

## Enhancing Elementary Students' Reading Comprehension through HOTS-Based RADEC Learning: A Classroom Action Research

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### Abstract

The capacity to interpret, evaluate, and extract meaning from text makes reading comprehension an essential pillar of literacy. However, developing higher-level reading competencies such as creative, critical, and inferential comprehension remains a major hurdle for elementary school children. This investigation sought to bridge this gap among fourth-grade students by utilizing the RADEC (Read–Answer–Discuss–Explain–Create) model underpinned by HOTS. Utilizing the Kemmis and McTaggart Classroom Action Research design, the study was conducted over two cycles with a sample of 30 fourth-graders. Methodological data collection involved reading assessment tests, qualitative observations, field logs, and documentation, which were then evaluated through descriptive statistics and qualitative techniques. The empirical evidence indicated a progressive advancement in every facet of reading comprehension, as evidenced by the average score climbing from 56.25 (pre-cycle) to 83.00 (Cycle II), and mastery rates jumping from 23.3% to 93.3%. Active participation also flourished during the RADEC implementation. Ultimately, these results affirm that combining HOTS with the RADEC model serves as a highly effective approach to boosting multifaceted comprehension and driving student-centered literacy in elementary schools.

Keywords: Classroom action research; Elementary education; HOTS; RADEC learning model; Reading comprehension

## 1 INTRODUCTION

Reading comprehension is globally acknowledged as the bedrock of literacy acquisition and an indispensable prerequisite for lifelong learning. Far beyond the basic mechanical decoding of written symbols, proficient reading requires learners to actively construct meaning, blend their prior knowledge with new textual data, form logical inferences, skeptically appraise arguments, and synthesize novel ideas (Turakuluva, 2025). These multifaceted cognitive processes form the core competencies mandated by modern education, where students must transcend mere data retrieval to analyze, synthesize, and operationalize information within increasingly intricate academic landscapes (Ruan, 2025). Consequently, elevating reading comprehension has become a paramount global educational agenda due to its direct bearing on multidisciplinary academic success and a student's preparedness to function in today's knowledge-centric society.

Despite massive financial and structural investments in literacy frameworks worldwide, international benchmarks continue to signal deep-rooted deficiencies in student reading capabilities. The 2022 PISA results, for instance, illustrated that Indonesian pupils scored significantly below the OECD norm, with only a small fraction proving capable of deciphering, evaluating, and deeply reflecting upon sophisticated texts (Simonacci, Cataldo, Grassia, Marino, & Gallo, 2026). Echoing these worries, the PIRLS evaluations

highlighted that primary-level students routinely stumble when faced with inferential and evaluative tasks, even though they can easily retrieve surface-level facts (Watters & Britton, 2017). These diagnostic outcomes prove that the modern crisis in reading education is not rooted in rudimentary decoding, but rather in the underdevelopment of high-order intellectual processes necessary for critical text engagement.

The stagnation of reading comprehension scores points toward systemic pedagogical shortcomings rather than deficiencies in innate student aptitude (Seidenberg, 2013). In typical primary classrooms, literacy instruction remains dominated by teacher-centric lectures, rote literal questioning, and an overemphasis on finding explicit text data, leaving virtually no room for peer collaboration, interpretive defense, or alternative viewpoint generation (Shrestha, 2020; Yudha et.al., 2025). This conventional pedagogy minimizes reading into an uninspired, mechanical exercise instead of an inquiry-led exploration. As an inevitable consequence, while students may achieve satisfactory literal decoding skills, they remain fundamentally ill-equipped for the inferential logic, critical scrutiny, and creative interpretation required by contemporary curricular standards (Liu, 2012).

The specific classroom environment examined in this research mirrors these systemic national challenges. Baseline observations and diagnostic evaluations conducted within a fourth-grade cohort that the pupils' reading comprehension fell short of prescribed benchmarks across four key areas: literal, inferential, critical, and creative understanding. Although the students successfully extracted explicit details, they faced immense hurdles when attempting to identify core themes, build valid inferences, assess textual credibility, or formulate original arguments. Furthermore, field notes confirmed low student verbal participation, an over-reliance on teacher directions, and a distinct lack of opportunities to engage in evidence-based reasoning, exposing a sharp rift between intended curriculum ideals and real-world teaching practices.

Overcoming these deep-seated literacy barriers demands an innovative instructional methodology that fuses reading tasks with high-level cognitive stimulation. One promising framework designed to bridge this gap is the Read-Answer-Discuss-Explain-Create (RADEC) learning model formulated by Sopandi (Pratama, Sopandi, Hidayah, Trihastuti, 2020; Ulfa, Oktaviana, Hasanah, 2024). In stark contrast to traditional literacy techniques, RADEC partitions the learning journey into five progressive phases that systematically guide students to read autonomously, respond to analytical prompts, collaborate with peers, articulate their rationale, and produce unique educational outputs (Novianti, Latifah, & Kashefian-Naeeni, 2025). Grounded deeply in constructivist theory, this model champions active knowledge building through discovery, peer interaction, communication, and self-reflection, thereby morphing reading from an isolated decoding chore into a collaborative intellectual venture (Bennet & Turner, 2026).

A review of existing literature demonstrates that the RADEC model consistently boosts academic performance, scientific literacy, conceptual clarity, critical analysis, articulation skills, and problem-solving capacities across diverse learning environments (Sofira, Rahayu, & Trisnowati, 2025). These historical studies validate that RADEC encourages active student ownership of learning and sharpens high-order cognitive processing via its structured execution (Lami'ah, Rufiana, Mardhatillah, Mashufafah, & Arifin, 2026). However, the vast majority of these inquiries have focused heavily on the fields of science and mathematics or general academic metrics, leaving its specific impact on reading comprehension as a multidimensional construct largely unexamined (Fatikhin, Budiyanto, & Qosyim, 2024). Additionally, previous researchers have mostly leaned on experimental or quasi-experimental frameworks, prioritizing static post-test scores over the fluid evolution of reading skills during live classroom interventions.

Another significant theoretical gap in previous research lies in how reading comprehension itself has been conceptualized and quantified. Most empirical studies treat reading competency as a singular, monolithic test score, ignoring the reality that different layers of comprehension develop at entirely different speeds and require unique instructional scaffolding. True reading comprehension is a composite of distinct cognitive processes—ranging from basic literal grasp and inferential deduction to critical critique and

creative thought generation (Shihab, 2011; Paige, Rupley, & Ziglari, 2024). Therefore, evaluating how a specific teaching intervention influences each distinct layer offers far deeper pedagogical insights than aggregate data alone, yet this multidimensional perspective remains vastly under-researched within primary-school literacy literature.

This study explicitly addresses these academic omissions by deploying a Higher-Order Thinking Skills (HOTS)-infused RADEC learning model through Classroom Action Research to map the developmental trajectory of fourth-grade students across literal, inferential, critical, and creative reading domains. Shifting away from the narrow focus of prior research, this study evaluates not only numerical learning outcomes but also tracks qualitative shifts in student classroom dialogue and cognitive stamina across successive action cycles. Consequently, this inquiry offers dual benefits: it expands the empirical body of work surrounding RADEC in elementary language arts, and it delivers a concrete instructional blueprint that marries HOTS with multidimensional reading targets to satisfy the competency-driven mandates of modern primary education.

Ultimately, by documenting how the RADEC framework enhances distinct cognitive tiers of literacy, this research bridges the gap between theoretical constructivism and concrete classroom application. It provides educators with a scalable, practical methodology to replace passive reading habits with active, inquiry-driven textual analysis. The insights gleaned from this cyclical intervention will serve as a valuable reference point for curriculum designers and elementary educators striving to cultivate a generation of critical thinkers who can successfully navigate the information-dense landscape of the twenty-first century.

## 2 RESEARCH METHODS

This research utilized a Classroom Action Research (CAR) framework adopting the cyclical design of Kemmis and McTaggart, which encompasses four recurring phases: planning, acting, observing, and reflecting. The study spanned two action cycles. Every cycle consisted of two instructional sessions followed by a single evaluation period. Reflections performed at the conclusion of each cycle served to pinpoint pedagogical shortcomings and devise corrective measures for the next phase (Kemmis, McTaggart, & Nixon, 2013). This iterative process allowed for ongoing optimization of teaching practices while simultaneously tracking developments in pupil reading comprehension and interactive engagement.

The study population comprised 30 fourth-grade pupils, balanced equally between 15 boys and 15 girls, selected via total sampling since the intervention took place within a single, intact classroom. This specific class was selected due to initial evaluations showing that the students' reading comprehension fell short of the school's Minimum Learning Mastery Criterion of 75, with pronounced deficiencies in inferential, critical, and creative understanding. Prior to commencing the intervention, a diagnostic reading assessment was administered to document baseline scores.

The pedagogical intervention centered on the execution of the Higher-Order Thinking Skills (HOTS)-oriented Read-Answer-Discuss-Explain-Create (RADEC) instructional model. In the Read phase, students reviewed assigned texts autonomously prior to class. During the Answer stage, they independently tackled HOTS-centered prompts designed to stimulate critical and interpretive thinking. The Discuss phase fostered peer collaboration via small-group interactions, allowing pupils to debate ideas and co-construct meaning. In the Explain stage, students presented and defended their interpretations using textual evidence. Lastly, during the Create phase, learners generated meaningful artifacts, including summaries, alternative story endings, concept maps, or contextual solutions derived from the texts. Pedagogical strategies in Cycle II were modified based on Cycle I reflections, focusing on more directed teacher scaffolding, refined inquiry methods, and optimized collaborative structures.

Reading comprehension capacities were measured using a researcher-constructed test containing 20 items distributed across four core literacy dimensions: literal, inferential, critical, and creative comprehension. The design of this assessment was guided by Bloom's Revised Taxonomy and standard primary-level literacy goals, with the underlying framework detailed in Table 1.

Table 1. Blueprint of the Reading Comprehension Instrument

| Reading Dimension         | Indicator                                                     | Cognitive Level | Item Type       |
|---------------------------|---------------------------------------------------------------|-----------------|-----------------|
| Literal comprehension     | Identify explicitly stated information in the text            | C1–C2           | Multiple-choice |
| Inferential comprehension | Draw conclusions and infer implicit meanings                  | C3–C4           | Multiple-choice |
| Critical comprehension    | Evaluate arguments and the credibility of textual information | C5              | Essay           |
| Creative comprehension    | Generate new ideas or alternative solutions based on the text | C6              | Essay           |

To track the execution of the pedagogical framework, a classroom observation protocol was structured around the five instructional steps of the RADEC model. This tool focused specifically on measuring pupil participation during each phase and was completed through a joint effort between the researcher and a partner teacher.

Table 2. Indicators of Students' Learning Activities

| RADEC Stage | Observation Indicator                                             |
|-------------|-------------------------------------------------------------------|
| Read        | Reads the assigned text independently before classroom discussion |
| Answer      | Responds individually to HOTS-oriented questions                  |
| Discuss     | Participates actively in collaborative group discussions          |
| Explain     | Presents and justifies ideas using textual evidence               |
| Create      | Produces meaningful products based on text comprehension          |

The action research was deemed a success when a minimum of 85% of the class achieved a score of 75 or higher, coupled with demonstrable growth across all four target dimensions of reading comprehension alongside enhanced engagement throughout the five phases of the RADEC system.

### 3 RESULT AND DISCUSSION

#### 3.1 Result

The implementation of the RADEC (Read–Answer–Discuss–Explain–Create) instructional framework sparked a steady rise in students' reading comprehension over the course of the action research cycles. Initial diagnostic data revealed that a mere 33% of the cohort met the baseline mastery threshold, highlighting widespread difficulties in text interpretation. Students struggled significantly with isolating primary themes, tying supporting details together, and rephrasing text concepts in their own vocabulary. These initial outcomes confirm that traditional reading approaches failed to give learners the necessary agency to actively construct meaning while engaging with texts.

Following the introduction of the HOTS-driven RADEC model in Cycle I, the mastery rate climbed to 44%, marking an encouraging initial shift in comprehension performance. While this numerical growth was measured, qualitative observations captured distinct modifications in classroom dynamics. Pupils displayed a stronger willingness to engage in peer dialogues, showed deeper curiosity toward the reading materials, and answered

teacher queries with growing self-assurance. Even so, a segment of the class remained reliant on direct teacher prompts during the Explain and Create phases, proving they were still adjusting to the student-centered expectations of the RADEC system.

Post-cycle reflections for Cycle I highlighted several lingering pedagogical bottlenecks, such as imbalanced student contributions during group tasks, inquiry methods that fell short of sparking deeper analysis, and constrained windows for students to expand on their thoughts autonomously. To remedy this, Cycle II introduced deliberate tactical adjustments: more structured teacher scaffolding, deliberately heterogeneous group pairings, more robust HOTS-centered prompts, and consistent formative feedback throughout the lesson. These modifications reinforced each phase of the RADEC framework, allowing students to take a more dominant role in decoding and constructing textual meaning.

The instructional corrections deployed in Cycle II yielded major breakthroughs in comprehension outcomes. Every student (100%) successfully hit the minimum mastery target, proving that the refined framework effectively catered to learners across all academic levels. Moreover, students exhibited heightened poise when articulating their perspectives, collaborated with greater energy, and demonstrated sharper accuracy in extracting both surface-level facts and hidden inferences. Achieving full mastery confirms that RADEC managed to shift reading lessons away from passive reception toward active inquiry, teamwork, and knowledge creation.

The spread of student scores in Cycle II underscores the overall efficacy of the intervention. Out of the eighteen participating pupils, ten (55.6%) reached the Very Good tier by earning scores between 85 and 100, while the other eight (44.4%) placed in the Good category with scores from 70 to 84. Crucially, no student fell into the Fair, Poor, or Very Poor brackets. This distribution proves that the model did not just boost the class average, but created an equitable learning curve across the entire group, showing that the pedagogical strengths of RADEC supported struggling readers rather than just accelerating high-performing ones.

| Table 3. Summary of Student Learning Mastery Across Research Stages |                            |            |
|---------------------------------------------------------------------|----------------------------|------------|
| Research Stage                                                      | Students Achieving Mastery | Percentage |
| Initial Assessment                                                  | 6                          | 33%        |
| Cycle I                                                             | 8                          | 44%        |
| Cycle II                                                            | 18                         | 100%       |

The upward trajectory detailed in Table 1 confirms a sustained advancement in reading comprehension during the study, validating that the methodical adjustments made between the action cycles were directly responsible for the enhanced academic outcomes.

### 3.1 Discussion

The present findings indicate that the HOTS-based RADEC learning model effectively enhanced elementary students' reading comprehension through a systematic sequence of cognitive and collaborative learning activities. Unlike conventional reading instruction that frequently emphasizes teacher explanation and literal questioning, RADEC positions students as active constructors of meaning. The progressive increase in mastery learning from 33% during the initial assessment to complete mastery in Cycle II suggests that meaningful improvements in reading comprehension emerge when students are actively involved in interpreting, discussing, explaining, and reconstructing textual information rather than passively receiving knowledge from the teacher.

As shown in Figure 1, students' reading comprehension improved consistently throughout the implementation of the HOTS-based RADEC learning model.

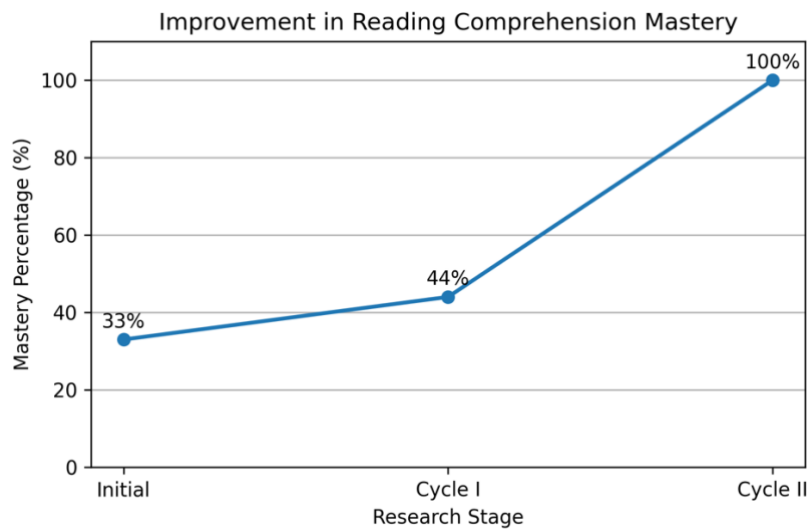


Figure 1. Improvement in Reading Comprehension Mastery

The improvement can first be explained through the instructional characteristics of the Read stage, which encourages students to explore texts independently before classroom interaction begins. Independent reading activates learners' prior knowledge and facilitates schema construction, enabling students to establish initial representations of textual meaning before engaging in collaborative activities. This finding supports constructivist perspectives that meaningful learning occurs when new information is integrated with existing cognitive structures rather than transmitted directly from teacher to student (Agra, Formiga, Oliveira, Costa, Fernandes, & Nóbrega, 2019).

The Answer stage further strengthened students' comprehension by encouraging them to respond individually to higher-order questions before participating in group discussions. This activity required students to organize their thoughts, identify key information, establish relationships among ideas, and formulate preliminary interpretations independently. Consequently, classroom discussions became opportunities to compare reasoning processes rather than merely exchange factual answers. Such learning experiences stimulate analytical thinking and metacognitive regulation, which are essential components of proficient reading comprehension (Nasab & Motlagh, 2015).

A particularly important contribution of the RADEC model emerged during the Discuss and Explain stages. Collaborative dialogue enabled students to negotiate meaning, clarify misconceptions, defend interpretations using textual evidence, and refine their understanding through peer interaction. These activities correspond closely with Vygotsky's social constructivist theory, which emphasizes that higher cognitive functions develop through social interaction before becoming internalized at the individual level (Shibina & Vidyapeetham, 2022). As students articulated and defended their interpretations, they gradually developed deeper comprehension and greater confidence in expressing ideas.

The Create stage represents the highest level of cognitive engagement within the RADEC framework because students are required to transform textual understanding into meaningful products. Producing summaries, alternative responses, or contextual solutions encourages learners not only to understand texts but also to reorganize information creatively according to their own perspectives. Such activities align with the highest level of Bloom's Revised Taxonomy—creating—which reflects the integration of comprehension, analysis, evaluation, and creative thinking into a unified learning process.

Another noteworthy finding concerns the progressive refinement of instructional implementation across research cycles. The substantial improvement observed in Cycle II was not solely attributable to repeated practice but also resulted from systematic reflection

and instructional modification. Enhanced teacher scaffolding, more effective questioning strategies, and improved collaborative learning structures created richer learning opportunities for students. This finding demonstrates one of the major strengths of Classroom Action Research, namely its capacity to continuously improve instructional quality through iterative cycles of planning, implementation, observation, and reflection (Adhikari, 2024; Nurmatova & Altun, 2023).

The findings are consistent with previous studies reporting that the RADEC model enhances students' critical thinking, conceptual understanding, scientific literacy, and learning engagement. However, the present study extends previous evidence by demonstrating that RADEC is equally effective in improving elementary students' reading comprehension. More importantly, this study illustrates that improvements in literacy emerge not merely from increased reading practice but from integrating reading activities with inquiry, collaboration, communication, and knowledge creation throughout the learning process (Harvina, Taufiq, & Ali, 2026, Sugiarti, Nurulpaik, Sopandi, & Rizkiah, 2025).

From a pedagogical perspective, the findings suggest that elementary literacy instruction should move beyond traditional comprehension exercises toward learning environments that promote active participation and higher-order thinking. Reading comprehension develops more effectively when students are encouraged to analyze, question, discuss, explain, and create rather than simply locate explicit information within texts. Consequently, the HOTS-based RADEC model offers a practical instructional framework that aligns with the competency-oriented objectives of the Merdeka Curriculum while simultaneously fostering critical thinking, collaboration, communication, and creativity among elementary school students.

## 4 CONCLUSION

The findings of this classroom action research demonstrate that the implementation of the Higher-Order Thinking Skills (HOTS)-based Read-Answer-Discuss-Explain-Create (RADEC) learning model effectively improved fourth-grade students' reading comprehension. The percentage of students achieving the minimum mastery criterion increased progressively from 33% in the initial assessment to 44% in Cycle I and reached 100% in Cycle II, indicating that the iterative refinement of instructional practices successfully enhanced students' comprehension abilities. The improvement was accompanied by greater classroom participation, increased confidence in expressing ideas, and stronger abilities to identify main ideas and supporting details within reading texts. These findings suggest that RADEC provides a systematic instructional framework that promotes active learning, collaborative knowledge construction, and higher-order thinking, thereby supporting meaningful literacy development in elementary education.

This study contributes to the growing body of research on student-centered literacy instruction by providing empirical evidence that integrating RADEC with HOTS-oriented learning activities can strengthen reading comprehension in elementary school classrooms. From a practical perspective, the model offers an effective instructional alternative for teachers seeking to improve students' literacy competencies while fostering communication, collaboration, critical thinking, and creativity in accordance with the objectives of the Merdeka Curriculum. Nevertheless, this study was limited to a single classroom with a relatively small number of participants. Future research is therefore recommended to involve larger and more diverse samples, employ experimental or longitudinal research designs, and examine the integration of RADEC with digital learning technologies to further explore its long-term effectiveness in enhancing elementary students' literacy development.

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