor that significantly influences children's reading success. This has been demonstrated in countries like Norway, where cultural and educational factors, as reflected in the development of SELM (Self-Directed Learning Model), play an essential role (Chalkley et al., 2022; Berg et al., 2023). It is estimated that most children enter elementary school with a high interest in literacy but may have limitations in reading ability (Bailey et al., 2022; Rojas-Drummond et al., 2017). To date, the only study exploring the relationship between progress in Self-Regulated Learning and academic achievement has focused on students considered academically at risk in grades 1 to 5.

Based on the preliminary study conducted through a survey of teachers and students at SD Negeri 15 Melayang, Sintang Regency, several key findings emerged. Interviews with teachers revealed low student engagement, with some students experiencing difficulties in reading during the learning process. Starting in March 2020, the COVID-19 pandemic and subsequent school closures, accompanied by stay-at-home orders, physical distancing measures, and government-mandated safety protocols, led to significant changes in students' learning experiences (Nasar et al., 2024; Bardosh et al., 2023). This shift appears to be linked to teacher-centered learning approaches, which often neglect active student engagement in the learning process (Woods & Copur-Gencturk, 2024; Hwang et al., 2024). Observations

and interviews with fifth-grade students at SD Negeri 15 Melayang further support these findings, highlighting students' difficulties in learning the Indonesian language, particularly in reading comprehension. Additionally, educators tend to rarely incorporate writing assessments into the Indonesian language curriculum, instead using writing primarily as an evaluation tool to measure students' reading comprehension and literacy skills (Wen & Walters, 2022; Liu et al., 2021).

Interviews with fifth-grade teachers and questionnaire results from SD Negeri 15 Melayang indicate that students' reading skills vary, with some still struggling with reading fluency and text comprehension. Teachers have attempted to integrate local wisdom through folktales, regional songs, and cultural materials, yet challenges such as limited facilities, time constraints, and large class sizes hinder effective implementation. The available teaching materials, such as textbooks and modules, are considered less engaging, less relevant to students' daily lives, and lacking in variety. Questionnaire findings reveal that local wisdom-based teaching materials effectively enhance learning motivation, cultural understanding, and reading skills; however, some students still experience boredom and difficulties with story-based questions. Teachers recommend developing more interactive and contextual teaching materials, supported by adequate facilities, training, and resources to enhance student engagement and learning outcomes. Research suggests that visual representations of knowledge can significantly improve structured and meaningful comprehension (Kumbure et al., 2024; Zhou et al., 2024). Through meaningful learning, new information can be integrated into individuals' cognitive structures, leading to more organized learning experiences (Kong & Wang, 2024; Shayan, Elahi, Ghazinoory, & Hoseini, 2018). Based on this concept, the study aims to develop grammar-based teaching materials to enhance reading comprehension among fifth-grade elementary school students. Significant research highlights that promoting progress in reading comprehension for all students requires more than simply providing rich texts it necessitates a targeted, strategic, and persistent approach in reading instruction (Carvalho, 2023).

2. METHODS

This study falls under the category of Research and Development (R&D) and employs the ADDIE design (Yulihendri & Evanita, 2023; Rahayu & Agustiana, 2023). The focus of this research is to develop instructional materials in the form of an Indonesian language learning book based on local wisdom, aimed at enhancing students' reading skills and critical thinking at the elementary school level, specifically for 21 fifth-grade students at SD Negeri 15 Melayang. This learning model follows the four-stage development process known as 4-D, which consists of Defining, Designing, Developing, and Disseminating (Nurdianah & Sudira, 2022; Alam et al., 2022).

This study employed the ADDIE design approach, integrating pretests and post-tests to evaluate students' strengths and weaknesses before and after learning. Although the research spanned one year, only the first three stages, definition, design, and development, were successfully completed, while the dissemination stage was not achieved. Focusing on the field of education, this study primarily aimed to develop grammar-based teaching materials designed to enhance elementary school students' reading comprehension and critical thinking skills. The effectiveness of the developed module was evaluated based on its ability to support both students and fifth-grade teachers in the learning process. The research variables were divided into two key aspects: the development of fifth-grade learning media to improve students' reading skills and the evaluation criteria, which were categorized into five levels of assessment: "not helpful," "less helpful," "moderately helpful," "helpful," and "very helpful."

In the ADDIE research model, there are five main stages. According to Robert Maribe Branch (Retnasari, Hidayah, & Prasetyo, 2021), these five main stages can be divided into 21 specific steps. These steps can be described in a table as follows.

Table 1. Details of ADDIE Stages

	Concepts	Common Procedures	
Analyze	Identify The Probable Causes For A Performance Gap	<ol style="list-style-type: none"> 1. Validate The Performance Gap 2. Determine Instructional Goals 3. Confirm The Intended Audience 4. Identify Required Resources 5. Determine Potential Delivery System (Including Cost Estimate) 6. Compose A Project Management Plan 	Analysis Summary
Design	Verify The Desired Performances And appropriate testing Methods	<ol style="list-style-type: none"> 7. Conduct A Task Inventory 8. Compose Performance Objectives 9. Generate Testing Strategies 10. Calculate Return On Investment 	Design Brief
Develop	Generate And Validate The Learning Resources	<ol style="list-style-type: none"> 11. Generate Content 12. Select Or Develop Supporting Media 13. Develop Guidance For Students 14. Develop Guidance For The Teacher 15. Conduct Formative Revisions 16. Conduct A Pilot Test 	Learning Resources
Implement	Prepare The Learning Environment And Engage The Students	<ol style="list-style-type: none"> 17. Prepare The Teacher 18. Prepare The Student 	Implementation Strategy
Evaluation	Assess The Quality Of The Instructional Products And Processes, Both Before And After Implementation	<ol style="list-style-type: none"> 19. Determine Evaluation Criteria 20. Select Evaluation Tools 21. Conduct Evaluation 	Evaluation Plan

3. FINDINGS AND DISCUSSION

3.1 Findings

In the analysis phase, two essential tasks must be accomplished. The first task involves evaluating the content needs of the Indonesian language learning module, particularly in the context of reading comprehension related to the story "Serangkat Pengaman." The second task focuses on assessing the need for a specialized learning module aimed at enhancing reading comprehension and critical thinking skills, covering stories from "Bubu Perangkap Ikan" to "Terowongan Bawah Tanah." These stories not only offer exciting adventures but also showcase natural beauty and cultural richness, which serve as invaluable heritage.

At this stage, the emphasis is placed on identifying and selecting appropriate learning content to support the development of teaching materials. The primary goal is to identify all relevant content based on the Indonesian curriculum, particularly in the context of reading comprehension and critical thinking in the storybook "Bubu Perangkap Ikan," which is intended for fifth-grade students. Additionally, characteristics analysis is conducted by reviewing the curriculum and lesson plans to ensure alignment with reading comprehension content in Indonesian language education. This study employs a quantitative approach using the ADDIE design model, which is highly suitable for enhancing students' reading skills.

Table 2. Instrumen Eligibility Criteria

Instrument Eligibility Criteria	
Content Eligibility	<ol style="list-style-type: none"> 1. Completeness of material in teaching materials 2. The depth of the material in teaching materials 3. Accuracy of material contained in 4. Support Learning Materials in tea
Appropriateness Language	<ol style="list-style-type: none"> 1. Compatibility with Developmental Level

Evaluation of teaching materials is essential to ensure their quality and relevance to learning needs. One effective method to assess the feasibility of teaching materials is by applying instrument feasibility criteria, which cover various aspects, including content and language. Table 2 summarizes the criteria used to evaluate the feasibility of instructional materials, focusing on completeness and depth of content, accuracy of information, and the extent to which the materials support the learning process. Additionally, linguistic criteria are also considered, particularly regarding the appropriateness of language usage in relation to students' developmental levels.

Table 3. Media Expert Assessment

Assessment Indicators	Assessment Items	Alternative Options			
		1	2	3	4
Media cover design	1. The appearance of the layout elements on the cover is harmonious, has rhythm and unity and is consistent.			√	
	2. The colours of the layout elements are harmonious and clarify functions.			√	
	3. The font used is easy to read and attractive.			√	
	4. Use of proportional letter combinations.			√	
	5. The media cover illustration is appropriate and the composition is proportional.			√	
	6. The characters and atmosphere are interesting.			√	
Media content design	7. Complete layout elements.			√	
	8. Harmonious layout elements.			√	
	9. The page layout is appropriate.				√

	10. The typography and fonts used are attractive and proportional.	√	
	11. Illustrations of the content are in accordance with the material.	√	
	12. The images and animations displayed are interesting.	√	
Media presentation	13. The orderly presentation of the material.	√	
	14. Load Adaptive concept of local wisdom.	√	
	15. All displayed components can be used by users easily.		√
	16. All components displayed are attractive.	√	
Straightforwardness of language	17. Accuracy of sentence structure.	√	
	18. Effectiveness of the sentences used.	√	
	19. The standardisation of terms used.	√	
Appropriateness of language to student development	20. Use of language that is easily understood by students.	√	
	21. Appropriateness to students' intellectual development.	√	
	22. Appropriateness to students' emotional development.	√	
Conformity with linguistic rules	23. The accuracy of the grammar used.	√	
	24. Spelling accuracy is used.	√	
Conformity with media principles	25. Conformity with the principle of self instructional.	√	
	26. Conformity with the principle of self contained.	√	
	27. Conformity with the stand alone principle.	√	
	28. Conformity with adaptive principles.	√	
	29. Conformity with the principle of user friendliness.	√	
	30. Conformity with the principle of consistency.	√	

Table 3 presents the media experts' assessment of various aspects of design and media presentation, including cover design, content design, material presentation, and language suitability for students' developmental levels. Each indicator is evaluated through assessment items that determine whether the design elements, language, and media principles meet the desired criteria. The evaluation covers aspects such as the alignment of layout elements on the media cover, the completeness and relevance of illustrations to the content, and the use of language that students easily understand and appropriate for their developmental stage. Additionally, the media is assessed based on instructional media principles, including self-sufficiency, integration, and ease of use. All these aspects received positive evaluations, indicating that the media meets the necessary quality standards for effective use in learning.

The focus of this study is to identify the need for teaching materials that support reading comprehension and critical thinking skills, particularly in the context of the storybook "Serangkat Pengaman." The objective is to determine the key elements necessary for developing effective instructional materials that can enhance students' reading skills when engaging with the text "Bubu

Perangkap Ikan." A needs analysis was conducted to thoroughly evaluate the demand for teaching materials by considering the complex interactions of various factors influencing students' reading comprehension. These factors include teacher guidance strategies, the learning environment, readers' backgrounds, individual differences among students, specific tasks, and the characteristics of the text itself.

Table 4. Results Of the Trial by Indonesian Language Experts

Criteria		obtain	Score	Core maximum S _u	Average score	Percentage per Criterion
Content Eligibility	1. Completeness of material in teaching materials	1	3	4	3.5	70%
		2	4	4		
		3	3	4		
		4	4	4		
	2. The depth of the material in teaching materials	1	4	4	3.25	85%
		2	3	4		
		3	3	4		
	3. Accuracy of material contained in teaching materials	1	4	4	4	100%
		2	4	4		
		3	4	4		
		4	4	4		
	4. Support Learning Materials in teaching materials	1	4	4	4	100%
2		4	4			
3		4	4			
Appropriateness Language	5. Compatibility with Developmental Level	1	4	4	3.6	91.6%

In the design phase, the development of instructional materials is centred on the understanding of reading as a process of analyzing, evaluating, and synthesizing information for decision-making. This study focuses on analyzing, evaluating, and summarizing research findings based on responses to research questions. The research instrument used is the System Thinking Inventory (STI), which consists of multiple-choice questions designed to measure students' learning achievements, specifically focusing on 15 system thinking indicators. To address these challenges, elementary school students analyze Indonesian language textbooks, particularly in information processing and evaluation activities. During the development phase, various activities were conducted, including the preparation of instructional materials aligned with the curriculum. Innovative teachers play a key role in designing a curriculum that fosters mutual respect between students and teachers, emphasizing a more student-centered approach in learning.

In the development phase, the 5E learning model was implemented, aligning with the constructivist approach and principles. This model consists of five stages: student engagement, concept exploration, concept explanation, elaboration of understanding, and learning assessment. Each step is designed to achieve different learning objectives from the students' perspective, emphasizing the importance of connecting past and present learning experiences. Additionally, the model supports an evaluation process that benefits both students and teachers by assessing learning outcomes and comprehension. The development of instructional materials was conducted to address the needs of both teachers and students, resulting in structured learning materials aligned with the expected competencies. Furthermore, a questionnaire was designed to assess validity and collect data from the research participants.

In the use of instructional materials, several key aspects must be considered, particularly the need for appropriate teaching resources. In this context, the teacher's role in developing instructional materials is crucial in determining the effectiveness of achieving learning objectives. Additionally, trial

implementation and evaluation play a significant role. Evaluation in this phase is not limited to the design, development, or product implementation stages but is conducted at every stage of the ADDIE model development process to ensure the quality and effectiveness of the instructional materials.

However, formative evaluation is also conducted at each stage to promptly identify areas that require improvement. The evaluation phase serves as the final step in the ADDIE model for developing instructional materials (Yu, Hsueh, Sun, & Liu, 2021). Its primary purpose is to assess the developed materials, ensure their effectiveness, and verify their alignment with the established learning objectives.

A comprehensive assessment by Indonesian language experts indicated that the teaching materials achieved 85% of the total maximum score of 100%, demonstrating their overall suitability for implementation. According to established guidelines, products scoring 75% or higher are considered appropriate for use in learning. Although none of the three criteria reached the maximum score of 100%, they were still deemed adequate: content mastery scored 75%, content depth scored 85%, and language appropriateness for students' developmental levels scored 85%, resulting in an overall score of 91.6%. For instance, in the content suitability component, the material completeness subcomponent received a score of 75%, meeting the minimum standard without requiring revision. Additionally, content depth scored 85%, indicating a high level of feasibility and applicability in the instructional materials.

The subcomponents of content accuracy and supporting learning materials both received a perfect score of 100%, indicating that they are fully suitable for implementation without revision. Regarding language appropriateness, the subcomponent evaluating language suitability for students' developmental levels scored 91.6%, earning the classification of "highly appropriate." Additionally, the subcomponents of communicative aspects, coherence, and idea unity each achieved a score of 100%, meeting the criteria for full applicability without the need for revision.

Table 5. Graphic Expert Test Results

Criteria		Obtain	Score	Core maximum S _c	Average score	Percentage per Criterion
Cover Image	1. Layout of teaching materials	1	4	4	3.5	87.5%
		2	3	4		
	2. Typography teaching materials	1	3	4	3	75%
		2	2	4		
		3	4	4		
	Content Graphics	1. Teaching materials	1	4	4	3
2			2	4		
2. Layout of teaching materials		1	4	4	4	100%
		2	4	4		
		3	4	4		
3. Typography teaching materials		1	4	4	3.6	91.6%
	2	3	4			
	3	4	4			
	4	4	4			
4. Illustration of teaching materials	1	4	4	4	100%	
	2	4	4			
	3	4	4			

Note: 0%-60% poor 65%-80% fair 85%-90% good 95%-100% excellent

The evaluation of all graphic aspects, including both the cover and content design, resulted in an overall score of 89%. For the cover design, the percentage scores for each subcomponent were as follows: 87.5% for layout, 75% for typography, and 75% for illustration. For the graphic content, the scores were 100% for layout, 91.6% for typography, and 100% for illustration, demonstrating a high level of visual quality and appropriateness.

Before hypothesis testing, prerequisite tests, including normality and homogeneity tests, were conducted to ensure that the data were normally distributed and homogeneous. If these assumptions

were met, parametric statistical tests could be applied; otherwise, nonparametric tests were used. The normality test was performed using the Kolmogorov-Smirnov test in SPSS 16.0 to determine the appropriate analytical method, ensuring that the research findings could be interpreted validly. The results of this test indicate whether reading skills and critical thinking data can be analyzed using parametric statistical methods.

Table 6. Tests of Normality

Class	Kolmogorov-Smirnov Statistic	df	Sig. (Kolmogorov-Smirnov)	Shapiro-Wilk Statistic	df (Shapiro-Wilk)	Sig. (Shapiro-Wilk)
Pretest BK Control	0.177	20	0.1	0.956	20	0.462
Posttest BK Control	0.161	20	0.186	0.943	20	0.268
Pretest PM Control	0.191	20	0.053	0.95	20	0.36
Posttest PM Control	0.158	20	0.2	0.943	20	0.273
Pretest BK Eks	0.133	20	0.108	0.958	20	0.19
Posttest BK Eks	0.14	36	0.07	0.943	36	0.062
Pretest PM Eks	0.145	36	0.055	0.938	36	0.044
Posttest PM Eks	0.128	36	0.145	0.954	36	0.139

The Kolmogorov-Smirnov test results indicated that the significance value for reading skills data was greater than 0.05, suggesting that the data were normally distributed. Consequently, the data from both the control and experimental classes in the pretest and posttest met the normal distribution assumption. Once normality was confirmed, the next step was conducting a homogeneity test using Levene's test to ensure that variance across groups was homogeneous. This step was essential to validate the accuracy of parametric statistical analysis in evaluating the study's results.

Table 7. Test of Homogeneity of Variance

Value	Levene Statistic	df1	df2	Sig.
Based on Mean	1.519	7	216	0.162
Based on Median	1.146	7	216	0.335
Based on Median and with adjusted df	1.146	7	190.374	0.336
Based on trimmed mean	1.446	7	216	0.188

Based on the Test of Homogeneity of Variances table, the significance value of 0.162 was greater than 0.05, indicating that the data were homogeneous. Thus, the data met both normality and homogeneity assumptions, allowing the analysis to proceed using the Paired Sample T-test and Independent Sample T-test to measure significant differences between the control and experimental groups.

Next, the Paired Sample T-test was conducted to determine the difference in mean scores between the pre-test and post-test, while the Independent Sample T-test was used to compare students' learning outcomes before and after using the "Serangkat Pengaman" instructional materials. Both tests aimed to evaluate the effectiveness of the teaching materials in enhancing students' reading skills. The hypothesis testing was based on the significance value (Sig), where H_0 is accepted if $\text{Sig} > 0.05$ and H_a is accepted if $\text{Sig} < 0.05$. The tests were performed using SPSS 16.0 to analyze the students' reading skills data.

Table 8. Paired Samples Test

Paired Differences	Mean	Std. Deviation	Std. Error Mean	95%	95%	t	df	Sig. (2-tailed)
				Confidence Interval of the Difference - Lower	Confidence Interval of the Difference - Upper			
PretestcontrolBK - PosttestControlBK	-9.5	6.428	1.437	-12.508	-6.492	-6.61	19	<0.001

Based on the Paired Sample T-test output, the Sig (2-tailed) value for the overall data was 0.001 < 0.05. This result indicates that H_0 is rejected and H_a is accepted. Therefore, it can be concluded that there is a significant difference in the mean reading skills test scores before and after using the "Serangkat Pengaman" instructional materials in learning.

3.2 Discussion

Analysis

In the 21st century, advancements in modern technology, such as podcasting and blogging, have transformed teaching and learning methods, as highlighted by (Sinha, 2022; Vistari, 2023). Education is no longer limited to traditional concrete media, and learning experiences can be further enhanced through educational video games, an area that has been extensively explored to examine their latest impact (Tüzün et al., 2009; Kurilovas & Kubilinskiene, 2020). Peer collaboration can be challenging for students, particularly for those with low social motivation or reading difficulties, and the emotional aspects of collaboration remain not fully understood. In learning environments, teachers and peers interact and influence one another within a dynamic system, as discussed in studies by (Dong et al., 2024; Gorham et al., 2024). Reading comprehension plays a crucial role in young learners' ability to acquire knowledge and apply it effectively in their studies and future careers, emphasizing its significance, as noted by (Zhong et al., 2022; Akyeampong et al., 2013).

In the analysis phase, an assessment of instructional material needs was conducted to ensure its alignment with the target learners' requirements. This analysis was carried out in fifth-grade classrooms at SD Negeri 15 Melayang through several steps, including identifying learning gaps, determining instructional objectives, and analyzing student characteristics. Interviews with teachers revealed several key findings, such as the recent implementation of the Kurikulum Merdeka, the use of instructional materials that do not align well with students' characteristics, limited learning media, and students' difficulties in understanding local wisdom-based content, such as Serangkat Pengaman. The lack of diverse instructional materials was identified as a major factor contributing to students' weak reading comprehension skills.

A needs analysis was conducted to evaluate the overall necessity of instructional materials, considering the complex interactions of various factors that contribute to enhancing students' reading comprehension. These factors include teacher guidance strategies, learning environment, readers' backgrounds, individual differences among readers, specific tasks, and the nature of the text itself. In the context of teaching reading comprehension in narrative texts, various learning models were considered, as highlighted in research by (Wu et al., 2023; Mendizábal et al., 2023). Additionally, the emergence of digital texts has created new opportunities for improving children's reading comprehension. Individual student characteristics may influence the relationship between word framework usage and text comprehension, as noted by (Hagan & Barron, 2019). Reading is a fundamental skill, and the key to developing reading comprehension lies in understanding itself (Habók et al., 2024; Cervetti & Pearson, 2023).

Additionally, curriculum analysis revealed that students struggled to comprehend local wisdom-based content, particularly Serangkat Pengaman, as outlined in the Learning Outcomes Phase

B. This material, which primarily focuses on lower-level reading comprehension, requires further development to ensure its practical application in daily life. The instructional media used by teachers has also not been fully optimized to enhance the material, resulting in lessons that are more theory-focused and less engaging for students. While some teachers have attempted to incorporate educational videos, the variety of technology-based teaching media remains limited.

Table 9. Student Needs Questionnaire Results

Indicator	Question Number	Total score of "Yes" answers	Percentage %	Category
Students' perceptions of Indonesian language subjects	1,2,3,4,5	400	86.95	Most need it
Material Reading comprehension and critical thinking	6,7,8	220	86.95	Most need it
Characteristics student	9,10,11	215	86.95	Most of the need
Current condition of students learning	12,13,14	258	93.47	More than half need
Student character when reading	15,16	160	86.95	More than half need
Concept understanding Indonesian students	17,18	120	65.21	Most need it

The evaluation results of six student perception indicators regarding the Indonesian language subject revealed that most indicators fell under the category of "Mostly Needed." The student perception indicator, reading comprehension material, and student characteristics received a score of approximately 86.95%, while the student learning condition indicator recorded the highest score of 93.47%, indicating that more than half of the students require improvements. Additionally, the student character during reading and Indonesian language concept comprehension indicators also highlighted areas needing greater attention, with scores of 160 (86.95%) and 120 (65.21%), respectively. Overall, these findings underscore the need to enhance Indonesian language learning, particularly in terms of learning conditions, instructional materials, and student characteristics.

Design

The activities in this phase include the design of instructional materials, where reading is understood as a process of analyzing, evaluating, and synthesizing information for decision-making, as described by (Gomez, 2024; Zhu et al., 2023). Conventional strategies generally focus on enhancing students' knowledge through the use of advanced technology to accelerate reading speed, as observed in studies by (Chen et al., 2024; Mallik, 2023). This research serves as a breakthrough in the development of technology-based reading comprehension, advancing education, as highlighted by (Ali et al., 2024; Lin, 2023). Reading skills require a flexible mindset, curiosity, a willingness to investigate phenomena, a desire to deepen knowledge, and openness to analyzing diverse perspectives. Additionally, creative reading habits are essential, as they foster idea generation and preparedness for learning new concepts, as emphasized by (Kuhn, 2024; Malik et al., 2023).

In the design phase, the primary goal was to develop instructional media in the form of a printed book in PDF format. The activities carried out included designing instruments, media, learning objectives, instructional tools, and evaluation at the design stage. The developed instruments included

interview sheets for teachers, questionnaires to identify student needs, media validation questionnaires, response questionnaires to assess media practicality, and test questions to measure students' comprehension. After revisions were made based on validator feedback, these instruments were deemed valid and ready for use.

The design of instructional media began with aligning the learning materials with the Learning Outcomes, aiming to enhance students' reading skills through the local story "Serangkat Pengaman". The media design included introductory, main, and closing sections, along with comprehension questions to assess students' understanding after reading the story. This instructional media was developed in both digital and print formats, featuring an engaging and easily understandable design for students. After small-scale and large-scale trials, the media was rated as highly practical, with a practicality percentage of 85.74% in small-scale trials and 87.55% in large-scale trials.

This review focuses on analyzing, evaluating, and summarizing research findings based on responses to the review questions, as conducted by (Gaertner et al., 2023; Gao et al., 2024). Reading is recognized as a critical skill that must be enhanced in 21st-century learning. The cognitive approach integrates various theories, including constructivist learning theory, cognitive development theory, socio-cognitive theory, cognitive information processing theory, and adult education theory. These foundational principles encourage students to use reading media effectively in constructing new knowledge, as explained by (Erawanto & Santoso, 2016; Vong & Kaewurai, 2017). Pre-test and post-test data were collected using test techniques, with the pre-test conducted before the learning process and the post-test administered after implementing the instructional materials. The learning objectives were formulated to develop materials that incorporate local stories to enhance reading skills for fifth-grade elementary school students. This teaching media is expected to improve students' conceptual understanding and critical thinking skills. The design evaluation phase confirmed that the design process was successfully executed, and the instructional materials were validated and ready for use in Indonesian language learning for fifth-grade students. Based on trial implementations, the media demonstrated high practicality and effectively enhanced students' learning motivation.

The research instrument used in this study was the System Thinking Inventory (STI), which consists of multiple-choice questions designed to measure students' academic performance, focusing on 15 system thinking indicators, as developed by (Zhang et al., 1989). Building reading skills is crucial in preparing high-quality students. By incorporating reading instruction, students are given the opportunity to process information, evaluate sources, and refrain from immediately selecting answers that appear to be the only "correct" choice, as discussed by (Sturm et al., 2021).

To address these challenges, elementary school students analyzed Indonesian language textbooks, focusing on information processing and evaluative activities, as described by (Fernandes et al., 2024; Crosthwaite et al., 2021). Before and after learning sessions, each student completed a self-assessment to evaluate their overall comprehension of the lesson, as well as their cross-cultural knowledge and skills. While the importance of reading comprehension in group discussions may appear as a conceptual unity in the literature, the field of psychology has yet to fully understand speed reading among students, as emphasized by (Roberts & Stankov, 1999).

Development

In this development phase, several activities were carried out, including preparing instructional materials aligned with the syllabus. Innovative educators designed curricula to foster mutual respect between students and teachers, prioritizing a student-centered approach (Jones, 2022; Patterson et al., 2022). Previous research has demonstrated the effectiveness of curriculum studies in understanding educational institution curricula and identifying opportunities to improve teaching methods. Various strategies have been implemented to deliver curricula and integrate them into the educational framework (Keating et al., 2022; Tegzes et al., 2023). Before the COVID-19 pandemic, traditional classrooms relied heavily on lecture-based teaching methods, which were less inclusive and did not effectively encourage active participation, negotiation, or reading comprehension. Students typically

remained passive listeners, with note-taking serving as the primary learning tool (Tong dkk., 2021; Heo, 2022). However, the "new normal" era prompted by the pandemic has led to a shift toward more descriptive teaching methods, emphasizing student development through active participation (J. Lin & Wang, 2024). At this stage, developing lesson plans, designing materials aligned with the syllabus, and conducting evaluations became key aspects of the process. Reading comprehension has remained a primary focus of research and education across disciplines such as philosophy, psychology, and education for over a century.

The development phase is a critical stage in research, aiming to produce valid and testable results. The primary objective of this phase is to assess the feasibility of instructional media before conducting trials and distribution. During this phase, validation processes for instruments, content, language, and media were carried out to ensure that all elements met the desired standards. The development of reading skills is an important aspect to consider, as balanced reading skills combined with critical thinking abilities contribute to fostering a lifelong reading habit, anytime and anywhere (Bui et al., 2023; D. Wang et al., 2024). The instrument validation process involved several tools, including interviews, needs analysis questionnaires, product validation questionnaires, and concept comprehension tests. All these instruments were validated by experts to ensure quality and reliability. Revisions were made based on validator feedback, including wording adjustments and the addition of points related to the Profil Pelajar Pancasila framework.

In addition to instrument validation, content and language validation were also conducted to ensure that the materials aligned with learning objectives and were appropriate for students' developmental levels. The content validation results, assessed by an expert, indicated that the instructional materials achieved an average score of 80.31%, classifying them as "Feasible" for implementation. Several key aspects, including content alignment with learning objectives, material relevance, and adherence to curriculum principles, received high scores, confirming that the instructional materials were ready for classroom use. Similarly, language validation results showed that the materials were well-comprehended by students and aligned with their cognitive development. The outcome of this phase was a well-structured instructional material product that met the required competencies. Additionally, a questionnaire was developed to measure validity and collect research data from study participants (YJ Wu & Chen, 2021).

Media expert validation was also a crucial step in the development phase. The validated media design demonstrated positive results, achieving an average score of 80.31%, which falls under the "Feasible" category. Key design aspects, such as media cover, content, presentation, and language suitability for students' development, received high scores, indicating that the media is effective and appropriate for use in learning. Additionally, teacher responses to the instructional media were highly positive, with an average score of 90.97%, classifying it as "Highly Feasible". Teachers provided constructive feedback, including suggestions to incorporate more original and proportionate images. Overall, the media was evaluated as effective, engaging, and ready for use without revisions, significantly enhancing students' learning experience.

Implementation

After the Serangkat Pengaman instructional materials were revised by experts, the next step was effectiveness testing to evaluate the impact of using these materials on students' reading skills. This study involved two groups: an experimental group, which used the Serangkat Pengaman materials, and a control group, which followed conventional teaching methods. The research instruments included concept comprehension tests and questionnaires to measure students' interest and motivation. The test results were analyzed using inferential statistical tests, such as the t-test or ANOVA, to compare the learning outcomes of both groups. It is expected that the use of these instructional materials will enhance students' conceptual understanding and reading skills. The implementation of the 5E learning model connects past and new learning experiences through five stages (Engage, Explore,

Explain, Elaborate, Evaluate). This approach helps assess both student and teacher comprehension, with instructional materials tailored to support learning objectives (Kong & Wang, 2024).

The effectiveness test was conducted in two classes at SD Negeri 15 Melayang, with one serving as the control group and the other as the experimental group. A reading skills questionnaire was completed by students before and after using the "Serangkat Pengaman" instructional materials. The collected data were then converted into percentages to measure reading proficiency levels. This study assessed students' ability to analyze information, comprehend reading materials, and provide evaluations or responses to the content before and after using the instructional materials. The results were then analyzed to determine whether there was a significant difference between the two groups.

The research findings indicate that the use of the "Serangkat Pengaman" instructional materials had a positive impact on the experimental class, showing a more significant improvement in reading skills and comprehension compared to the control class. The implementation of innovative and interactive teaching materials effectively engaged students in the learning process. To ensure the statistical validity of these results, further analysis using SPSS 16.0 is required. This statistical test will evaluate the effectiveness of Indonesian language instructional materials integrated with local wisdom stories in strengthening students' independent character and reading skills.

Evaluation

Evaluation in the development of instructional materials is essential to ensure that the materials meet the established objectives and criteria, as well as to assess their feasibility before progressing to the next phase. The evaluation phase serves as the final step in the development of instructional materials using the ADDIE model (Yu et al., 2021). The primary purpose of this phase is to assess the developed instructional materials, ensuring their effectiveness and verifying their alignment with predetermined learning objectives (Conrad et al., 2024). In the development of Indonesian language instructional materials integrated with local wisdom stories to enhance reading skills among fifth-grade students at SD Negeri 15 Melayang, evaluation ensures that the materials are not only curriculum-aligned but also effective in improving students' literacy skills. The local wisdom-based storytelling media, Serangkat Pengaman, is expected to capture students' interest, introduce local cultural values, and remain relevant to students' cultural contexts. By doing so, it aims to enhance text comprehension and effectively improve students' reading skills.

Indonesian Studies Expert

The overall evaluation by Indonesian language experts indicated that the instructional materials achieved 85% of the total maximum score of 100%, demonstrating their general suitability for implementation. According to the guidelines, instructional materials with a score of 75% or higher are considered feasible for use in learning. Additionally, each criterion met or exceeded the 75% threshold, confirming the materials' effectiveness and appropriateness for classroom application.

Although the three evaluation criteria did not reach the maximum score of 100%, they were still considered sufficient. The content mastery component achieved 75%, the depth of content received 85%, and the language appropriateness for students' developmental level also scored 85%. As a result, the overall score reached 91.6%. However, improvements should not be solely based on percentage scores; expert feedback and suggestions were also taken into consideration. The feasibility evaluation of the instructional materials assessed each component and subcomponent in detail. For example, within the content suitability component, the completeness of materials subcomponent received 75%, meeting the minimum standard without requiring revision. Additionally, the depth of content scored 85%, indicating a high level of feasibility and applicability in instructional use.

The subcomponents of content accuracy and supporting learning materials both received a perfect score of 100%, indicating that they are fully suitable for implementation without revision. Regarding language appropriateness, the language suitability assessment subcomponent for students' developmental level scored 91.6%, earning the classification of "highly appropriate." Additionally, the

communicative aspect subcomponent and the coherence and unity of ideas subcomponent each achieved a score of 100%, meeting the criteria for full applicability without the need for revision. However, it is important to note that percentage scores alone do not solely determine the appropriateness of the instructional materials. Further actions and improvements can still be considered based on expert feedback and additional evaluation.

Analysis of Validation Results from Graphic Expert Data

The evaluation of all graphic aspects, including both cover and content design, resulted in an overall score of 89%. According to the product suitability guidelines, this score indicates that the instructional materials are feasible and ready for use. However, this score alone is not the sole consideration for refining a product. The assessment of each subcomponent and expert feedback also plays a crucial role in further improving the instructional materials.

For the cover design, the percentage scores for each subcomponent were as follows; 87.5% for layout, 75% for typography, and 75% for illustration. These scores indicate that all three subcomponents meet the standards and are suitable for use. Similarly, for graphic content, the scores were 100% for layout, 91.6% for typography, and 100% for illustration. With all scores above 75%, every subcomponent within the graphic content category was deemed feasible and ready for implementation.

4. CONCLUSION

The study concluded that the Indonesian language instructional materials integrated with local wisdom stories were effective in enhancing the reading skills of fifth-grade students at SD Negeri 15 Melayang. Evaluations from subject matter and design experts rated the materials as feasible, although some revisions were recommended. Teachers, however, assessed the materials as highly feasible without suggesting any modifications. The practicality assessment yielded a score of 83.55%, indicating that the materials were highly practical for classroom use. Furthermore, the N-gain and Paired Sample T-tests revealed a statistically significant improvement in students' reading proficiency ($p < 0.05$), affirming the instructional materials' effectiveness. These findings highlight the materials' potential to promote interactive and well-structured learning experiences. Despite these positive outcomes, the study was limited by its small sample size and focus on a single school, which may affect the generalizability of the results. Future research is encouraged to replicate this study across diverse educational contexts and larger populations to further validate the materials' effectiveness and explore their adaptability to other grade levels and subject areas.

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