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Examining reading comprehension and critical thinking skills among fourth-grade elementary school students

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Abstract

Background: Reading comprehension and critical thinking are fundamental competencies that support students' literacy development and learning across subjects. Nevertheless, many elementary school students still experience difficulties in interpreting texts and evaluating information critically.
Aims: This study aims to examine the reading comprehension and critical thinking abilities of fourth-grade elementary school students in Indonesian language learning.
Method: The study employed a descriptive quantitative design. Participants consisted of 37 fourth-grade students from a public elementary school in Serang City selected through purposive sampling. Data were collected using an essay-based test developed according to indicators of reading comprehension and critical thinking, including identifying problems, comparing arguments, proposing solutions, generating ideas, and expressing opinions. The instrument was validated through expert judgment to ensure content suitability. The collected data were analyzed using descriptive statistical techniques such as mean scores, percentages, and categorization of students' ability levels.
Results: The analysis revealed that students' critical thinking skills generally fell into the moderate category with an average score of 60.14 out of 100. Students' scores ranged from 30 to 80, with both the median and mode recorded at 65, indicating that most scores were concentrated around this value. In terms of category distribution, 21.62% of students were classified as low, 64.86% as moderate, and 13.51% as high.
Conclusion: The findings suggest that although students have developed basic critical thinking abilities, their analytical reasoning and argumentation skills remain limited. Therefore, instructional strategies that encourage deeper reading, discussion, and reasoning activities are needed to strengthen students' critical thinking development.

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INTRODUCTION

Reading comprehension is widely recognized as a fundamental skill that supports students' learning across different subjects in elementary education (Parker et al., 2022; Smith et al., 2021). At this stage of schooling, reading is not limited to decoding written symbols but involves understanding ideas, interpreting information, and connecting meanings within a text (Trasmundi et al., 2021; Wyse & Hacking, 2024). Students who develop strong reading comprehension abilities are generally better prepared to construct knowledge independently and engage more actively in classroom learning.

Despite its importance, developing reading comprehension skills among elementary school students remains a continuing challenge (Medranda-Morales et al., 2023; Smith et al., 2023). Several

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studies and international literacy assessments report that many students still encounter difficulties when interpreting complex information, identifying implicit meanings, and drawing logical conclusions from written texts (Duke & Cartwright, 2021; Kranz et al., 2023). These findings indicate that students' literacy development requires greater attention, particularly in strengthening their ability to analyze and interpret textual information.

In addition to reading comprehension, critical thinking has become one of the key competencies emphasized in contemporary education (Medranda-Morales et al., 2023; Paige et al., 2024). Critical thinking allows students to examine information carefully, evaluate different perspectives, and formulate logical arguments based on available evidence (Dwyer, 2023; Vincent-Lancrin, 2023). As education increasingly emphasizes higher-order thinking skills, students are expected not only to understand information but also to question, analyze, and interpret it critically.

However, opportunities for students to practice critical thinking in elementary school classrooms are often limited (Liang & Fung, 2021). Learning activities frequently emphasize recalling factual information rather than encouraging students to analyze ideas, justify their reasoning, or develop alternative viewpoints (Elaby et al., 2022). Consequently, students may be able to identify information in texts but still experience difficulties when required to evaluate arguments or construct well-supported explanations.

Given the close relationship between reading comprehension and critical thinking, literacy learning should provide opportunities for students to interpret texts critically and reflect on the ideas presented in them (Elaby et al., 2022). Understanding how these two abilities are demonstrated by elementary school students is therefore important for describing the current condition of students' literacy-related cognitive skills and identifying areas that still require improvement.

Reading comprehension is generally understood as a complex cognitive process that involves constructing meaning from written texts (Duke & Cartwright, 2021). According to Grabe and Stoller, effective reading comprehension requires readers to identify key ideas, understand vocabulary within context, draw inferences, and integrate information across different parts of a text. These processes indicate that reading is an active interaction between the reader and the text rather than a passive decoding activity. Critical thinking, meanwhile, refers to the ability to analyze information logically, evaluate arguments, and formulate reasoned conclusions. Facione describes critical thinking as a set of higher-order cognitive skills consisting of interpretation, analysis, evaluation, and inference (Ma, 2023). Similarly, Fisher argues that critical thinking develops through learning experiences that encourage questioning, reasoning, and reflective discussion. Previous research has also suggested a meaningful relationship between reading comprehension and critical thinking (Gerlich, 2025; Medranda-Morales et al., 2023). Students who demonstrate deeper understanding of texts tend to be more capable of interpreting information critically and constructing logical arguments. Consequently, literacy learning that integrates reading with analytical reasoning activities is considered an important approach for fostering higher-order thinking skills among students.

Although reading comprehension and critical thinking have received considerable attention in educational research, many studies still examine these competencies independently (Anggraeni et al., 2023). Research focusing on reading comprehension often concentrates on students' ability to locate and understand textual information, while studies on critical thinking tend to explore reasoning skills in broader academic contexts without explicitly linking them to literacy learning (Le & Nguyen, 2024). Furthermore, a significant number of previous studies emphasize instructional interventions aimed at improving critical thinking through specific learning models (Bhuttah et al., 2024; Rivas et al., 2022). While such studies provide valuable insights into teaching strategies, relatively fewer investigations attempt to describe the existing condition of students' reading comprehension and critical thinking abilities before instructional interventions are applied

(Bakhtiari Moghadam et al., 2023). As a result, empirical descriptions of how these two competencies appear together in elementary school students remain limited. Another limitation concerns the lack of detailed analysis of how students demonstrate reasoning when responding to reading materials (Ballock & McQuitty, 2023; Darwin et al., 2024). Understanding how students interpret texts, compare arguments, and express opinions can provide important insights into their cognitive processes during literacy learning. Therefore, examining reading comprehension and critical thinking simultaneously is necessary to provide a clearer picture of students' literacy-related reasoning abilities at the elementary school level. Thus, this study addresses this gap by providing an integrated analysis of reading comprehension and critical thinking skills among fourth-grade elementary school students. By examining these abilities together, the study offers empirical evidence of students' reasoning patterns when interpreting texts and responding to literacy-based tasks.

Understanding the current level of students' reading comprehension and critical thinking abilities is essential for improving literacy learning practices in elementary schools. By identifying how students interpret textual information and construct reasoning when responding to reading tasks, educators can gain insights into both the strengths and limitations of students' literacy development (Hossain, 2024). Such information can help teachers design learning activities that encourage deeper comprehension, more reflective thinking, and more meaningful engagement with reading materials. In this way, examining these competencies contributes not only to describing students' abilities but also to supporting the development of instructional strategies that promote higher-order thinking in elementary education.

Based on the issues discussed above, this study aims to examine the reading comprehension and critical thinking skills of fourth-grade elementary school students in Indonesian language learning. Specifically, the study seeks to describe students' ability levels and to identify patterns in how they interpret reading texts and express their reasoning when responding to given tasks.

METHOD

Research Design

This research adopted a descriptive quantitative design to explore the reading comprehension and critical thinking skills of fourth-grade elementary school students. The use of a descriptive approach was considered appropriate because the study did not aim to evaluate the effectiveness of a specific instructional intervention. Instead, the research focused on describing the current level of students' abilities based on the results of a structured assessment. Through this design, numerical data obtained from students' responses could be analyzed to reveal patterns in their literacy-related cognitive skills. The descriptive quantitative approach therefore allowed the researcher to present a systematic overview of how students demonstrate reading comprehension and critical thinking when responding to literacy tasks.

Participants

The participants involved in this study were fourth-grade students from a public elementary school located in Serang City, Indonesia. The participants were selected through purposive sampling, a technique that allows researchers to choose subjects who meet specific criteria relevant to the objectives of the study. A total of 37 students participated in the research. These students represented a typical elementary classroom where reading activities form part of the Indonesian language curriculum. Their participation provided an opportunity to observe how students at this level demonstrate reading comprehension and critical thinking skills when interacting with written texts.

Research Procedure

The research was carried out through several stages to ensure that the data collected accurately reflected students' abilities. The process began with identifying the research focus and formulating the research questions that guided the study. Once the research direction had been determined, the participants who met the study criteria were selected. Following the participant selection stage, the researcher administered an assessment designed to evaluate students' reading comprehension and critical thinking skills. During this stage, students were asked to read a text and respond to several questions that required them to interpret information, recognize key ideas, and express their reasoning. After all responses were collected, the data were organized and prepared for analysis. The researcher then examined the results to identify patterns in students' answers and determine the overall level of their abilities. The final stage involved interpreting the results and formulating conclusions based on the findings of the study.

The sequence of the research process is illustrated in Figure 1.

Figure 1. Research Methodology Flowchart

The flowchart summarizes the main stages of the research, including identifying the research question, selecting participants, administering the assessment, analyzing the collected data, drawing conclusions, and disseminating the findings.

Instruments

The instrument used in this research was an essay-based test developed to measure students' reading comprehension and critical thinking skills. The questions were designed to capture different aspects of students' literacy abilities when interacting with written texts. For reading comprehension, the instrument focused on several indicators such as identifying the main idea of a text, understanding vocabulary in context, drawing inferences, and summarizing information. In addition, several questions were constructed to examine students' critical thinking skills, including their ability to recognize problems, compare ideas, generate possible solutions, and express opinions supported by logical reasoning. Before being used in the classroom, the instrument was reviewed through an expert validation process. This step ensured that the test items were appropriate for the cognitive level of fourth-grade students and aligned with the intended indicators of reading comprehension and critical thinking.

Data Analysis

The data obtained from students' responses were analyzed using descriptive statistical techniques. The analysis aimed to describe the distribution of students' scores and to identify general patterns in their abilities. Several statistical measures were used in this process, including the calculation of the mean score and the examination of the range of students' results. To facilitate

interpretation, students' scores were grouped into three categories: low, moderate, and high. This categorization allowed the researcher to describe the overall profile of students' reading comprehension and critical thinking skills. The results of the analysis were then interpreted to provide a clearer understanding of how elementary school students demonstrate reasoning when responding to reading tasks.

RESULTS AND DISCUSSION

Results

This section presents the findings related to students' critical thinking performance based on the assessment administered to fourth-grade elementary school students. The results are described using descriptive statistics, followed by an analysis of the distribution of students' ability levels and a qualitative interpretation of students' responses.

Descriptive Statistics of Students' Critical Thinking Skills

The analysis began by examining the descriptive statistics of students' scores on the critical thinking assessment. A total of 37 students participated in the test, with the highest possible score set at 100. The analysis showed that students' scores ranged from 30 to 80, indicating variation in students' ability to respond to tasks that required reasoning and interpretation.

The average score obtained by students was 60.14, suggesting that overall critical thinking ability was situated within the moderate level. The median and mode were both 65, which indicates that a considerable number of students obtained scores around this value. In addition, the standard deviation of 13.72 suggests that the variation in students' scores was moderate, meaning that most students' scores were relatively close to the average.

Table 1. Presents the summary of the descriptive statistical results.

Statistic	Value
Number of Students	37
Minimum Score	30
Maximum Score	80
Mean	60.14
Median	65
Mode	65
Standard Deviation	13.72
First Quartile (Q1)	55
Third Quartile (Q3)	65

The quartile values provide additional insight into the distribution of students' scores. The first quartile (Q1 = 55) indicates that approximately one quarter of the students obtained scores below 55, while the third quartile (Q3 = 65) shows that the majority of scores were concentrated between 55 and 65. This concentration suggests that many students demonstrated a similar level of reasoning ability.

Distribution of Students' Critical Thinking Levels

To facilitate interpretation, students' scores were further categorized into three levels of critical thinking ability: low, moderate, and high. These categories were determined based on the following score ranges:

- Low: score below 55
- Moderate: score between 55 and 74
- High: score 75 and above

The distribution of students across these categories is presented in Table 2.

Table 2. Distribution of Students' Critical Thinking Skill Levels

Category	Score Range	Number of Students	Percentage
Low	< 55	8	21.62%
Moderate	55 – 74	24	64.86%
High	≥ 75	5	13.51%
Total	–	37	100%

The results indicate that most students (64.86%) were categorized at the moderate level. Meanwhile, 21.62% of students were classified as having low critical thinking ability, and 13.51% demonstrated higher levels of reasoning skills. To provide a clearer representation of these findings, the distribution of students' critical thinking levels is illustrated in Figure 2.

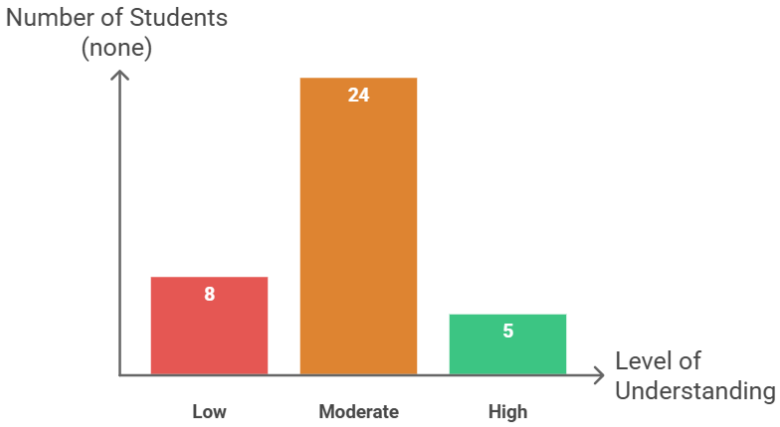

Figure 2. Distribution of Students' Critical Thinking Skill Levels

As shown in Figure 2, the moderate category contains the largest number of students, indicating that many learners have begun to demonstrate basic reasoning abilities. However, only a small proportion of students showed a higher level of critical thinking when responding to the assessment tasks.

Qualitative Description of Students' Responses

A closer examination of students' answers revealed noticeable differences in reasoning patterns across the three ability levels. Students in the low category generally provided short and limited responses. Many of them had difficulty identifying the main issue presented in the text and often expressed their opinions without providing clear explanations or supporting arguments. Students in the moderate category, which represented the majority of the participants, were typically able to identify the main problem and provide relevant responses. Nevertheless, their explanations often remained brief and lacked deeper analysis. Their reasoning tended to be straightforward and did not yet demonstrate fully developed arguments. In contrast, students classified in the high category demonstrated more structured and reflective thinking. Their responses often included clearer explanations, logical reasoning, and ideas that were closely connected to the context of the problem. These students were also more capable of presenting arguments that were supported by relevant information from the text. Overall, these findings indicate that while many students have begun to develop basic critical thinking abilities, only a small number of students demonstrate advanced analytical reasoning when interpreting and responding to reading materials.

Discussion

The results of this study provide an overview of how fourth-grade elementary school students demonstrate reading comprehension and critical thinking skills when responding to literacy tasks. The overall findings indicate that most students exhibit a moderate level of critical

thinking ability, as reflected in the average score obtained in the assessment. This condition suggests that students are generally able to understand the information presented in reading texts and respond to questions related to the content (Bogaerds-Hazenberg et al., 2021; McCarthy & McNamara, 2021). However, their ability to analyze information more deeply and construct well-developed reasoning is still developing (Qin et al., 2024).

A closer examination of the descriptive statistical results further clarifies this pattern. The similarity between the median and mode scores indicates that a considerable number of students achieved scores within a similar range, suggesting a relatively consistent level of ability among the participants (Yavuz et al., 2025). This distribution implies that the students share comparable levels of reasoning skills, with most of them demonstrating basic analytical abilities but not yet reaching a more advanced level of critical evaluation (Loyens et al., 2023).

These findings reflect the nature of cognitive development at the elementary school level (Jones & Davison, 2021). At this stage, students are still in the process of learning how to organize their thoughts, interpret information, and justify their opinions logically (Sachdeva & Eggen, 2021). Although they are capable of identifying important ideas within a text, transforming that understanding into well-structured reasoning often requires further practice and guidance. As a result, it is understandable that the majority of students fall within the moderate category rather than the higher category of critical thinking ability.

Differences in reasoning patterns also became evident when students' responses were examined more closely. Students categorized at the low level of critical thinking generally produced brief and incomplete answers (Dellantonio & Pastore, 2021). In many cases, they struggled to identify the central problem presented in the reading material (Eberle & Hobrecht, 2021). Their responses tended to repeat information from the text without offering additional explanation or interpretation, indicating limited engagement with the ideas presented.

Students classified in the moderate category demonstrated a more satisfactory level of comprehension. Most of them were able to recognize the main issue discussed in the text and provide answers that were relevant to the given questions (Singhal et al., 2025). Nevertheless, their explanations often remained relatively simple and lacked deeper elaboration (Grimmelikhuijsen, 2023). While these students showed an emerging ability to analyze information, their reasoning frequently stopped at a basic level and did not yet extend into more complex argumentation.

In contrast, the responses produced by students in the high category displayed clearer evidence of analytical thinking. These students were generally able to explain their ideas in a more structured manner and support their answers with logical reasoning (Golden, 2023). They also appeared more capable of connecting information from the text with their own understanding of the topic (Isoaho et al., 2021). Although the number of students in this category was relatively small, their responses illustrate the potential for stronger critical thinking when students are able to engage more actively with reading materials.

The differences observed among the three categories also highlight the influence of classroom learning experiences. In many elementary classrooms, reading activities often emphasize identifying explicit information from texts rather than encouraging students to interpret ideas critically (Lombardi et al., 2021). When students are primarily asked to recall facts, opportunities to practice reasoning, evaluating arguments, and expressing independent opinions may become limited (Reznitskaya & Wilkinson, 2021). Consequently, the development of critical thinking skills may progress more slowly.

Considering these findings, it becomes important for educators to design learning activities that encourage deeper engagement with reading materials (Dadandı & Dadandı, 2022). Instruction that integrates discussion, questioning, and reflective analysis can help students move beyond simply understanding the content of a text (Howell, 2021). Through such learning experiences, students can

gradually develop stronger reasoning skills, allowing reading comprehension and critical thinking to grow simultaneously within the literacy learning process.

Implications

The findings of this study offer several insights for the improvement of literacy learning in elementary school contexts. The results indicate that most fourth-grade students demonstrate a moderate level of reading comprehension and critical thinking ability. This suggests that students are generally capable of understanding the basic content of a text, yet their ability to interpret information more critically and articulate well-supported reasoning is still developing. For classroom practice, this finding highlights the importance of designing learning activities that encourage students to engage with texts more actively. Rather than focusing solely on identifying factual information, teachers may incorporate discussion-based reading, open-ended questions, and reflective dialogue that invite students to explain their thinking. Such approaches can gradually support the development of analytical reasoning and help students move from basic comprehension toward deeper understanding of textual information.

Limitations

Despite the insights generated by this study, several limitations need to be considered when interpreting the findings. The study was conducted with a relatively small group of participants drawn from a single elementary school, which means that the results may not fully represent the broader population of elementary students. In addition, the data were obtained from a written assessment designed to measure students' reading comprehension and critical thinking responses. While this approach provides useful information about students' written reasoning, it may not entirely capture the full range of cognitive processes that occur when students engage with reading tasks. Moreover, the study focused primarily on describing students' ability levels rather than examining the specific instructional practices that may influence the development of these skills. For these reasons, the findings should be viewed as an initial exploration of students' literacy-related reasoning abilities rather than a comprehensive explanation of how such abilities develop.

Suggestions

Future studies may extend the present findings by exploring reading comprehension and critical thinking skills in a wider range of educational settings. Research involving larger samples from multiple schools could provide a broader perspective on how these abilities develop across different learning environments. In addition, further investigations could focus on examining instructional strategies that encourage students to engage more deeply with reading materials. Studies that combine quantitative assessment with qualitative approaches, such as classroom observation or analysis of students' verbal explanations, may offer richer insights into how students interpret texts and construct their reasoning. Such research would contribute to a deeper understanding of how literacy instruction can support the development of critical thinking skills during the early years of schooling.

CONCLUSION

This study explored the reading comprehension and critical thinking skills of fourth-grade elementary school students through an assessment designed to capture how learners interpret texts and express their reasoning. The findings reveal that most students demonstrate a moderate level of ability, indicating that they are generally capable of understanding the main ideas of a reading passage and responding to related questions, yet their capacity to analyze information and present well-developed arguments is still evolving. Differences in students' responses also suggest that reasoning skills vary considerably among learners, with some students providing only brief

explanations while others are able to articulate more structured and logical ideas. These results highlight the importance of learning experiences that encourage students to engage more thoughtfully with reading materials, particularly through activities that invite discussion, reflection, and explanation of ideas. By creating opportunities for students to interpret texts more actively and justify their opinions, literacy instruction can contribute not only to improving reading comprehension but also to strengthening critical thinking during the early stages of schooling.

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AUTHOR CONTRIBUTIONS STATEMENT

Husnul Hotimah contributed to the conceptualization of the study, data collection, data analysis, and the preparation of the initial manuscript draft. Atep Sujana provided supervision throughout the research process and contributed to the development of the research design and methodological framework. Encep Supriatna participated in refining the research instruments, validating the analytical approach, and reviewing the manuscript critically for important intellectual content. Iik Nurulpaik assisted in data interpretation, manuscript editing, and the final revision of the article prior to submission.

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