

The Effects of Comprehensive Reading Strategy Instruction on Elementary Students' Reading Comprehension: A Quasi-Experimental Study

Surismiati¹, Gunawan², Ayu Wulandari³, Mustofa⁴, Danto⁵, Kurnia Saputri⁶, Jeni Amiriski⁷

¹Universitas Muhammadiyah Palembang, Palembang, Indonesia; surismiati@um-palembang.ac.id

²Universitas Muhammadiyah Palembang; Palembang, Indonesia; gunawan@gmail.com

³Universitas Muhammadiyah Palembang; Palembang, Indonesia; ayuwulandari@gmail.com

⁴Universitas Muhammadiyah Palembang; Palembang, Indonesia; mustofa@gmail.com

⁵Universitas Muhammadiyah Palembang; Palembang, Indonesia; danto@gmail.com

⁶Universitas Muhammadiyah Palembang; Palembang, Indonesia; kurniasaputri93@gmail.com

⁷Universitas Muhammadiyah Palembang; Palembang, Indonesia; jeniamiriski@gmail.com

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ABSTRACT

Reading comprehension is a fundamental literacy skill that significantly influences the academic achievement of elementary school students. Despite its importance, classroom reading instruction frequently emphasizes surface-level activities and lacks explicit, integrated teaching of reading strategies. The present study investigates the impact of comprehensive reading strategies on the reading comprehension ability of elementary school students. A quasi-experimental design was employed, utilizing a pretest-posttest control group model. Data analysis was conducted using an independent t-test on posttest scores. The sample comprised 60 grade V students from SD Muhammadiyah 16 Palembang, divided equally into experimental (n = 30) and control groups (n = 30). The experimental group received integrated, strategy-based reading instruction encompassing pre-reading, while-reading, and post-reading stages, whereas the control group received conventional reading instruction. Reading comprehension was assessed using a test measuring four aspects: literal, inferential, critical, and creative comprehension. Data were analyzed with an independent sample t-test after confirming normality and homogeneity of variance. Results indicated that the experimental group achieved a higher posttest mean score (M = 82.30) compared to the control group (M = 71.25). This difference was statistically significant, $t(58) = 4.87, p < .001$, with a large effect size (Cohen's $d \approx 1.26$). These findings indicate that comprehensive reading strategies are effective in enhancing elementary students' reading comprehension. Successful implementation of these strategies requires teacher training and systematic integration into the elementary reading curriculum. Limitations of the study include non-randomized group assignments, restriction to a single school, and a relatively short intervention period.

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Corresponding Author:

Surismiati

Universitas Muhammadiyah Palembang, Palembang, Indonesia; surismiati@um-palembang.ac.id

1. INTRODUCTION

Reading comprehension constitutes a fundamental academic skill for elementary school students, supporting learning across all subject areas. Reading encompasses not only the decoding of written symbols but also complex cognitive processes through which learners actively construct meaning by integrating textual information with prior knowledge and contextual understanding (Kintsch, 1998; Snow, 2002). Robust reading comprehension skills are consistently associated with overall academic achievement and long-term educational success, whereas weak comprehension impedes students' literacy development and performance across disciplines (Cain & Oakhill, 2014; Duke & Cartwright, 2021; OECD, 2019). In this study, comprehensive reading strategies are defined as a set of cognitive and metacognitive strategies systematically applied and integrated into the three main phases of reading: pre-reading, while reading, and post-reading. This approach draws on the theory of metacognition and self-regulated reading, which emphasizes the conscious planning, monitoring, and evaluation of understanding by the reader (Pressley & Afflerbach, 1995; Zimmerman, 2002; Afflerbach et al., 2017).

During the pre-reading phase, strategies such as activating prior knowledge, establishing reading objectives, predicting text content, and introducing text structure are employed. These approaches function as a planning process, enabling students to construct an initial framework for understanding and to prepare cognitively for reading. In the reading phase, strategies emphasize monitoring comprehension by posing questions, clarifying information, making inferences, identifying main ideas, and assessing the alignment of comprehension with reading objectives. This phase exemplifies self-regulation, allowing students to adapt their strategies when encountering comprehension challenges. In the post-reading phase, strategies include summarizing, reflecting on the text, evaluating information, and connecting the reading to other experiences or knowledge (Oo & Habok, 2020). These activities serve as an evaluative process that consolidates understanding and promotes deeper learning.

In addition to academic achievement, reading comprehension is integral to the development of higher-order cognitive and metacognitive skills, such as inference-making, comprehension monitoring, and information synthesis (Perfetti & Stafura, 2014). These abilities are strongly linked to students' reading motivation and engagement, both of which are critical for sustained literacy development (Guthrie & Wigfield, 2017). Nevertheless, empirical studies demonstrate that many elementary students, although proficient in decoding, continue to struggle with deep comprehension, particularly in identifying main ideas, making inferences, and integrating information across multiple texts (OECD, 2019).

The issue of reading comprehension is evident within the broader context of literacy in Indonesia. Data from the Program for International Student Assessment (PISA) indicate that Indonesian students' reading literacy remains below the OECD average, with the majority at a basic comprehension level and struggling to interpret and critically evaluate written information (OECD, 2019). These results suggest that literacy challenges are both individual and systemic, extending to the basic education stage, which serves as the primary foundation for literacy development.

At the school level, challenges are observed in reading instruction at SD Muhammadiyah 16 Palembang. Initial observations and analysis of students' reading comprehension scores reveal that most students continue to demonstrate limited ability to understand reading material in depth. Instruction typically emphasizes reading texts and answering questions directly, with little focus on explicitly teaching reading strategies. Consequently, students often participate passively in the reading process and lack experience in applying cognitive and metacognitive strategies to develop independent comprehension of the texts.

These challenges are frequently associated with instructional practices that prioritize surface-level reading activities and offer minimal explicit instruction in comprehension strategies (Duke et al., 2011; McKeown et al., 2016). Consequently, students often interact passively with texts and lack sufficient opportunities to independently apply cognitive and metacognitive strategies. Furthermore, practical constraints commonly restrict teachers' capacity to deliver comprehensive strategy instruction consistently in classroom environments (Vaughn et al., 2021).

Recent literacy research indicates that reading comprehension develops most effectively through explicit, systematic, and sustained instruction that incorporates pre-reading, during-reading, and post-reading strategies (Pressley & Afflerbach, 1995; Duke et al., 2011). Strategy-based instruction facilitates students' regulation of meaning-making processes and is particularly advantageous in elementary classrooms where metacognitive skills are still emerging (Afflerbach et al., 2017; Graesser, 2015). Empirical and meta-analytic evidence demonstrates that structured reading strategy instruction produces greater and more consistent improvements in comprehension than traditional methods, particularly when accompanied by high-quality instruction and active student engagement (Elleman & Oslund, 2019; Guthrie & Wigfield, 2017).

At the policy level, international literacy frameworks emphasize comprehension-oriented instruction as a foundation for twenty-first-century literacy, including critical thinking, information evaluation, and reflective learning (OECD, 2019; UNESCO, 2017). Although various studies have discussed the effectiveness of reading strategies in improving student comprehension, most of these studies tend to examine strategies separately or focus on specific techniques without testing their application as a single integrated learning suite. In addition, much of the research was conducted in the context of limited experimentation or controlled learning environments, so it did not fully represent the practice of reading learning in an authentic elementary school classroom. Empirical evidence that specifically tests the effectiveness of applying comprehensive reading strategies as an integrated sequence that includes pre-reading, reading, and post-reading stages, as well as comparing them to conventional reading learning through a control group design, is still relatively limited. Therefore, a study examining the implementation of comprehensive reading strategies in a real-world classroom context with a comparison of control groups is needed to provide stronger empirical evidence regarding the effectiveness of this approach in improving reading comprehension of primary school students.

To address this gap, the present study investigates the systematic implementation of comprehensive reading strategy activities as an integrated instructional approach, rather than as isolated techniques. By examining the combined effects of pre-reading, during-reading, and post-reading activities, the study provides empirical evidence supporting process-oriented reading instruction. The objective is to demonstrate the effectiveness of this approach in enhancing elementary students' reading comprehension in a meaningful and sustainable way. Consistent with the research question, the following research hypothesis is proposed:

H₁: Students who participate in reading instruction based on comprehensive reading strategies will demonstrate significantly higher post-reading comprehension scores or greater gains than those who receive conventional reading learning instruction.

H₀: There is no significant difference in post-reading comprehension scores or gain scores between students who participate in comprehensive reading strategy-based instruction and those who receive conventional reading instruction.

This research makes a theoretical contribution by reinforcing the framework of process-based reading instruction and self-regulation through the evaluation of comprehensive reading strategies as an integrated sequence encompassing pre-reading, during-reading, and post-reading stages. The study's findings extend empirical evidence regarding the effectiveness of integrated approaches for improving elementary students' reading comprehension in authentic classroom settings. In practical terms, the study offers direct implications for teachers and elementary schools by presenting a reading instruction model that is both applicable and straightforward to implement in daily practice. The comprehensive reading strategies evaluated may serve as a reference for developing reading instruction, teacher training, and integrating reading comprehension strategies into the elementary school literacy curriculum.

2. METHODS

A quantitative research methodology was employed using a quasi-experimental framework, with a pre-test post-test control group design. This method was selected to examine the effects of comprehensive

reading strategy activities on students' reading comprehension by comparing outcomes between an experimental group and a control group. Given the authentic classroom context and the impracticability of random assignment at the individual student level, the quasi-experimental design was deemed most appropriate for preserving ecological validity and facilitating meaningful group comparisons.

The study sample comprised grade V students of SD Muhammadiyah 16 Palembang in the school year. Sixty students, age 10 to 11 years, participated in the research. English and Indonesian were used as the language of instruction for all educational research activities. Students were divided into two groups: an experimental group ($n = 30$) and a control group ($n = 30$). Group assignment was determined by existing intact classes, which did not allow for individual-level randomization. The experimental group received instruction through comprehensive reading strategies, while the control group received conventional reading instruction aligned with standard school practices.

The inclusion criteria for this study were as follows: (1) students were registered as active in grade V at SD Muhammadiyah 16 Palembang, (2) students participated in all learning sessions as well as pretest and posttest assessments, and (3) students possessed basic reading skills appropriate to their grade level. The exclusion criteria comprised students with special needs requiring individualized learning services and those who did not participate in any stages of data collection. To establish initial equivalence between the experimental and control groups completed reading comprehension pretest was completed before the intervention. The pretest results indicated no significant difference in initial reading comprehension ability between the groups, supporting their comparability for posttest analysis.

The experimental group received learning interventions through a structured and sequential comprehensive reading strategy, encompassing pre-reading, during reading, and post-reading stages. The intervention spanned six weeks and consisted of twelve learning sessions, each approximately seventy minutes in duration, in alignment with the standard allocation of Indonesian language time in schools. The same classroom teacher instructed both the experimental and control groups to minimize potential teacher-effect bias. Before the intervention, participating teachers received detailed explanations and written guidance outlining the steps for implementing comprehensive reading strategies. The instructional materials comprised a reading text appropriate for grade V students' developmental levels, including narrative, descriptive, and informative texts commonly featured in the elementary school curriculum. All texts were selected from textbooks and reading resources regularly utilized in schools to ensure the learning context remained authentic and relevant to daily classroom practice.

During the pre-reading stage, students were instructed to activate prior knowledge, predict the content of the text, and establish reading objectives. In the reading stage, students practiced comprehension monitoring strategies, including questioning, clarifying information, identifying key ideas, and making inferences. In the post-reading stage, students engaged in activities to summarize, reflect on the reading content of the reading, and evaluate information to enhance their understanding of the text. To ensure consistency and fidelity in the intervention's implementation, the researcher employed observation sheets and lesson logs completed during each session. These instruments monitored the execution of each reading strategy stage, adherence to the lesson plan, and student engagement throughout the learning process. Monitoring results indicated all sessions in the experimental group were conducted according to the established intervention design. The control group received conventional reading instruction of equivalent duration and material, yet without explicit and structured teaching of reading strategies. This arrangement was intended to ensure that differences in learning outcomes could be attributed to the implementation of comprehensive reading strategies.

The primary instrument in this study is a reading comprehension test developed to assess students' comprehension abilities. The test is structured according to a reading comprehension framework encompassing four dimensions: literal, inferential, critical, and creative comprehension. These dimensions aligned with the cognitive processes outlined in the revised Bloom taxonomy. The test comprises 30 questions, proportionally distributed across the four dimensions. Literal comprehension is evaluated through 8 questions that measure the ability to identify explicit information in the text. Inferential comprehension is assessed with 8 items that examine the capacity to draw conclusions and

interpret implicit information. Critical comprehension is measured by 7 questions that assess the ability to judge the content and determine the accuracy or relevance of information. Creative comprehension includes 7 questions that assess the ability to connect the reading material to prior experiences, integrate other knowledge, or generate novel responses based on the text. Scores range from 0 to 100, with each correct answer receiving 1 point and each incorrect answer receiving 0 points. The total score is then converted to a standardized scale, reflecting the student's overall reading comprehension level.

The validity of the content of the instrument is determined through an expert judgment procedure, involving language education lecturers and elementary school teachers who are experienced in learning to read. The experts assessed the suitability of the question items with the indicators of reading comprehension, the level of difficulty of the questions, language clarity, and the suitability of the context with the characteristics of elementary school students. In addition, the instrument was tested on a limited basis (pilot testing) on students with characteristics comparable to those of the study participants to ensure readability and clarity of instructions. The reliability of the instrument was analyzed using an internal reliability coefficient (Cronbach's alpha/KR-20), and the results of the analysis showed that the instrument had reliability in the good category, making it feasible to measure students' reading comprehension ability consistently.

Reading comprehension tests were administered to both the experimental group and the control group before and after the implementation of learning interventions. The pretest was used to assess students' reading comprehension levels before the intervention, while the posttest measured changes and improvements following the completion of all interventions. In quasi-experimental research, data analysis typically employs analysis of covariance (ANCOVA), using posttest scores as dependent variables and pretest scores as covariates to control for initial group differences. In the present study, however, a gain score approach and an independent samples t-test were utilized. This methodological choice was justified by the demonstrated equivalence of initial abilities between groups, as indicated by pretest results. Therefore, comparing gain scores was deemed sufficient and appropriate for assessing the impact of the learning interventions.

Before hypothesis testing, the data were examined to ensure compliance with statistical assumptions. The Kolmogorov-Smirnov test was used to assess normality, indicating that reading comprehension scores in both groups followed a normal distribution ($p > 0.05$). Additionally, the Levene test was employed to evaluate variance homogeneity, revealing that the score variances between the experimental and control groups were homogeneous ($p > 0.05$). Given that both assumptions were satisfied, parametric analyses were deemed appropriate. Hypothesis testing was performed using an independent samples t-test to compare posttest scores and gains in reading comprehension between the experimental and control groups at a significance level of 0.05. Beyond statistical significance, effect size was calculated using Cohen's *d* to quantify the magnitude of the intervention's impact. A 95% confidence interval was also reported to provide a precise estimate of the observed effect size.

This analytical approach enables a more comprehensive interpretation of research findings by considering both statistical significance and the practical impact of comprehensive reading strategies on students' reading comprehension. The pretest and posttest data were subjected to inferential statistical analysis to assess the impact of the comprehensive reading strategy intervention on students' reading comprehension. Comparisons were performed to identify differences in comprehension gains between the experimental and control groups. The level of statistical significance was evaluated using a predetermined alpha threshold.

3. FINDINGS AND DISCUSSION

3.1 Findings

3.1.1 Descriptive Results

The descriptive findings indicate that students in the experimental group experienced greater improvements in reading comprehension than those in the control group. As shown in the results table,

learners exposed to comprehensive reading strategy instruction exhibited larger gains between the pretest and posttest than their peers who received conventional reading instruction. This trend provides evidence of the positive influence of comprehensive reading strategies on the development of students' reading comprehension. The higher increase in mean scores observed in the experimental group suggests that structured involvement in pre-reading and post-reading activities supported more meaningful improvements in students' text comprehension abilities.

Table 1. Mean Scores of Students' Reading Comprehension

Groups	Pretest	Posttest	Gain Score
Experiment	63.45	82.30	18.85
Control	64.10	71.25	7.15

3.1.2 Assumption Testing and Hypothesis Testing

Before conducting hypothesis testing, the dataset was subjected to preliminary assumption checks, including assessments of normality and variance homogeneity. The normality analysis demonstrated that the data followed a normal distribution, as indicated by significance values above the 0.05 criterion. Furthermore, the homogeneity of variance test confirmed that the score variances between the experimental and control groups were equivalent, with significance levels exceeding 0.05.

After confirming that these statistical assumptions were met, hypothesis testing was carried out using an independent samples t-test applied to the posttest scores. This procedure aimed to evaluate whether a statistically significant difference in reading comprehension outcomes existed between students exposed to comprehensive reading strategy instruction and those who received conventional reading instruction.

As summarized in Table 2, the results of the independent samples t-test revealed a significant difference in posttest reading comprehension scores between the two groups ($p < 0.05$). Students in the experimental group outperformed those in the control group, providing empirical support for the effectiveness of comprehensive reading strategy instruction in enhancing elementary students' reading comprehension.

Table 2. Independent Samples t-Test Results for Posttest Scores

Variable	t-score	t-table	Sig. (p-value)	Status
Reading Comprehension	4.87	2.00	0.000	Significant

The statistical analysis indicated that the obtained significance value ($p < .001$) was below the established alpha threshold of 0.05. Consequently, the null hypothesis was rejected in favor of the alternative hypothesis, confirming that the application of comprehensive reading strategies produced a statistically significant improvement in the reading comprehension abilities of students at SD Muhammadiyah 16 Palembang.

In addition, a visual examination of students' achievement data revealed a more pronounced increase in reading comprehension scores for the experimental group than for the control group. This trend suggests that instruction incorporating comprehensive reading strategies was more effective than conventional teaching approaches in fostering deeper and more meaningful text comprehension.

3.2 Discussion

The observed improvement in reading comprehension skills among students in the experimental group can be attributed to the learning mechanisms embedded within the integrated application of comprehensive reading strategies. Pre-reading, reading, and post-reading strategies function as a sequence of cognitive and metacognitive processes that collectively facilitate text comprehension. During the pre-reading stage, activating prior knowledge and establishing reading objectives serve as

planning mechanisms that enable students to construct an initial conceptual framework. This approach allows students to connect new information to existing schema, thereby enhancing the processing of meaning during reading (Pressley & Afflerbach, 1995; Zimmerman, 2002).

During the reading stage, strategies such as questioning, predicting content, identifying key ideas, and drawing inferences serve as mechanisms for monitoring comprehension. These strategies enable students to assess the consistency of their understanding and make necessary adjustments when difficulties arise. This monitoring process fosters sustained cognitive engagement and prevents mechanical reading. In the post-reading stage, activities such as summarizing, reflecting, and evaluating the reading content function as evaluation mechanisms that enhance information integration, deepen comprehension, and promote higher-order thinking skills (Oo & Habok, 2020). Therefore, the observed improvement in reading comprehension within the experimental group can be attributed to students' active engagement throughout the entire process of constructing textual meaning, rather than mere exposure to reading materials.

The integration of these instructional stages creates a cohesive and meaningful reading experience that extends beyond basic decoding skills. Consequently, students exposed to comprehensive reading strategies demonstrated substantially greater improvements in reading comprehension than their peers receiving traditional instruction, highlighting the instructional value of strategy-based reading approaches at the elementary level.

These results corroborate prior studies emphasizing the role of comprehensive reading strategies in advancing higher-order cognitive processes and deep textual understanding. Research by Snow (2018) and Duke and Pearson (2019) indicates that strategy-oriented reading instruction enhances students' inferential reasoning, critical analysis, and reflective engagement with texts. Such approaches support readers in developing a more holistic understanding of textual meaning.

Moreover, Guthrie et al. (2020) assert that strategy-based reading instruction contributes not only to improved comprehension outcomes but also to heightened reading motivation and learner engagement. By involving students in intentional and interactive reading tasks, comprehensive strategies foster self-regulated learning, sustained attention, and intrinsic motivation—factors that are vital for enduring literacy development. Increased engagement, in turn, supports deeper cognitive processing and more meaningful learning experiences.

In the context of elementary education, comprehensive reading strategies are highly aligned with the demands of twenty-first-century literacy. Contemporary literacy frameworks emphasize that students must move beyond mechanical reading to develop the ability to comprehend, analyze, evaluate, and apply information across varied contexts (OECD, 2019). Accordingly, the implementation of comprehensive reading strategies in elementary classrooms is consistent with international literacy standards and contributes to the development of critical and analytical readers capable of navigating complex information environments.

The findings of this study indicate that effective implementation of comprehensive reading strategies in classroom settings requires substantial pedagogical support. In the initial stages of intervention, students benefit from intensive scaffolding to facilitate independent understanding and application of reading strategies, particularly because many are unfamiliar with strategy-based reading instruction. Furthermore, teachers must possess a strong conceptual understanding and pedagogical expertise to model strategies, manage instructional time, and adapt text difficulty to students' initial proficiency levels. Key factors such as limited instructional time, variability in students' baseline reading abilities, and the complexity of reading materials must be carefully considered when implementing comprehensive reading strategies in authentic classroom environments.

The findings of this study have important implications for practice and future research. Pedagogically, the results highlight comprehensive reading strategies as an effective approach for improving elementary students' reading comprehension through the systematic integration of pre-reading, during-reading, and post-reading activities that promote active engagement and strategic reading behaviors. At the institutional level, these strategies may support the development of stronger

school-wide literacy practices by emphasizing comprehension-focused instruction supported through professional development and curriculum alignment. From a research perspective, this study provides empirical evidence that can inform future investigations, particularly studies examining the long-term effects of comprehensive reading strategies, their applicability across diverse contexts, and students' reading processes using qualitative or mixed-methods designs.

This study makes several important contributions to elementary reading comprehension research. First, it provides empirical evidence supporting the effectiveness of comprehensive reading strategy instruction implemented as an integrated instructional sequence, rather than as isolated strategies, in improving students' reading comprehension. Second, the findings reinforce process-oriented theories of reading by emphasizing active meaning construction, metacognitive regulation, and strategic engagement during reading. Third, the study offers contextual insights by demonstrating the feasibility and effectiveness of comprehensive reading strategies in authentic elementary classroom settings with typical instructional constraints. Finally, the use of a quasi-experimental pretest–posttest control group design strengthens the methodological rigor of the study and provides a useful reference for future literacy research.

The findings of this study are subject to limitations regarding generalizability. As the research was conducted in a single elementary school with a relatively small sample size, the results may not be applicable to other elementary schools with differing characteristics. Consequently, these findings should be interpreted as contextual evidence illustrating the potential effectiveness of comprehensive reading strategies, rather than as a universal conclusion.

4. CONCLUSION

The application of integrated comprehensive reading strategies at the pre-reading, during reading, and post-reading stages significantly enhances elementary students' reading comprehension compared to conventional approaches. These results confirm that explicit and sequential instruction in reading strategies supports both meaning construction and self-regulation during reading. The findings underscore the importance of incorporating comprehensive reading strategies into instructional planning, implementing the gradual release of responsibility model, and strengthening teacher professional development to ensure consistent and effective practice.

This study presents several limitations. First, group assignments were not randomized, as existing classes were utilized. Second, the research was conducted in a single elementary school, which restricts the generalizability of the findings. Third, the intervention period was relatively brief, potentially limiting the observation of long-term effects. Fourth, the instruments employed measured only reading comprehension outcomes and did not capture detailed data on the reading process.

Based on the research findings, it is recommended that teachers systematically integrate reading strategy instruction into lesson plans through explicit modeling, gradual scaffolding, and the gradual release of responsibility model. Schools should support this approach by providing professional development for teachers, allocating sufficient instructional time, and employing formative assessments to monitor students' reading comprehension progress. Further studies should replicate this research across multiple schools with extended periods, incorporate delayed posttests, and gather qualitative data on students' reading processes, such as think-aloud protocols, classroom observations, and interviews, to achieve a more comprehensive understanding of reading instruction mechanisms.

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