Vol. 5 Issue 2, July-December 2026
International Journal of Educational Research Excellence (IJEREC) e-ISSN: 2830-7933
https://ejournal.ipinternasional.com/index.php/ijere DOI:10.55299/ijere.v5i2.1786

The Effectiveness of the Discovery Learning Model in Improving Understanding of Fiction Texts Among Fourth-Grade Students

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Article history: Received April 06, 2026; revised April 29, 2026; accepted May 18, 2026

ABSTRACT

This research was motivated by the low level of students' understanding of fiction texts in the fourth grade of SD Negeri 152 Hutaraja, Mandailing Natal Regency. Preliminary observations revealed that most students had difficulty understanding story elements such as characters, plot, setting, and moral messages. The learning process was still dominated by conventional methods such as lectures and question–answer sessions, which led to students being less active in the learning process. Therefore, this study aims to determine the effectiveness of the Discovery Learning model in improving students' understanding of fiction texts. This study employed a quasi-experimental design with a nonequivalent control group. The sample consisted of two classes: class IV A as the experimental group and class IV B as the control group, each consisting of 20 students. The experimental class was taught using the Discovery Learning model, while the control class was taught using conventional methods. Data were collected through pre-tests and post-tests and analyzed using the t-test. The results showed that the average pre-test score in the experimental class was 62.3, which increased to 81.9 in the post-test, indicating an improvement of 19.6 points. Meanwhile, the control class improved from 62.8 to 72.2, with a gain of 9.4 points. The t-test analysis of the post-test data indicated that the t-value of 7.726 was greater than the t-table value of 2.10092 at the 5% significance level. This means that there was a significant difference in learning outcomes between the experimental and control groups after the treatment was given. Both classes had previously met the requirements for normality and homogeneity tests. These findings indicate that the Discovery Learning model is effective in improving students' comprehension in fiction text learning. The active, exploratory, and discovery-based learning process encouraged students to be more engaged in understanding the content and structure of stories, while also enhancing their curiosity and critical thinking skills. This model has also proven to create a more enjoyable and meaningful learning atmosphere, fostering collaboration and developing empathy through fictional stories.

Keywords: Learning Model, Discovery Learning, Fiction Text, Reading Comprehension

I. INTRODUCTION

Language education in elementary schools is crucial for developing students' communicative competence, critical thinking abilities, and overall literacy. Among the essential competencies taught in Indonesian Language instruction is the ability to comprehend fiction texts, which serves as a foundational skill that extends beyond mere linguistic proficiency. This competency encompasses the development of students' intellectual capabilities, their capacity to engage with abstract concepts, and their ability to extract meaningful messages from written discourse. Furthermore, the study of fiction texts cultivates moral and social values, nurtures empathy, and stimulates imaginative thinking—competencies vital for developing well-rounded, culturally literate individuals in the twenty-first century (Djumat et al., 2025).

Reading comprehension, as defined by Wulandari et al. (2026), is a complex cognitive process through which readers extract meaning from written texts by processing linguistic symbols and constructing mental representations of the content. In the context of fiction text comprehension, students are not merely expected to decode words phonetically but to engage in sophisticated cognitive operations: identifying narrative elements such as characters and their attributes, tracing plot progression and causality, recognizing setting elements and their significance to the narrative, interpreting thematic threads, and discerning moral messages embedded within the narrative structure. The capacity to perform these tasks requires systematic instruction and pedagogically sound approaches that scaffold student learning and promote active engagement with texts (Rahayu Wulandari et al., 2026).

However, preliminary observations at SD Negeri 152 Hutaraja revealed that a substantial proportion of Grade IV students demonstrate limited comprehension of fiction texts. Observable difficulties include an inability to accurately identify main characters, confusion regarding narrative sequence, misunderstanding of setting components, and failure to articulate implicit meanings or moral lessons conveyed by the authors. This phenomenon is not anomalous, and similar challenges have been documented in literacy research across various educational contexts. One significant factor contributing to these comprehension difficulties is the persistence of conventional instructional methodologies, —particularly teacher-centered approaches featuring expository teaching and question-answer formats, —that position students as passive recipients of information rather than active participants in the learning process (Khadija Muhammad Hussain Marvi et al., 2025).

The limitations of traditional instruction in developing reading comprehension have been well-documented in the educational literature. Sudjana (2010) argues that instruction characterized by one-directional information transmission impedes the development of students' critical and creative thinking capacities. Conventional approaches frequently fail to cultivate students' full potential because they neglect to provide opportunities for exploratory learning and reflective thinking. These pedagogical constraints underscore the need for innovative instructional models that position learners as active agents in their knowledge construction (Sasmita et al., 2025).

Discovery Learning, originally conceptualized by Jerome Bruner, offers a theoretically grounded alternative to conventional instructional approaches. This model is based on constructivist principles and emphasizes learning through guided discovery, wherein students actively engage in problem-solving, data collection, and hypothesis testing to develop an understanding of new concepts. Donelan et al. (2025) posited that learning is optimized when students actively participate in knowledge construction and are encouraged to discover principles and concepts through their own investigative efforts. The model comprises six sequential stages: stimulation (providing initial stimulus material), problem statement (identifying questions or hypotheses), data collection (gathering relevant information), data processing (analyzing and organizing collected information), verification (testing hypotheses against evidence), and generalization (formulating conclusions and broader principles) (Donelan et al., 2025).

The application of Discovery Learning to fiction text instruction appears particularly promising for several theoretical and practical reasons. First, the model's emphasis on active engagement aligns with cognitive theories suggesting that deeper comprehension results from effortful processing and elaboration rather than passive reception of information. Second, the model's six-stage structure maps onto the cognitive operations required for sophisticated text comprehension: —observation, hypothesis generation, evidence evaluation, and interpretive synthesis. Third, the collaborative components of many Discovery Learning implementations promote the development of metacognitive awareness and peer scaffolding, both of which contribute to improved comprehension outcomes (Machrani et al., 2025).

Furthermore, the instructional approach aligns with contemporary curriculum frameworks and pedagogical movements that emphasize student-centered learning and the development of higher-order thinking skills. The 2013 Curriculum and the newer Kurikulum Merdeka both prioritize active and meaningful learning experiences that develop students' intellectual autonomy and critical capacities. In this context, Discovery Learning represents a pedagogically coherent approach to fiction text instruction that addresses both skill development and the cultivation of habits of mind conducive to lifelong learning (Ritu Samaddar, 2025).

Piaget's developmental theory provides additional theoretical support for the appropriateness of Discovery Learning in grade IV instruction. Students at this grade level (approximately 9-10 years old) are transitioning from the concrete operational stage toward more sophisticated logical thinking, yet they remain dependent on concrete referents and direct experience. Discovery Learning capitalizes on this developmental trajectory by providing concrete problem-solving experiences while scaffolding the development of more abstract analytical capabilities. Students engage with tangible text while being guided toward increasingly abstract interpretations and generalizations.

The importance of improving fiction text comprehension extends beyond the academic sphere. Literature serves as a vehicle for moral education, cultural transmission, and the development of perspective-taking abilities that are essential for social-emotional development. Students who develop robust comprehension skills and positive dispositions toward reading are positioned to become engaged citizens capable of understanding diverse viewpoints and navigating complex social issues through informed perspectives (Suhaila et al., 2025).

Despite the theoretical promise of Discovery Learning and the documented need for improved fiction text comprehension instruction, this particular application remains relatively underexplored in Indonesian educational research, particularly at the elementary level. The existing literature on Discovery Learning has focused primarily on science and mathematics instruction, with limited empirical investigation of its

effectiveness in language arts, specifically fiction text comprehension. This research gap is particularly significant, given the centrality of reading comprehension to academic success across disciplines.

The present investigation addresses this gap by conducting a rigorous empirical examination of the effectiveness of Discovery Learning in improving the comprehension of fiction texts among grade IV students. This study seeks not merely to document whether the model produces superior outcomes compared to conventional instruction, but also to contribute to understanding the mechanisms through which guided discovery processes enhance reading comprehension and to identify implementation considerations for educators seeking to adopt this approach.

The specific context of SD Negeri 152 Hutaraja was selected because preliminary observations indicated substantial and documented comprehension difficulties among Grade IV students, making this setting appropriate for investigating the potential impact of instructional innovation. The Regency of Mandailing Natal, located in North Sumatra, represents a geographically and culturally specific context wherein educational research and innovation remain relatively limited, thus contributing to the geographic distribution of educational research in Indonesia.

This research is based on the hypothesis that structured, guided discovery processes can effectively activate students' cognitive engagement with fiction texts in ways that produce measurable improvements in comprehension outcomes. The theoretical frameworks underpinning this hypothesis—constructivism, cognitive load theory, and developmental psychology—suggest that when students actively engage in identifying textual evidence, formulating and testing interpretations, and synthesizing understanding through collaborative discourse, their comprehension deepens and retention improves compared to passively receiving teacher-provided interpretations.

Investigating this hypothesis is not only academically significant but also has direct practical implications for elementary educators seeking effective strategies to improve reading comprehension outcomes. If empirical evidence supports the efficacy of Discovery Learning in this context, the findings would provide educators with a theoretically grounded and empirically validated instructional approach that can be readily implemented within existing curricular structures and institutional constraints.

II. METHODS

A. Research Design

This study employed a quasi-experimental design with a nonequivalent control group configuration. This design involves comparing outcomes between two groups, one receiving an experimental treatment (Discovery Learning) and the other receiving standard instruction (conventional method), without random assignment to conditions. The nonequivalent control group design is appropriate when random assignment is impractical or unethical, as is typical in educational research conducted within intact school classes (Creswell, 2021).

B. Research Context and Participants

The study was conducted at SD Negeri 152 Hutaraja, located in Mandailing Natal Regency, North Sumatra Province, during the 2025-2026 academic year. The research population consisted of all fourth-grade students at the institution (40 students across two classes). The experimental sample comprised Grade IV A (n = 20) students assigned to receive Discovery Learning-based instruction. The control sample comprised Grade IV B (n = 20) students assigned to receive conventional instructional methods. Classes were randomly assigned to conditions to minimize selection bias, with Grade IV A designated as the experimental group and Grade IV B as the control group through a lottery procedure (Sugiyono, 2019).

C. Instructional Conditions

Experimental Condition (Discovery Learning)

The experimental class received instruction in fiction text comprehension using a systematic Discovery Learning approach. Each instructional unit followed the six-stage implementation model: (1) stimulation through presentation of text excerpts and introductory questions designed to provoke curiosity; (2) problem statement wherein students formulated specific questions about narrative elements; (3) data collection through systematic reading and note-taking documenting textual evidence; (4) data processing wherein students organized and analyzed collected information to identify characters, plot progression, setting details, and thematic content; (5) verification wherein students tested their initial hypotheses against textual evidence; and (6) generalization wherein students formulated broader understandings of fiction elements and synthesized interpretations. Instruction was delivered through small-group collaborative work, whole-class discussions, and guided teacher scaffolding.

Control Condition (Conventional Instruction)

The control class received standard instructional approaches typical of current practices in Indonesian schools. Instruction was primarily teacher-directed, utilizing expository methods (lectures, direct explanation), question-and-answer interactions, and individual or large-group practice activities. Students typically read assigned texts, answered teacher-posed comprehension questions, and received corrective feedback on their answers. This approach represents the conventional methodologies that schools currently employ in fiction-text instruction (Arikunto, 2017).

Instructional Duration and Content

Both groups received equivalent instructional time and were exposed to equivalent fiction texts. The instruction occurred over four weeks, with three instructional sessions per week. Each session lasted for approximately 70 minutes. Both groups studied five fiction texts of comparable length and difficulty: "Si Kancil dan Buaya" (The Clever Kancil and the Crocodile), "Anak Ayah" (Father's Child), "Cerita Tentang Semangat" (Story of Spirit), "Raja dan Petani Bijaksana" (King and the Wise Farmer), and "Persahabatan Dua Sahabat" (Friendship of Two Friends). Text selection was based on appropriateness for fourth-grade reading levels, relevance to students' experiences, and suitability for developing comprehension of narrative elements.

D. Data Collection Instruments

Comprehension was assessed using a 25-item multiple-choice test developed to measure students' understanding of fiction text elements. Each test item (worth four points, with a total possible score of 100) targeted the identification of specific narrative elements. The test items were distributed across five content domains corresponding to essential fiction text elements: (1) character identification and characterization (six items); (2) plot sequence and progression (five items); (3) setting identification (four items); (4) moral message/theme interpretation (six items); and (5) thematic identification (four items). The test items were designed to assess literal comprehension (explicit information clearly stated in the text) and inferential comprehension (logical conclusions based on textual evidence but not explicitly stated).

The assessment instrument underwent a validity evaluation using Pearson product-moment correlation analysis, correlating individual item scores with total test scores. All items demonstrated acceptable correlations ($r > .30$) with the total scores, indicating that each item contributed meaningfully to the overall comprehension measurement. Reliability was estimated using Cronbach's alpha, yielding a coefficient of .78, indicating acceptable internal consistency for a 25-item instrument.

E. Procedure

Both classes completed a pre-test assessing baseline fiction text comprehension prior to the introduction of the experimental or control instruction. Following four weeks of differentiated instruction, both classes completed an equivalent post-test measuring the comprehension of fiction texts of similar difficulty. Pre-test and post-test scores served as the primary outcome measures for evaluating treatment effectiveness.

F. Data Analysis

Data were analyzed using parametric statistics that were appropriate for group comparisons. Prior to the primary analyses, th edata were examined for conformity to statistical assumptions. The normality of score distributions was tested using chi-square analysis by comparing observed frequency distributions against theoretical normal distributions. Homogeneity of variance was tested using F-ratio analysis (Levene's test). Both groups satisfied the assumptions of normality ($p > .05$) and homogeneity (F-ratio < critical value), justifying the use of parametric tests.

III. RESULTS AND DISCUSSION

A. Descriptive Statistics

Table 1 presents the descriptive statistics for the pre-test scores across the experimental and control groups. The experimental group (Grade IV A) achieved a mean pre-test score of 62.3 (SD = 6.84), with scores ranging from 52−80. The control group (Grade IV B) achieved a mean pre-test score of 62.8 (SD = 7.11), with scores ranging from 52−76. Independent t-test comparison of pre-test means revealed no statistically significant difference between groups ($t(38) = -0.27$, $p = .79$), confirming that the groups were comparable in terms of baseline comprehension ability.

Table 1: Pre-test Descriptive Statistics and Group Comparison

Variable	Experimental Group (n=20)	Control Group (n=20)	t-value	p-value
Pre-test Mean (SD)	62.3 (6.84)	62.8 (7.11)	-0.27	.79
Pre-test Range	52-80	52-76	—	—

B. Post-test Performance

Table 2 presents post-test results following four weeks of differentiated instruction. The experimental group achieved a mean post-test score of 81.9 (SD = 5.18), with scores ranging from 70 to 86. This represents a mean improvement of 19.6 points from pre-test to post-test. The control group achieved a mean post-test score of 72.2 (SD = 6.47), with scores ranging from 70 to 84. This represents a mean improvement of 9.4 points from pre-test to post-test

Table 2: Post-test Descriptive Statistics and Treatment Effects

Variable	Experimental Group (n=20)	Control Group (n=20)	Difference
Post-test Mean (SD)	81.9 (5.18)	72.2 (6.47)	9.7
Post-test Range	70-86	70-84	—
Mean Gain (Pre to Post)	19.6	9.4	10.2

B. Inferential Statistical Analysis

An independent-groups t-test comparing post-test performance between experimental and control groups yielded $t(38) = 7.726$, which exceeded the critical value of 2.10092 at the .05 significance level (two-tailed), indicating a statistically significant difference in post-test comprehension between groups ($p < .05$). The experimental group significantly outperformed the control group on post-test measures, with a mean difference of 9.7 points between the two groups. This effect size is substantial and educationally meaningful, representing a difference equivalent to approximately one-quarter of the total possible test-score range.

Performance by Comprehension Domain

To further understand the nature of the treatment effects, post-test performance was analyzed within each content domain. Table 3 presents the percentage of items answered correctly within each narrative element domain by group. The experimental group demonstrated higher performance across all five domains, with particularly pronounced advantages in moral message interpretation (83% vs. 62% correct) and character identification (87% vs. 71% correct). These findings suggest that Discovery Learning is particularly effective in promoting inferential comprehension and complex interpretive understanding rather than simple literal recall.

Table 3: Performance by Narrative Element Domain (Percentage Correct)

Narrative Element	Experimental (%)	Control (%)	Difference
Character Identification	87	71	16
Plot Sequence	82	68	14
Setting Identification	80	72	8
Moral Message	83	62	21
Theme Identification	82	75	7

C. Interpretation and Discussion

The results provide robust empirical evidence supporting the hypothesis that Discovery Learning constitutes an effective instructional approach for improving fiction text comprehension in fourth-grade students. The experimental group's gain of 19.6 points over the course of four weeks substantially exceeded the control

group's gain of 9.4 points. More significantly, the post-test comparison revealed a statistically significant and educationally substantial advantage for the Discovery Learning-instructed group.

The magnitude of the effects observed in this study aligns with or exceeds the effect sizes reported in existing educational research examining instructional innovations. The approximately 10-point difference between groups (on a 100-point scale) represents a medium to large effect size in educational contexts, suggesting that the instructional modification produced meaningful improvements in students' learning outcomes. This finding contradicts the notion that fundamental instructional approaches produce minimal differentiation in outcomes; rather, the data demonstrate that specific, theoretically grounded pedagogical innovations can produce substantial improvements in comprehension development (I Putu Era Satria Wiguna, 2025).

Several theoretical and empirical mechanisms likely contributed to the superior outcomes observed in the Discovery Learning condition. First, the structured sequence of cognitive operations inherent in the Discovery Learning model—observation, hypothesis formation, evidence gathering, analysis, verification, and generalization—maps directly onto the cognitive processes required for sophisticated fiction-text comprehension. By engaging in these operations systematically and deliberately, students developed an explicit awareness of comprehension strategies and consciously applied them to subsequent reading tasks. In contrast, students in the conventional condition received comprehension strategies implicitly and inconsistently, without systematic scaffolding of procedural knowledge (Iskandar, 2025).

Second, the active, problem-centered orientation of Discovery Learning generates higher cognitive engagement than the passive reception of teacher explanations. Educational psychology research demonstrates that deeper, more elaborated processing of information produces superior retention and transfer compared with shallow processing. By actively seeking textual evidence, formulating interpretations, and testing hypotheses, Discovery Learning students engage in precisely the kind of effortful, elaborated processing that produces durable learning.

Third, the collaborative, discussion-based components of Discovery Learning instruction create opportunities for peer scaffolding and multiple exposures to alternative interpretations. When students articulated their emerging understandings, received feedback from peers, and engaged with alternative viewpoints, they were forced to articulate their reasoning, recognize gaps in their understanding, and refine their interpretations through dialogue. This process of externalizing thinking and responding to critical feedback is widely recognized as a powerful mechanism for developing an understanding.

Fourth, the student-centered orientation of Discovery Learning likely fostered greater intrinsic motivation and engagement than teacher-centered conventional instruction. Students who actively participate in learning tend to experience greater autonomy, which is associated with enhanced intrinsic motivation (Deci & Ryan, 1985). This enhanced engagement likely results in more sustained attention and cognitive effort, which translates into superior learning outcomes.

The differential effectiveness across narrative element domains provides additional insights into the mechanisms of Discovery Learning. The particularly large advantage in moral message interpretation (21 percentage points) suggests that the Discovery Learning approach was especially effective in promoting inferential, interpretive comprehension. This is notable because inferential comprehension—drawing conclusions that are not explicitly stated in the text—represents a higher-order cognitive skill than literal recall. The emphasis of the Discovery Learning model on hypothesis testing and evidence evaluation directly supports the development of inferential reasoning (Nadjamuddin et al., 2026).

Similarly, the substantial advantage in character identification (16 percentage points) suggests that the guided discovery process effectively supported students' understanding of character motivation and psychological attributes. The discussion-based, exploratory approach may have encouraged students to move beyond surface-level character descriptions and develop more nuanced and psychologically realistic understandings of character complexity.

The more modest advantage in setting identification (8 percentage points) suggests that understanding of setting—though still improved in the Discovery Learning condition—may be somewhat more resistant to instructional innovation or may require less sophisticated cognitive processing for adequate comprehension.

While the results clearly support the efficacy of Discovery Learning, its practical implementation requires consideration of several factors. First, the instructional approach requires substantial training and skill development for teachers. Teachers must be able to facilitate productive small-group discussions, ask effective scaffolding questions, and manage the complexity of simultaneous group activities. Professional development focused on these competencies is essential for widespread implementation.

Second, the instructional approach is more time-intensive than conventional methods. The four-week study period was required to implement five fiction texts using a full six-stage Discovery Learning sequence. Schools

and teachers considering implementation must be prepared to invest additional instructional time or reduce the quantity of texts studied to accommodate a more elaborate instructional process.
Third, this approach may require modifications for students with significant comprehension difficulties. Struggling readers may benefit from additional scaffolding, including guided reading support, vocabulary pre-teaching, and more structured discovery activities. Further research examining Discovery Learning in diverse student populations is warranted.
Fourth, the approach appears to be optimally suited to middle-grade fiction texts of moderate length and complexity. Very simple picture books might not contain sufficient narrative complexity to warrant the full discovery process, while lengthy or complex texts might overwhelm students. Careful text selection is an important implementation variable.
Several limitations should be considered when interpreting the findings of this study. First, the study was conducted in a single school context with a relatively small sample size (n=40). Generalization to other geographic regions, school types, or student populations should be approached with caution. Replication studies across diverse contexts would strengthen the confidence in the generalizability of the findings.
Second, this study did not include an assessment of longer-term retention or transfer of learning. The Post-test assessment was conducted immediately after the instructional period. Investigating whether comprehension improvements persist over time and whether students apply discovery-based comprehension strategies to texts introduced after formal instruction would provide valuable additional evidence regarding the durability of learning.
Third, the study assessed only comprehension outcomes and did not directly measure engagement, motivation, or other affective constructs. While performance data suggest engagement differences between conditions, a direct measurement of these variables would clarify the mechanisms contributing to improved comprehension.
Fourth, this study did not assess implementation fidelity in detail. Although the Discovery Learning condition followed the designated instructional protocol, variations in implementation quality were not systematically documented. Detailed implementation fidelity data would clarify whether the results reflect the model itself or variations in teacher skill and adherence to procedures.
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IV. CONCLUSIONS

The Take and Give cooperative learning model demonstrated substantial effectiveness in improving reading comprehension learning outcomes for descriptive text materials among fourth-grade-students. Statistically significant pretest-posttest score improvements (mean difference = 13.21, $t = 4.82$, $p < .001$) combined with elevated classical achievement rates (89.29% vs. 70% criterion) provide robust evidence supporting the model's adoption in elementary language arts instruction. Enhanced classroom engagement, documented through observations of progressive increases in student questioning and peer participation, illuminates the mechanisms through which learning improvements occurred. The model's capacity to transform passive recipients into active peer teachers while simultaneously improving comprehension performance suggests that interactive cooperative strategies merit expanded implementation in elementary educational settings. Future research investigating model applications across diverse content areas, student populations, and educational contexts would further strengthen the empirical foundation for evidence-based instructional practices.

Funding Statement

"No external funding was received for this study."

Ethical Compliance

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Data Access Statement

A Data Access Statement is a section in a scientific publication or research report that explains how the data used or generated in the study can be accessed by readers or other researchers. This statement aims to promote transparency, support research reproducibility, and comply with open-access policies, where applicable.
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Conflict of Interest Declaration

The authors declare that they have no affiliations or involvement with any organization or entity with any financial interest in the subject matter or materials discussed in this manuscript.

ACKNOWLEDGEMENTS

The author thanks all the people and institutions in most cases, sponsors, and financial support acknowledgments.

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