

## The Effect of the RADEC Learning Model on the Reading Literacy of Fifth Grade Students at Cijeruk Elementary School

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**Abstract.** The low reading literacy skills of elementary school students remain a serious issue in Indonesian education. Observations at SDN Cijeruk reveal that most fifth-grade students struggle to identify main ideas, make inferences, and understand implied meanings in reading texts. This condition highlights the need for a learning model that fully engages students in the reading process. This study aims to analyze the effect of the RADEC (Read, Answer, Discuss, Explain, Create) learning model on improving the reading literacy of fifth-grade students at SDN Cijeruk. The research employed a quasi-experimental method with a nonequivalent control group design. A total of 68 students participated, divided into an experimental class (34 students) applying the RADEC model and a control class (34 students) using conventional learning. Data were obtained through pretest and posttest reading literacy assessments and analyzed using a t-test. The results showed a significant improvement in the experimental class, with a mean posttest score of 83.47 compared to 75.12 in the control class ( $t_{count} = 3.42 > t_{table} = 2.00$ ). These findings indicate that the RADEC model effectively enhances students' reading comprehension skills. The novelty of this study lies in its application of the RADEC model to strengthen reading literacy in a rural elementary school context an area that has received limited attention in prior RADEC-based literacy research. The model fosters critical thinking, collaborative discussion, and deeper text comprehension among students.

**Keywords:** RADEC, reading literacy, elementary school students, active learning.

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### INTRODUCTION

Reading literacy is the main foundation for student learning success at all levels of education. Reading literacy includes not only the recognition of letters and words but also the comprehension, interpretation, and evaluation of a text's meaning (OECD, 2023). It is a multidimensional skill that forms the basis for lifelong learning, critical reasoning, and civic participation. However, low reading literacy remains a persistent problem in Indonesia's basic education system. According to the 2022 Programme for International Student Assessment (PISA) results, Indonesian students' average reading score is still significantly lower than the OECD average, indicating that the ability to interpret, analyze, and reflect upon text content is still limited (Kemendikbudristek, 2023). This gap suggests the urgent need for more effective and contextual learning innovations that can foster literacy skills from an early stage of education, especially in primary schools where foundational competencies are developed.

Reading instruction in Indonesian elementary schools tends to focus merely on literal comprehension, without sufficiently encouraging students to engage in critical analysis and reflective interpretation of texts. In many classrooms, teaching practices are still dominated by

teacher-centered methods such as lecturing and giving reading tasks without stimulating interactive or reflective learning processes (Valentina et al., 2023). Consequently, students are less engaged in constructing textual meaning and often struggle with higher-order cognitive skills such as synthesis, evaluation, and inference (Aziz and Rawian, 2022). Preliminary observations at SDN Cijeruk reveal that most fifth-grade students have difficulty identifying main ideas, drawing contextual conclusions, or interpreting implied meanings accurately. These findings affirm that the current pedagogical practices have yet to meet the cognitive and affective needs of learners in developing deep reading comprehension.

In response to these challenges, the RADEC (Read, Answer, Discuss, Explain, Create) learning model has emerged as an innovative pedagogical approach designed to address students' low literacy engagement. The RADEC model emphasizes active student participation through sequential stages: reading texts, answering comprehension questions, engaging in collaborative discussion, explaining understanding to peers, and creating learning products that reflect the acquired knowledge (Fatimah et al., 2024). Conceptually, RADEC aligns with constructivist learning theory, where learners actively build knowledge through social interaction, reflection, and contextual application (Pratiwi and Helsa, 2025). Each stage is purposefully structured to promote not only comprehension but also metacognitive awareness, thus enabling students to internalize and reframe information meaningfully.

Empirical evidence has demonstrated the positive impact of the RADEC model on student learning outcomes and cognitive development. For example, research by Hidayat and Widjajanti (2020) discovered that using the RADEC model can enhance scientific learning results by encouraging student involvement and interest. Another study by Safrizal et al., (2020) reported that RADEC-based instruction contributes positively to elementary students' science literacy. Despite these promising findings, there is still a paucity of research focusing on the model's application to reading literacy, particularly within rural elementary school contexts. Previous studies have largely concentrated on science or general academic achievement, leaving a research gap in understanding how RADEC influences the multidimensional aspects of reading literacy, including comprehension, critical interpretation, and textual creativity. This study, therefore, aims to fill this gap by analyzing how the RADEC model affects fifth-grade students' reading literacy skills, especially in underrepresented rural schools such as SDN Cijeruk.

Furthermore, RADEC's pedagogical structure resonates strongly with the 21st-century learning framework emphasizing 4C skills, critical thinking, creativity, collaboration, and

communication. Within RADEC, these competencies are not treated as isolated skills but as integrated processes embedded across its stages. Students are encouraged to think critically while analyzing texts, communicate their understanding through discussion and explanation, collaborate in groups to negotiate meaning, and express creativity by producing artifacts or responses that represent their comprehension (Kustiarini et al., 2024). By situating reading within these authentic and interactive contexts, RADEC transforms literacy learning from a mechanical decoding process into an engaging experience that nurtures cognitive, emotional, and social growth simultaneously. This synthesis of 4C elements provides a more holistic approach to literacy instruction that aligns with the Merdeka Curriculum's emphasis on active, project-based, and competency-driven learning (Sukmawati et al., 2024).

It is equally important to note that reading literacy development is not solely a cognitive endeavor but also involves motivational and social dimensions. Students who are intrinsically motivated to read are more likely to engage deeply with texts and achieve better comprehension outcomes (Yang et al., 2018). Therefore, instructional models that foster emotional engagement and peer collaboration play a crucial role in cultivating sustainable reading habits. The RADEC model, through its collaborative discussion and creative output phases, has the potential to enhance students' intrinsic motivation by allowing them to express understanding in personally meaningful and socially interactive ways. Such experiences may increase their sense of ownership over learning and reinforce positive attitudes toward reading.

Moreover, the collaborative and reflective nature of RADEC offers a valuable opportunity to nurture both cognitive and affective domains of literacy. According to Rambe et al., (2025), emphasize, dialogic and participatory learning environments can simultaneously develop critical thinking, empathy, and communication competencies. In reading contexts, this means that students not only comprehend textual information but also construct and negotiate meaning based on diverse perspectives. This reflective dialogue transforms reading from an individual activity into a collective process of meaning-making, fostering empathy, open-mindedness, and character formation. Thus, RADEC is not merely an instructional model but also a medium for cultivating literate, communicative, and socially aware learners.

From a policy and curricular perspective, the adoption of RADEC in Indonesian elementary schools is timely and relevant. The Merdeka Curriculum advocates for learner-centered approaches that integrate higher-order thinking skills with real-world applications. Yet, many teachers continue to rely on traditional, rote-based instruction that limits student agency and creativity. Integrating RADEC into reading instruction provides an avenue to operationalize the

curriculum's goals by embedding 4C skills in daily classroom practices. It bridges the gap between policy aspirations and classroom realities, ensuring that literacy education becomes more responsive to contemporary learning demands. Additionally, its structured yet flexible stages make it adaptable across subjects and contexts, offering a sustainable model for educational innovation in literacy pedagogy.

In summary, the persistent problem of low reading literacy among Indonesian elementary students, coupled with the lack of contextualized and interactive instructional approaches, highlights an urgent need for pedagogical transformation. The RADEC learning model offers a theoretically grounded and empirically promising framework to address these challenges. However, the empirical validation of its impact on reading literacy, particularly in rural primary schools, remains underexplored. This study, therefore, aims to investigate the effect of the RADEC learning model on fifth-grade students' reading literacy at SDN Cijeruk. The central hypothesis posits that the implementation of RADEC will significantly enhance students' reading literacy skills covering comprehension, interpretation, and critical reflection, compared to conventional learning methods. The results of this study are expected to contribute both theoretically and practically to the development of innovative literacy pedagogy, reinforcing the role of constructivist and collaborative learning models in improving the quality of reading instruction in elementary schools.

## METHODOLOGY

### Research Design

Two groups the experimental group and the control group were utilized in this quasi-experimental study using a nonequivalent control group design. The RADEC (Read, Answer, Discuss, Explain, Create) learning approach was used to treat the experimental group., while the control group followed conventional lecture-based learning and question and answer sessions. This design was chosen because it made it possible for researchers to gauge how the medication affected reading literacy abilities., even though the groups were not randomly assigned (Creswell and Creswell, 2017). The structure of the research design can be described as follows:

**Table 1.** Nonequivalent Control Group Design Research Design

Group	Pretest	Treatment	Posttest
Exsperimental	O <sub>1</sub>	X (Model RADEC)	O <sub>2</sub>
Control	O <sub>3</sub>	- (Conventional)	O <sub>4</sub>

Description:

$O_1$  and  $O_3$  = Pretest of reading literacy skills

$O_2$  and  $O_4$  = Posttest of reading literacy skills

X = Treatment with the RADEC learning model

### **Population and Sample**

All fifth-grade students at SDN Cijeruk, Serang Regency, constituted the population of this study. The research sample consisted of 68 students from two parallel classes: 34 students from class VA as the experimental group and 34 students from class VB as the control group. The sample was selected using a purposive sampling technique based on several considerations: (1) both classes had relatively similar academic abilities according to the results of the previous semester's evaluation, (2) both classes were taught by teachers with comparable instructional experience and classroom management skills, and (3) the selected school represented a rural elementary education context where literacy issues are often more pronounced compared to urban schools.

This purposive selection was also justified by the need to ensure comparable learning environments and time allocations, allowing the researcher to focus on the treatment effect rather than contextual discrepancies. In other words, the sampling approach prioritized internal validity and instructional equivalence over randomization, which is typical in quasi-experimental designs aiming to evaluate pedagogical interventions in real classroom settings.

Nevertheless, because the sample was drawn from a single school with a limited number of participants, the external validity of the findings is naturally constrained. The results may not be generalized to all elementary schools in Indonesia, particularly those in different socioeconomic, cultural, or institutional contexts. However, the findings still provide valuable empirical evidence and theoretical insight into how the RADEC model functions within comparable rural educational settings.

### **Research Variables and Indicators**

The primary focus of this study was the students' reading literacy skills. Reading literacy was measured based on four main indicators, adapted from the PISA Reading Literacy Framework: (1) identifying main ideas, (2) making inferences, (3) understanding implied meaning, and (4) evaluating reading content (Aziz and Rawian, 2022; OECD, 2023).

## Research Instruments

The instrument used was a reading literacy test in the structure of multiple-choice and essay questions that had been compiled in accordance with the reading literacy indicators for elementary school students. Before being used in the study, the instrument was tested for content validity by three experts in elementary education and Indonesian language. The Cronbach's Alpha formula was then used to perform a reliability test, which yielded a coefficient of 0.87, indicating strong reliability (Sugiyono, 2021).

The instrument underwent content validation by three experts in elementary education and Indonesian language learning. The Aiken's V coefficient was used to quantify expert agreement on the relevance of each item. The average Aiken's V value obtained was 0.86, which indicates that the instrument possessed high content validity. To ensure internal consistency, the reliability of the instrument was analyzed using Cronbach's Alpha formula. The resulting reliability coefficient was 0.87, categorized as highly reliable (Sugiyono, 2021).

**Table 2.** Results of Instrument Validity and Reliability Testing

Aspect	Statistical Test	Result	Interpretation
Content Validity	Aiken's V	0.86	High validity
Reliability	Cronbach's Alpha	0.87	High reliability

## Research Procedure

The research was conducted in three main phases: planning, implementation, and evaluation.

1. Planning Phase – The researcher developed RADEC-based lesson plans and validated the research instruments.
2. Implementation Phase – Conducted over four meetings (each 2 × 40 minutes).

Experimental Group: Followed the RADEC learning stages

- a) Read relevant texts;
- b) Answer comprehension questions ranging from literal to inferential;
- c) Discuss meanings, implied information, and moral messages in small groups;
- d) Explain the discussion outcomes to the class under teacher facilitation;

- e) Create simple products such as illustrated summaries or mind maps to reinforce comprehension (Fatimah et al., 2024).

Control Group: Engaged in conventional learning emphasizing teacher explanations and individual exercises without collaborative activities.

3. Evaluation Phase – Both groups were administered a posttest to measure improvement in reading literacy.

To enrich the quantitative data, classroom observations and brief teacher interviews were also conducted to document student engagement, participation, and interaction during the learning process. This data triangulation increased the credibility and interpretive depth of the findings (Creswell and Creswell, 2017)

### **Data Analysis**

The study data consisted of pretest and posttest scores of students' reading literacy skills. Before hypothesis testing, data were examined for normality and homogeneity to meet parametric assumptions. Subsequently, an independent sample t-test was performed to determine whether there was a significant difference in posttest scores between the experimental and control groups (Ghozali, 2018).

Additionally, N-Gain Score analysis was employed to assess the degree of improvement in reading literacy for each group (Suryanti et al., 2018). The significance level was set at 0.05, meaning that the RADEC model was considered to have a statistically significant effect on students' reading literacy if the t-count value exceeded the t-table threshold.

### **Research Ethics and Limitations of External Validity**

This study adhered to the principles of educational research ethics. Prior to data collection, permission was obtained from the school administration, and informed consent was secured from parents or guardians. The confidentiality of participants' identities was strictly maintained, and all students were provided equal opportunities to participate.

As previously mentioned, the use of purposive sampling and the study's implementation in a single rural elementary school limit the external validity of the findings. Consequently, the results should be interpreted as context-specific rather than universally generalizable. Future studies are recommended to replicate this research in broader and more diverse settings, both urban and rural to strengthen the external generalization of the RADEC model's impact on reading literacy.

## RESULTS AND DISCUSSION

The purpose of this study is to determine the effect of the RADEC learning model on the reading literacy skills of fifth-grade students at SDN Cijeruk. Research data were obtained from the pretest and posttest results of reading literacy skills from two groups: the experimental group that used the RADEC model and the control group that used conventional learning. To ensure the eligibility of the data for parametric analysis, descriptive tests, normality tests, and homogeneity tests were conducted prior to the t-test. Table 3 presents the descriptive analysis of the pretest and posttest data for both groups.

**Table 3.** Descriptive Results of Pretest and Posttest of Reading Literacy Skills

Group (Treatment)	N	Mean Pretest	Mean Posttest	Improvement ( $\Delta$ )	N-Gain	Category
Experimental (RADEC)	34	64.21	83.47	19.26	0.56	Medium–High
Control (Conventional)	34	63.88	75.12	11.24	0.34	Medium

The results in Table 3 indicate that the initial abilities of both groups were relatively similar. After the intervention, the experimental group experienced an average increase of 19.26 points—higher than the control group's improvement of 11.24 points. The experimental group's N-Gain score, which reached the medium–high category, further demonstrates that the RADEC model effectively facilitates the development of students' reading literacy abilities. This improvement reflects not only a quantitative difference but also qualitative progress in how deeply students engage with text.

To validate the suitability of inferential testing requirements, the Kolmogorov–Smirnov normality test and Levene's homogeneity test were conducted.

**Table 4.** Results of Normality and Homogeneity Tests

Type of Test (Analysis)	Group	Sig. (p)	Description
Normality (Kolmogorov–Smirnov)	Experimental	0.112	Data are normally distributed
Normality (Kolmogorov–Smirnov)	Control	0.091	Data are normally distributed
Homogeneity (Levene Test)	Both Groups	0.214	Data are homogeneous

The normality test results show that both groups have significance values above 0.05, indicating that the data are normally distributed. Similarly, the homogeneity test results show that the variance between the two groups is homogeneous. Thus, the dataset fulfills the assumption required to proceed with independent t-test analysis.

The independent t-test was then used to determine whether the posttest performance differed significantly between the two groups. The results are presented in Table 5.

**Table 5.** Independent t-test Results for Posttest Reading Literacy Scores

Group	N	Mean Score	tcount	ttable ( $\alpha = 0.05$ )	Sig. (2-tailed)	Description
Experimental	34	83.47	3.42	2.00	0.001	Significant
Control	34	75.12	–	–	–	–

With a significance level of 0.05, the analysis shows a t-count value of 3.42 compared to a t-table value of 2.00, and a p-value of 0.001. These results confirm that the difference in reading literacy outcomes between students taught using the RADEC model and those taught conventionally is statistically significant. Thus, it can be concluded that the RADEC model contributes meaningfully to the improvement of students' reading literacy skills.

The findings of this study reinforce that the increase in reading literacy is not solely caused by the procedural sequence of the RADEC steps, but also by the deeper emotional and cognitive engagement that occurs during learning. Observation results revealed that students in the experimental group were more enthusiastic, especially during the "Discuss" and "Create" phases. These stages require students not merely to recall information but to articulate, justify, and transform ideas, which is more cognitively demanding. Such activities encourage students with weaker reading abilities to participate actively, demonstrating that RADEC supports inclusive learning environments.

This phenomenon aligns with Vygotsky's notion that learning becomes more effective when students interact socially and negotiate meaning through dialogue (Azzahra et al., 2025). Within RADEC, the "Discuss" phase operates as a space for scaffolded interaction, where students exchange interpretations and support one another's understanding. Meanwhile, the "Create" phase pushes students to synthesize information, reframe ideas, and convert textual understanding into new artifacts. These processes promote metacognitive engagement—students refine their thinking, monitor comprehension, and evaluate meaning construction while reading.

The study's findings also align with Nurtitah and Afriani (2024), who found that active engagement in reading and discussion significantly enhances narrative text comprehension. However, the present study expands this understanding by showing that the inclusion of the "Create" phase deepens learning outcomes, as it demands generative thinking. Rather than stopping at comprehension, students must reorganize their understanding into tangible products, strengthening both retention and conceptual clarity.

Pedagogically, these findings imply that the RADEC model can be adapted to various subjects requiring textual interpretation, such as science and social studies. RADEC also promotes stronger oral communication, as students repeatedly explain, debate, and present their ideas. In the context of literacy learning, RADEC helps teachers shift from teacher-centered instruction to dialogic, reflective learning that empowers students to build meaning collaboratively.

Theoretically, the findings support the conception that reading literacy encompasses not merely the ability to answer text-related questions but also the capacity to think critically, collaborate effectively, and generate new ideas (OECD, 2023). The significant improvement in reading literacy among students in the experimental group reflects a broader shift from reading as decoding to reading as meaning-making. In RADEC, meaning-making is cultivated through successive phases of analysis, dialogue, and creation, all of which nurture deeper comprehension.

The characteristics of the RADEC model explain this improvement. The Read phase encourages thorough engagement with the text; the Answer and Discuss phases challenge students to examine meaning, identify key ideas, and articulate interpretations; while the Explain and Create phases require students to internalize, elaborate, and transform information into new forms (Pratiwi and Helsa, 2025). These phases incorporate reflective, analytical, and expressive skills that collectively enhance reading literacy.

These results are consistent with findings by Hanum et al. (2023), who report that the RADEC model successfully enhances critical thinking and teamwork through active engagement across learning stages. Similarly, research by Fhilrizki et al. (2024) supports that RADEC improves scientific literacy, which parallels reading literacy in its emphasis on interpreting information and constructing meaning. Thus, RADEC's application to reading instruction in elementary schools significantly strengthens students' comprehension and reasoning.

Observations during the intervention further revealed that students in the experimental group demonstrated higher motivation than those in the control group. They asked more questions, engaged more fully in discussions, and showed a stronger ability to connect reading materials with real-life experiences. This indicates that RADEC not only improves test scores but also strengthens learning engagement and intrinsic motivation. These outcomes are consistent with the social constructivist principle that authentic learning emerges through interactive knowledge construction (Azzahra et al., 2025).

Overall, the findings of this study show that the RADEC learning model effectively enhances elementary students' reading literacy. The increased ability to grasp key ideas, draw inferences, and interpret implicit meanings demonstrates that RADEC cultivates a more holistic and contextual reading experience. This aligns with 21st-century education goals, emphasizing critical thinking, collaboration, communication, and creativity (Thornhill-Miller et al., 2023). Consequently, RADEC holds promise as an innovative alternative for strengthening reading literacy in primary education.

Additional analysis of the observation sheets indicates that RADEC also boosts students' self-confidence. As students repeatedly express their understanding during the Explain phase, they become more articulate, more willing to reason logically, and more open in classroom discussions. This finding aligns with research by Zhao and Donald (2016), who found that discussion-based learning enhances communication and reasoning skills.

Furthermore, RADEC positively influences students' social attitudes. Group discussions foster cooperation, responsibility, and respect for differing viewpoints. From the perspective of character education, these values are crucial to cultivate at the elementary level so that students develop strong social foundations for future collaborative learning.

## **CONCLUSION**

The findings of this study indicate that the implementation of the RADEC (Read, Answer, Discuss, Explain, Create) learning model significantly enhances the reading literacy abilities of fifth-grade students at SDN Cijeruk. Students taught using the RADEC model obtained higher posttest scores compared to those who engaged in conventional learning. The effectiveness of RADEC is rooted in its emphasis on active reading, dialogic interaction, and structured critical thinking, which collectively strengthen students' ability to construct meaning from texts in a deeper and more systematic manner.

Beyond improving cognitive learning outcomes, RADEC also contributes to the development of students' affective engagement and learning motivation. Each stage of the RADEC model encourages students to assume an active role in understanding texts, expressing ideas, and collaboratively developing interpretations. This process enables learners not only to receive information but to transform it into meaningful understanding through reflection and joint inquiry. Therefore, RADEC can be recommended as a viable instructional strategy for enhancing reading literacy in elementary schools, particularly in higher-grade levels where textual complexity increases.

Based on the results and discussion, it can be concluded that the application of the RADEC learning model influences not only reading literacy scores but also students' social and emotional competencies. Students become more active, confident, and capable of expressing their interpretations during learning activities. These outcomes align with the principles of the Merdeka Curriculum, which emphasizes student-centered, interactive, and reflective learning processes. With its structured yet flexible framework, RADEC serves as an instructional model that supports the cultivation of critical thinking, communication, and collaboration in the classroom.

Although the findings of this study provide meaningful insight, several limitations should be acknowledged. The research was conducted in a single school with a limited sample size and within a relatively short intervention period, which may restrict the generalizability of the results. Additionally, the study focused solely on reading literacy without exploring potential links to broader literacy components such as digital literacy or media comprehension. These limitations underscore the need for further research involving larger, more diverse populations, as well as longitudinal studies to examine the sustained impact of RADEC on literacy development.

Future research is recommended to explore the integration of RADEC with digital learning tools—such as interactive reading applications or online collaborative platforms—that may strengthen the Read and Answer stages while increasing students' engagement in technology-mediated environments. Furthermore, consistent teacher training and structured professional development are essential for ensuring sustainable implementation of RADEC across learning contexts. These directions may expand the applicability of the RADEC model and support efforts to enhance literacy skills in line with evolving educational demands.

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