**Attadib: Journal of Elementary Education**
Web Jurnal: https://www.jurnalfai-uikabogor.org/index.php/attadib
Edisi : Vol.8 No.3 Desember 2024

# Elementary School Students' Critical Thinking Abilities in Relation to Their Language and Reasoning Abilities

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***Abstract***

*Critical thinking skills in science learning are important competencies for elementary school students in facing the challenges of the 21st century. This study aims to describe the critical thinking skills of grade V students in science learning at MI Miftahul Huda Banyuwangi. The method used was descriptive qualitative with a phenomenological approach. The results showed that 18 out of 26 students obtained a percentage of <50%, which included a relatively weak category. The conclusions of this study are: (1) The critical thinking skills of fifth grade students in learning science are influenced by internal and external factors. Internal factors include student characteristics, reading ability, learning motivation, writing ability, and student habits. External factors include the organization of learning by teachers and habituation carried out by teachers to students. (2) The critical thinking skills of fifth grade students in science learning are relatively weak. (3) Low critical thinking skills are caused by students' low language and reasoning skills.*

**Keywords:** Critical Thinking, Elementary School, Language and Reasoning Abilities

**Abstrak**

Keterampilan berpikir kritis dalam pembelajaran IPA merupakan kompetensi penting bagi siswa sekolah dasar dalam menghadapi tantangan abad ke-21. Penelitian ini bertujuan untuk mendeskripsikan keterampilan berpikir kritis siswa kelas V pada pembelajaran IPA di MI Miftahul Huda Banyuwangi. Metode yang digunakan adalah deskriptif kualitatif dengan pendekatan fenomenologi. Hasil penelitian menunjukkan bahwa 18 dari 26 siswa memperoleh persentase <50% yang termasuk kategori kurang. Kesimpulan dari penelitian ini adalah: (1) Kemampuan berpikir kritis siswa kelas V SD dalam pembelajaran IPA dipengaruhi oleh faktor internal dan eksternal. Faktor internal

meliputi karakteristik siswa, kemampuan membaca, motivasi belajar, kemampuan menulis, dan kebiasaan siswa. Faktor eksternal meliputi pengorganisasian pembelajaran oleh guru dan pembiasaan yang dilakukan oleh guru kepada siswa. (2) Kemampuan berpikir kritis siswa kelas V SD dalam pembelajaran IPA tergolong lemah. (3) Rendahnya kemampuan berpikir kritis disebabkan oleh rendahnya kemampuan bahasa dan penalaran siswa.
**Kata kunci:** Berpikir Kritis, Sekolah Dasar, Kemampuan Berbahasa dan Bernalar

## INTRODUCTION

Based on the findings at MI Miftahul Huda Banyuwangi, there are several problems that affect the teaching and learning process. Students in this school show a fairly good level of activeness during classroom learning. They have dared to ask questions about things they do not understand. However, these questions are still classified as memory and comprehension questions, not yet reaching the level of analysis or evaluation. In addition, although students have been quite active in asking questions, they have not been active in expressing their opinions. Some students admitted that they rarely expressed their opinions because they felt shy.

Students' motivation and enthusiasm for learning are also still relatively low. This can be seen from the tendency of students to reject teacher directions when asked to carry out certain learning activities. In addition, many students often neglect their homework. Nevertheless, students actually show greater interest and higher enthusiasm when conducting practical activities and experiments. Unfortunately, the learning time available is still limited and the class teacher often leaves the class due to official business, so the opportunity to do practical activities is limited. Repetition of information delivery by the teacher is also common in the learning process, indicating challenges in maintaining consistency and clarity of communication.

Learning outcomes in science subjects also show that there are still many students who score below the Minimum Completion Criteria (KKM). As many as 60% of students scored below the KKM, while only 40% scored above the KKM. In fact, 70% of students claim that they like science subjects. In the midst of a world situation that is currently characterized by rapid change, danger, and complexity, the development of Science and Technology (IPTEK) not only facilitates communication but also changes the human mindset. The mindset that used to be constant, automatic, spontaneous, and obedient to rules,

must now change to be more adaptive and sensitive to the surrounding environment and the challenges faced. According to (Muhammad et al., 2021), we are required to have a mindset that is able to adapt to the rapid changes in this world.

To overcome the problems at MI Miftahul Huda Banyuwangi, it is important to pay attention to several aspects. First, providing support to students to increase their courage in expressing their opinions, perhaps through a more personalized approach and positive reinforcement. Second, increasing students' learning motivation with more interesting methods that are relevant to their daily lives, such as practice-based projects and experiments that utilize learning time effectively. Third, efforts are needed to maintain consistent teacher presence in the classroom, reducing the frequency of teacher absences due to official business. Fourth, giving special attention to students who have difficulty achieving the KKM, through additional tutoring or more individualized teaching methods.

An adaptive mindset is characterized by concern for phenomena that occur in the surrounding environment, where the skills that students should have are critical thinking skills. In facing the problems of today's world, handling synergistically and cooperatively requires a better way of thinking, namely by thinking critically(Handayani et al., 2021) The ability to think critically makes a person able to choose and sort out the positive and negative sides of something that is being faced before accepting or rejecting it. Critical thinking is used to indicate the level of cognitive expertise in various activities and is a good use of logic (Maqbullah et al., 2018). Therefore, students really need to have critical thinking skills. Critical thinking skills invite students to think reflectively about a problem, analyze problems, and determine the causes and consequences of decisions taken.

Natural Science (IPA) is one of the subjects taught at the Elementary School (SD) level. Natural science offers ways to understand events in nature. The nature of science is as a way of thinking, a way of investigation, and a way of knowledge(Sari et al., 2020). Science learning needs to pay attention to the formation of knowledge in the minds of students (Wedyawati & Lisa, 2019). However, at MI Miftahul Huda Banyuwangi, Blora Regency, problems in science learning can be seen from the low scores obtained by students, with 60% of students getting scores below the Minimum Completeness Criteria (KKM).

The identified problems are thought to be influenced by various factors. With the data previously presented, further research is needed to examine the Critical Thinking Ability of Grade V Students in Science Learning at MI Miftahul Huda Banyuwangi, This study aims to

identify things that influence critical thinking skills, describe critical thinking skills, and analyze the causes of low critical thinking skills in grade V students in science learning.

The reason for choosing this theme is due to the urgency of the importance of critical thinking skills in science learning. This is in line with the results of previous studies which show that there is a significant relationship between language and reasoning skills with students' critical thinking skills. This statement is supported by research conducted by (Efendi & Wardani, 2021), which states that there is a significant influence between verbal ability and students' critical thinking. Therefore, this research is expected to provide a deeper understanding of the factors that influence students' critical thinking skills and develop effective strategies to improve critical thinking skills in science learning at MI Miftahul Huda Banyuwangi. Thus, students can be more adaptive to environmental changes and able to face complex challenges in the future.

This research presents the uniqueness of understanding and describing the critical thinking skills of grade V students in science learning at MI Miftahul Huda Banyuwangi through an in-depth phenomenological approach. Different from previous studies that may emphasize quantitative results, this research uses qualitative descriptive methods to explore internal and external factors that influence students' critical thinking skills. The finding that 18 out of 26 students had a critical thinking skills percentage below 50% highlighted significant weaknesses in this important competency. The study also identified internal factors such as student characteristics, reading ability, learning motivation, writing ability, and student habits, as well as external factors such as teaching methods and habituation by teachers as the main causes of low critical thinking skills. The uniqueness of this study lies in the holistic approach that not only measures the level of critical thinking skills but also identifies the root causes, providing more comprehensive and in-depth insights to develop more effective intervention strategies in improving students' critical thinking skills in primary schools.

## METHOD RESEARCH

The type of research used by researchers is a descriptive qualitative research method with a phenomenological approach. Qualitative research is a research procedure that produces descriptive data in the form of oral or written and the behavior of people observed in a certain context, studied from a whole, comprehensive, and holistic perspective (Ramadhan & Usriyah, 2021). This method is often referred to as naturalistic research

because it is conducted in natural conditions(Sugiyono, 2013). The aim is to understand meaning, find hypotheses, and construct phenomena.

Descriptive research aims to provide a description using words and numbers, or a profile of the problem or an outline of the stages to answer questions of who, when, where, and how for a specific purpose(Ramadhan, 2021). The phenomenological approach in this study is a narrative study that reports the experiences of individuals or several individuals by describing their common experiences related to the concepts or phenomena they experience(Sugiyono, 2013). Phenomenological studies aim to find the reality that appears (Hamzah, 2019).

This research was conducted in Class V of MI Miftahul Huda Banyuwangi, Sambong Sub-district, Blora Regency. The research location was chosen based on pre-research conducted by researchers through interviews with teachers, student observations, and filling out questionnaires by students. The research was conducted in April-May 2024. Data were obtained through interviews with the fifth grade teacher, questionnaire filling by students, observation of the science learning process, critical thinking skills test, and documentation during the study(Sugiyono, 2013). Critical thinking ability test in the form of essay questions

This research was conducted in three phases, namely the preparation stage, the fieldwork implementation stage, and the data processing stage(Sugiyono, 2013).The data analysis technique used the Miles and Huberman analysis technique (Sugiyono, 2013)which includes data reduction, data presentation, and conclusion drawing. To ensure data validity, researchers used credibility and confirmability tests. In the credibility test, researchers increase persistence in research, use triangulation techniques, and conduct member checks. The confirmability test is carried out by using a journal to reflect on the data collected

Through this descriptive qualitative research method with a phenomenological approach, researchers try to get an in-depth understanding of the critical thinking skills of grade V students in learning science at MI Miftahul Huda Banyuwangi. This research provides a comprehensive picture of the factors that influence students' critical thinking skills, identifies various experiences and challenges faced by students, and provides recommendations for improving critical thinking skills in the context of science learning in elementary schools. The phenomenological approach enabled the researcher to construct the meaning of students' experiences holistically, providing rich and deep insights that are not only relevant to the school setting but also applicable to the wider educational context.

The data analysis method used is interactive analysis, which includes data collection, data modeling, data condensation, and conclusion drawing or verification. Data validity testing was conducted through credibility testing using source triangulation and method triangulation, thus ensuring the accuracy and reliability of data obtained from various sources and methods**.**

## RESULT AND DISCUSSION

Based on the data collected, the condition of grade V students' reading skills showed some significant challenges. Two students were still spelling while reading, indicating a basic lag in literacy skills. As many as 75% of students faced difficulties in reading new vocabulary and their mastery of Indonesian vocabulary was generally lacking. This impacts on their ability to comprehend the content of the reading because they only skim. One of the main causes of this lack of reading ability is online learning during the pandemic, which seems to reduce the effectiveness of literacy learning.

In terms of students' habits, many students tend to discuss online games both during breaks and during lessons. While they have an interest in reading books, this activity is limited to school textbooks only and is not done every day. Students' interest in newspaper reading, news listening and magazine reading activities is very low, indicating a lack of exposure to different types of reading.

The learning process also faces obstacles. Teachers often leave the classroom for business outside the school, which results in a lack of lesson preparation. Practicum, which should be an important part of learning, is rarely done, reducing a more interactive and practical learning experience for students. In terms of habituation by teachers, although literacy counting is still ongoing, reading literacy is no longer implemented consistently. This exacerbates students' already low literacy skills.

Students' learning motivation also shows variations. As many as 75% of students have high learning enthusiasm, but there are still 25% of students who have low learning enthusiasm. The characteristics of grade V students show that they have high curiosity, but this is not matched by a good attitude. Students are not yet active in expressing their opinions and are not used to speaking independently and in an orderly manner. Some students are still egocentric and have not been able to collaborate well. Students' communication skills in using good and correct Indonesian are still very poor, with a tendency to use Javanese in

daily communication. Difficulties in composing sentences well and understanding and summarizing readings or explanations orally are also significant problems.

The critical thinking skills test showed that students struggled in several important aspects. The ability to explain, understand questions, include reasons in opinions, and analyze information is lacking. Students' problem-solving knowledge was also low, and they paid little attention to cause and effect in their decision-making. While the ability to observe is good, the ability to predict the implications of behavior is lacking.

The critical thinking skills of grade V students at MI Miftahul Huda Banyuwangi in science learning are influenced by various internal factors, including student characteristics, reading ability and learning motivation, as well as students' writing ability.

**Student Characteristics**

Grade V students range in age from 10 to 13 years old, a critical age range where students begin to enter early adolescence. At this age, they generally have a high curiosity but it is often not accompanied by a good attitude. Grade V students are not yet active in expressing opinions and are still accustomed to expressing opinions independently, in turns, and in an orderly manner. About 50% of the students showed a desire to know new things by asking questions, although the questions were more about basic knowledge than deep understanding or application. The attitudes required for critical thinking, such as skepticism, openness, respect for honesty, and respect for various data and opinions, still need to be developed in these students. According to research, curiosity and questioning are important characteristics of someone who thinks critically because they always try to find answers to the questions they ask. Tolerant attitudes in children can also be cultivated through teaching, habituation, and real examples from teachers and the surrounding environment.

**Reading Ability and Student Motivation:**

Low reading ability is also an inhibiting factor in the development of critical thinking skills. In class V, there are still two students who still spell when reading. As many as 75% of students have a high learning spirit, but there are 25% whose learning spirit is lacking. High learning motivation can improve reading comprehension skills, which in turn contributes to the development of critical thinking skills. Critical reading involves the ability to analyze and evaluate what is read, as well as explore and evaluate the information obtained. This critical reading ability is not just skimming, but also understanding the meaning and content of the text read, including assessing its truth. Grade V students tend to be at an elementary reading level, where they do not fully understand what they are reading. Many

students still struggle with new vocabulary and limited mastery of Indonesian vocabulary. Therefore, more in-depth and structured reading habits need to be implemented to develop students' critical reading skills.

**Students' Writing Ability**

Students' writing skills also affect their critical thinking skills. Students often write with inappropriate spelling, including incorrect capitalization, inappropriate use of letters in writing words, and poorly structured sentences. These errors often make their writing difficult to read and understand. There is a significant relationship between critical thinking and writing skills, where critical writing means constructing strong arguments and clearly demonstrating intellectual positions to readers. Therefore, teachers need to pay attention to sentence structure when teaching writing. Good writing skills are indispensable for all students to fulfill their future educational and occupational requirements. Teachers have an important role in developing students' writing skills, by emphasizing the importance of correct grammar and textual structure in their writing. Regular and intensive writing practice is necessary, including explicit teaching and more practice on grammar. Explanatory texts can be one of the alternatives for intensive student writing practice.

**Students' habits**

Based on the results of the research, the most popular habit of grade V students at MI Miftahul Huda Banyuwangi is playing online games. Despite this, students' reading literacy is still lacking, discussion skills are minimal, and the ability to process information is also inadequate. According to (Purbarani et al., 2018), what a child, adolescent or adult feels is the result of a combination of inherited biological factors and environmental influences. Science literacy and critical thinking are key components in science learning that aim to prepare students as members of a society that is responsive to science and technology(Tiana, 2015). Quality literature and good pedagogy support each other in improving students' literacy(Firdausi et al., 2021). Therefore, the habit of playing online games can be minimized by creating new habits in class and school. The reading literacy program that has been running needs to be reactivated with more intensive supervision to increase students' interest in reading.

**Teacher's Implementation of Learning**

Another external factor that influences students' critical thinking skills is the organization of learning by teachers. At MI Miftahul Huda Banyuwangi, learning is often less than optimal even though they have used thematic books that integrate various lessons in the hope that they become more meaningful. Less than optimal preparation for learning leads to infrequent practicums, and students' ability to read and count is considered very poor, especially as a result of 1.5 years of online learning that is not optimal. The use of appropriate learning models is an important aspect that needs to be developed to make learning more meaningful. For example, the RICOSRE learning model (Reading, Identifying the problem, Constructing the solution, Solving the problem, Reviewing the solution, and Extending the solution) has been proven to be more effective in improving students' critical thinking skills compared to conventional learning models(Setyawan & Kristanti, 2021). In addition, the collaboration of the Jigsaw model and Problem-Based Learning is also effective in developing students' critical thinking skills, although it requires good time management(Ramadhan & Usriyah, 2021). The use of interactive media based on augmented reality is also feasible to develop students' critical thinking skills in science learning(Setiawan et al., 2022). A learning atmosphere that supports the development of critical thinking skills requires cooperation and mutual understanding between all parties involved in the teaching and learning process(Purbarani et al., 2018).

The digital era requires readiness to face technological advances, where quality literacy and digital media education applied in the education curriculum can be a solution in preparing the national education system for the challenges of the 21st century, where critical thinking skills are one of the competencies that must be possessed. Therefore, teachers have an important role in improving students' critical thinking skills to face these challenges.

**Habituation by Teachers to Students**

Habits made by teachers also play an important role in improving students' critical thinking skills. Reading literacy that had been running will be better if it is re-familiarized to support student development while facing the challenges of the 21st century. Indonesia's biggest challenge is no longer increasing access, but improving the quality of both students and educators(Syahri et al., 2023). Therefore, habituation that can improve critical thinking skills needs to be carried out by teachers, such as the literacy movement to read books and educational content from the media. Given the character of teenagers in the digital era who are very fond of the internet, teachers must be able to prove that the internet does not only

have a negative impact, but can also be used for useful things such as solving problems and forming literate readers by empowering technology and the internet(Nurlaeli, 2022). This can be an alternative for teachers in familiarizing students to read through their technology.

People who have spiritual intelligence and akhlakul karimah will be able to be wiser in responding to challenging situations and conditions in the digital era, as well as fostering harmonious relationships between themselves, others, and the natural environment(Siwi & Setiawan, 2021). Character education for students is very important so that they can be wiser and more careful in responding to various situations. Therefore, reading habits and wise use of technology need to be continuously instilled in students to improve their critical thinking skills and face challenges in the digital era.

**Critical Thinking Ability of Grade V Students in Science Learning at MI Miftahul Huda Banyuwangi**

Critical thinking ability is one of the important competencies in higher order thinking skills, as explained by (Antonelli-Ponti & Crosswaite, 2019). In Bloom's taxonomy, high-level thinking skills include cognitive levels C4 (analyze), C5 (evaluate), and C6 (create). In the preparation of critical thinking test questions, indicators such as clarity, accuracy, precision, relevance, depth, breadth, logic, meaning, and reasonableness are highly considered(Ramadhani, 2021). In the context of grade V students who are at the concrete operational stage, the questions are also prepared by paying attention to appropriate images, language, and vocabulary.

The results of data analysis obtained from interviews with teachers, observations during the study, student tests, and documentation show that the critical thinking skills of grade V students at MI Miftahul Huda Banyuwangi are still low. Here are some specific findings:

a. Students are less able to explain well so this indicator has not been met.
b. Students are less able to understand questions and statements well.
c. Students rarely include reasons in making opinions or answering questions
d. Students are not yet able to associate the information received with their existing knowledge.
e. Students are not yet able to analyze information well.
f. Students' knowledge is limited in solving problems.
g. Students do not pay attention to cause-and-effect relationships in making decisions.
h. Students' ability to observe things is quite good.

i. Students are less able to predict the implications of their behavior.

Of the nine indicators of critical thinking skills, only the meaning indicator was met. The test results showed that 18 students obtained a percentage of test results ≤ 50%, indicating weak critical thinking skills, while only 7 students obtained a percentage of test results > 50%, indicating relatively strong critical thinking skills. This is in line with Hariri & Bagherinejad's statement (Ramadhani, 2021) that critical thinking test scores less than the middle score indicate weak critical thinking skills, and scores above the middle score indicate strong critical thinking skills.

**Causes of Low Critical Thinking Ability of Grade V Students in Science Learning at MI Miftahul Huda Banyuwangi**

**Low Student Language Skills**

Good language skills are essential for demonstrating critical thinking in written work(Naparin, 2020). Based on the data, students' ability to communicate using good and correct Indonesian is still very lacking, both in oral and written communication. Students more often use Javanese in their daily lives, so the intensity of using Indonesian is less. Errors in sentence structure and spelling still occur frequently, which makes oral and written communication difficult to understand. Language skills include oral skills (speaking and listening) and written skills (writing and reading) which are closely related(Jannah et al., 2023). Improving Indonesian language skills can be achieved through habituation to reading books and actively expressing opinions related to learning topics(Putri Harapani & Nurhasanah, 2022).

**Students' Low Reasoning Ability**

Thinking errors are also caused by illogical reasoning (Afitska & Said, 2022). Illogicality and fallacies in reasoning often occur in fifth grade students who still have difficulty understanding reading and explanations. Low reading skills also contribute to the low ability to make logical and unambiguous conclusions. Learning strategies that implement three levels of inquiry (analyzing, evaluating, and creating) can improve students' reasoning competencies(Papanthymou & Darra, 2022). Story problems that require reasoning skills can also be used to train students in making logical conclusions(Porta & Todd, 2024).

Thus, it is important to improve students' language and reasoning skills in science learning, because these two abilities have a significant effect on students' critical thinking

skills(Saleem Khasawneh, 2021). Through this improvement effort, it is hoped that students' critical thinking skills can develop better.

## CONCLUSION

Based on the data collected, the reading skills of grade V students at MI Miftahul Huda Banyuwangi show significant challenges. Two students still spell while reading, signaling a basic delay in literacy skills. About 75% of students have difficulty in reading new vocabulary and have low mastery of Indonesian vocabulary, which impacts on their ability to understand the content of reading. Students tend to just skim without delving into the meaning. One of the main causes of low reading skills is online learning during the pandemic, which seems to reduce the effectiveness of literacy learning. Many students are more interested in discussing online games than reading activities. Interest in reading books is limited to school textbooks only and is not done every day. Interest in reading newspapers, listening to news and reading magazines is very low, indicating a lack of exposure to different types of reading. Teachers often leave the classroom for business outside of school, resulting in a lack of lesson preparation. Practicals that should be an important part of learning are rarely done, reducing a more interactive and practical learning experience for students. Ongoing reading literacy activities are no longer implemented consistently, exacerbating students' already low literacy skills. As many as 75% of students have high learning enthusiasm, but 25% of students still show low learning enthusiasm. Grade V students show high curiosity but this has not been matched by good attitudes. They have not actively expressed their opinions and are not used to speaking independently and in an orderly manner. Some students are still egocentric and not able to collaborate well.

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