

Analysis of Students' Critical Reasoning Ability in Islamic Banking Accounting Learning at Muhammadiyah Sampit Vocational School

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Abstract

Critical reasoning ability is one of the essential skills that students must possess to meet the demands of education in the 21st century. This study aims to describe and analyze students' critical reasoning skills in the Islamic Banking Accounting subject at SMK Muhammadiyah Sampit. The method used in this study is qualitative with a descriptive approach. The subjects of this study consisted of three 11th-grade students majoring in Islamic Banking Accounting who were selected through a purposive sampling technique based on high, medium, and low levels of critical reasoning ability. Data collection in this study was carried out through semi-structured tests and interviews, then analyzed using the model from Miles and Huberman, which includes data reduction, data presentation, and conclusion drawing. Data analysis was supported by NVivo software with Word Cloud and Word Tree visualizations. The research findings indicate that students' critical reasoning ability is reflected in three indicators: acquisition and processing of information and ideas, analysis and evaluation of reasoning, and reflection of thinking in decision-making. Students with high levels of critical reasoning ability show superior abilities in understanding information, analyzing problems, and reflecting on the learning process when compared to those with medium and low levels of ability. The results of this study reveal that the skills of understanding information, analyzing problems, and reflecting on learning experiences are interrelated in forming students' critical reasoning abilities in learning Islamic Banking Accounting.

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1. INTRODUCTION

Critical reasoning skills are one of the essential competency's students must possess to face the challenges of learning in the 21st century. This ability enables students to obtain and process information honestly, analyze various problems, evaluate existing evidence, and make logical decisions based on accountable reasons (Ratnawati, Arofah, Puspitarini, & Sunita, 2024). In the implementation of the Independent Curriculum, critical reasoning skills are an important aspect of the Pancasila Student Profile, which is expected to develop through various student-centered learning activities (Ministry of Primary and Secondary Education of the Republic of Indonesia, 2025). The importance of critical reasoning skills is also evident in various international education evaluation results, such as reports from the *Programme for International Student Assessment (PISA)*. The Indonesian Student Assessment (PISA) report states that Indonesian students' abilities to comprehend information, reason critically, and solve problems still need improvement (OECD, 2023). This situation indicates that learning in school is not only about mastering material but also

must provide opportunities for students to practice critical reasoning skills analytically, reflectively, and argumentatively. Relatedly, Halimah, Julianta, and Astuti (2024) found that some students still experience difficulties in analyzing information, providing reasonable reasons, and drawing conclusions based on existing data during the learning process. In vocational education, critical reasoning skills are increasingly needed because students must not only understand theoretical concepts but also be able to use their knowledge to solve problems in their chosen field of expertise. One subject that requires these skills is Islamic Banking Accounting. Learning Islamic banking accounting requires students to understand the types of financial transactions, analyze existing data, determine correct recording methods, and prepare financial reports in accordance with Islamic principles (Lukman & Lie, 2024). Therefore, critical reasoning skills are very important so that students are able to understand concepts, evaluate information, and make the right decisions in solving problems in the field of accounting (Sinuhaji, 2023).

Research on critical reasoning skills has been extensively conducted in various learning situations. Bangun, Simarmata, and Hasanah (2024) found that students' critical reasoning skills are evident in their ability to acquire and process information, analyze and evaluate reasoning, and reflect on their thinking in decision-making. Research by Riani, Rejekiningsih, and Santosa (2024) shows that the use of interactive learning media can increase student engagement in learning and help develop their critical reasoning skills. Meanwhile, Khasanah and Muthali'in (2023) stated that project activities in the implementation of the Independent Curriculum can strengthen critical reasoning skills through the process of analysis, evaluation, and reflection on a problem. These research results indicate that critical reasoning skills are a very important skill and need to be developed in various learning processes. However, previous research has tended to emphasize strategies, media, or learning implementation methods aimed at improving students' critical reasoning skills. Research specifically examining students' critical reasoning skills in Islamic Banking Accounting learning in Vocational High Schools is still relatively limited. Furthermore, research that categorizes students' critical reasoning abilities into high, medium, and low categories through in-depth analysis using test results and interviews is still scarce. This indicates that there are still research gaps that require further investigation.

Based on these gaps, this study has an updated research focus that analyzes students' critical reasoning abilities in Islamic Banking Accounting learning, based on the critical reasoning dimensions of the Pancasila Student Profile, which include the acquisition and processing of information and ideas, analysis and evaluation of reasoning, and reflection on thinking in decision-making. In addition, this study also explains the characteristics of students' critical reasoning abilities based on three categories: high, medium, and low, by analyzing test results and in-depth interviews.

This study was conducted to gain a more comprehensive understanding of students' critical reasoning skills in Islamic Banking Accounting learning at Muhammadiyah Vocational High School (SMK) Sampit. The findings of this study are expected to contribute to the development of learning tactics that support the improvement of students' critical reasoning skills, especially in the context of vocational education. Therefore, the purpose of this study is to describe and analyze students' critical reasoning skills in Islamic Banking Accounting learning at Muhammadiyah Vocational High School (SMK) Sampit.

2. RESEARCH METHODS

This study employs a qualitative approach with a descriptive approach. The qualitative approach was applied to gain a deep understanding and describe students' critical reasoning skills in Islamic Banking Accounting learning (Abdussamad, 2021). This descriptive

research type was chosen because it aims to describe phenomena systematically in accordance with the realities in the field (Sugiyono, 2022). This research was conducted at SMK Muhammadiyah Sampit in the even semester of the 2025/2026 academic year. The research subjects consisted of three grade XI LPS students selected through a purposive sampling technique with categories of high, medium, and low critical reasoning abilities. In addition, the Islamic Banking Accounting teacher was included as an additional informant to provide insight into the learning process and students' critical reasoning abilities. The analysis of critical reasoning skills in this study used three indicators that refer to the critical reasoning dimensions of the Pancasila Student Profile: information and idea acquisition and processing, reasoning analysis and evaluation, and reflection on thinking in decision-making (Bangun, Simarmata, & Hasanah, 2024). These indicators served as the basis for instrument development and data analysis.

Table 1. Critical Reasoning Ability Indicators

Variables	Indicator
Critical Reasoning Skills	Acquisition and Processing of Information and Ideas
	Analysis and Evaluation of Reasoning
	Reflection of Thought in Decision Making

Information was collected through semi-structured testing and interviews. The test consisted of five essay questions aimed at obtaining data on students' critical reasoning skills in the Islamic Banking Accounting course. The scores from each question were added together to calculate the student's final grade using the following formula:

$$\text{Value} = \frac{\text{Score Obtained}}{\text{Maximum Score}} \times 100\%$$

Based on the scoring results, students' critical reasoning ability was categorized as high, medium, and low. This classification was adapted from the classification of critical reasoning ability levels formulated by Patahuddin, Syawal, and Amri (2021) to align with the instrument characteristics, critical reasoning ability indicators, and maximum scores in this study. The categories of students' critical reasoning ability are shown in the table below:

Table 2. Criteria for Students' Critical Reasoning Ability Levels

Value Range	Category
79-100	High
56-78	Currently
0-55	Low

Next, semi-structured interviews were conducted with students and teachers to gain deeper insight into students' critical reasoning skills in each category. Data from the test results, student interviews, and teacher interviews were then analyzed using NVivo software with visualization *Word Cloud* and *Word Tree* to help identify patterns, relationships between concepts, and tendencies in answers that emerge in the research data. Data analysis in this study uses the method of Miles and Huberman, which includes data reduction, data presentation, and drawing conclusions. To increase the validity and credibility of the data, this study applies technical triangulation by comparing the results of tests and interviews. The research procedure begins with administering tests to students, grouping students based on critical reasoning ability categories, selecting research subjects, conducting interviews

with students and teachers, conducting data analysis, technical triangulation, and concluding.

3. RESULTS AND DISCUSSION

3.1. Research Results

The research data were obtained through the results of students' critical reasoning ability tests, in-depth interviews with students and subject teachers, and data analysis using the NVivo application. The analysis was carried out based on three indicators of critical reasoning ability that refer to the critical reasoning dimensions in the Pancasila Student Profile, namely the acquisition and processing of information and ideas, analysis and evaluation of reasoning, and reflection of thought in decision-making. Based on the results of the critical reasoning ability tests that have been conducted, three research subjects were obtained representing the high, medium, and low categories. Grouping of subjects was carried out based on the results of the critical reasoning ability test. A summary of the categories of research subjects is then presented in the table below:

Table 3. Students' Critical Reasoning Ability Categories

Subject	Score	Category
SF	85	High
BG	78	Currently
GN	55	Low

Based on the results of the table above, it can be seen that subject SF achieved the highest score, so the subject is categorized as having high critical reasoning skills. Subject BG is in the medium category. The subject of Islamic Banking Accounting (GN) is in the medium category because it received a score of 78, while the subject of Islamic Banking Accounting (GN) is in the low category, as GN students' scores are the lowest among the other subjects. This difference in scores reflects variations in students' critical reasoning abilities in Islamic Banking Accounting learning. Furthermore, the analysis of the research results was conducted based on three indicators of critical reasoning ability.

3.1.1. Acquisition and Processing of Information and Ideas

The research results show that students' abilities to acquire and process information vary across critical reasoning skill categories. Students in the high category can identify important information contained in transactions, identify the accounts involved, and accurately explain the relationships between accounts. Furthermore, students in the high category are also able to process the information obtained into general journal entries in accordance with applicable accounting principles.

Students in the intermediate category were also able to recognize important information in the problem and determine the accounts used in the transaction. However, their ability to relate the information obtained to relevant accounting concepts was still not fully effective. Conversely, students in the low category were able to recognize basic information in transactions, but they still struggled to connect the relationships between accounts and transform that information into a deeper understanding. These results indicate that the ability to acquire and process information is significantly influenced by students' understanding of basic accounting concepts, particularly regarding account identification and the application of the concepts of debit and credit in recording transactions.

Based on the image above, we can see that the most frequently occurring words are "answer," "question," "solve," "student," "account," "method," "analysis," "read," and "consider." The dominance of "answer" indicates that students' evaluation process involves examining their work. Meanwhile, the presence of "analysis" and "consider" indicates a reasoning process that occurs before students determine their final answer.

The findings show that analytical and evaluation reasoning skills are demonstrated by students' ability to read information carefully, consider various possible answers, and assess the accuracy of answers based on the concepts they have learned.



Figure 4. Word Tree Analysis and Evaluation of Reasoning

Results *Word Tree* shows that the wording of the problem is often related to the activities of reading the problem, understanding the content of the problem, reviewing the problem, identifying the accounts involved, and analyzing the information before working on it. This pattern indicates that students conduct analysis by understanding the content of the problem first before determining the appropriate solution steps. In addition, the occurrence of the words account, analysis, compare, and solve indicates that students do not immediately provide answers, but rather go through a series of thought processes that include identifying information, comparing the information with the material that has been taught, and evaluating the most appropriate possible solutions. This finding indicates that analytical and evaluation reasoning skills are seen in how students understand the content of the problem thoroughly, relate existing information to accounting concepts, and determine solution steps based on logical considerations.

Results *Word Cloud* and *Word Tree* show that analytical and evaluation reasoning skills are demonstrated through the activity of reading questions carefully, understanding the concept of the question, identifying the accounts involved, comparing information with concepts that have been learned, and considering the appropriate solution steps before determining the answer. The dominance of the word's answers, question, analysis, account, and solve indicates that students go through an evaluation process by analyzing the information in the question before making a decision. This finding shows that analytical and evaluation reasoning skills are not only reflected in the accuracy of the answers given, but also in students' ability to understand problems, evaluate information, and determine logical solutions based on the concept of Islamic Banking Accounting.

3.1.3. Reflection of Thought in Decision Making

The findings of this study identified that the capacity for reflection in decision-making varied across critical reasoning ability categories. Students in the high category demonstrated strong reflection skills by routinely checking their answers, assessing errors, and seeking approaches to improve their understanding of material not yet mastered. Students in the medium category also reflected on their work, although this reflection was limited to checking answers without in-depth analysis of the causes of errors. On the other hand, students in the low category tended to rely on teacher assistance and their personal notebooks when facing difficulties in solving problems.

This evidence shows that the ability to reflect is very important to help students evaluate the reasoning process they have carried out and determine the actions that need to be taken to correct errors and improve their understanding of the material being studied.



Figure 5. Word Cloud Reflection of Thought in Decision Making

From the image above, we can see that the most frequently occurring words are "material," "understanding," "error," "teacher," "answer," "explanation," "method," "reading," and "correcting." The dominance of "material" and "understanding" indicates that students' reflection is focused on deepening their understanding of the material being taught. Furthermore, the presence of "error" and "correcting" indicates students' awareness of assessing their work and addressing any identified weaknesses.



Figure 6. Word Tree Reflection of Thought in Decision Making

Results of the analysis of *Word Tree* revealed that the term material is often associated with activities such as understanding the material, relearning, rereading notes, and repeating learning to deepen knowledge. This pattern indicates that students reflect on their learning experiences by reviewing material that is not yet fully understood. Furthermore, the emergence of words such as error, improvement, teacher, and explanation indicates that the reflection carried out by students is not only an awareness of existing errors, but also accompanied by efforts to improve by rereading the material, asking for clarification from the teacher, and seeking other relevant learning resources. These results indicate that the reflection process is implemented in concrete actions aimed at improving understanding of the material being studied.

These findings indicate that students use previous learning experiences as a foundation for determining more effective learning strategies in the future. As a result, reflection on decision-making serves not only as a self-evaluation but also as a tool to improve the learning process and enhance students' understanding of the general journal material in Islamic Banking Accounting.

Results of the analysis: *Word Cloud* and *Word Tree*. The results showed that self-reflection in decision-making was characterized by students' awareness of the mistakes they made and their efforts to correct them through various learning strategies. The dominance of words such as material, understanding, mistakes, teachers, and explanations reflected that students reflected by reviewing the material, reading notes, asking for explanations from teachers, and evaluating recorded learning outcomes. This finding suggests that reflection is not merely a self-evaluation process, but also manifests in concrete actions to improve understanding and establish better learning strategies in the future.

3.2. Discussion

This discussion is described by referring to three indicators of critical reasoning ability that refer to the critical reasoning dimension of the Pancasila Student Profile, which includes the acquisition and processing of information and ideas, analysis and evaluation of reasoning, and reflection on thinking in decision-making. The results of this study indicate that students' critical reasoning ability in Islamic Banking Accounting learning improves through the process of understanding information, analyzing problems, and reflecting on learning experiences to enhance understanding. These findings are supported by the results of NVivo visualization through *Word Cloud* and *Word Tree*, which show the relationship between information, questions, and materials as part of students' critical reasoning process.

3.2.1. Acquisition and Processing of Information and Ideas

This study shows that students with high critical reasoning skills can gather and process information better than students with low critical reasoning skills. This is evident in their ability to identify important information in questions, determine the accounts involved in transactions, and connect this information to previously learned concepts. On the other hand, students with low critical reasoning skills still face difficulties in determining relevant information and often only focus on immediately visible information without processing the information in depth. This finding is supported by the results of *Word Cloud* and *Word Tree*, which show the dominance of words such as information, understanding, material, account, and question. This pattern indicates that the information gathering process begins with the ability to understand the material, find important information, and determine aspects that need to be considered

before solving a given problem. In other words, the ability to obtain and process information is not only related to reading ability but also to the ability to understand and interpret the meaning of that information. The results of this study are in line with the research of Bangun, Simarmata, and Hasanah (2024) which states that the ability to obtain and process information is one of the main components in the critical reasoning dimension of the Pancasila Student Profile. Students who have this ability can identify relevant information, understand the relationships between information, and use that information as a basis for solving problems.

This finding is also supported by Huda (2023), who explains that critical reasoning skills develop through cognitive processes involving understanding, processing, and evaluating information before making decisions. Therefore, the ability to obtain and process information is a crucial foundation in learning Islamic Banking Accounting because it helps students understand transactions, determine the accounts used, and develop a deeper understanding of the accounting concepts studied.

3.2.2. Analysis and Evaluation of Reasoning

The results of this study indicate that students with high critical reasoning skills can analyze the content of questions more deeply than students in the moderate category. These students can identify the problems in the questions, compare the information with previously learned accounting concepts, and provide logical reasons for selecting the answer they believe is correct. On the other hand, students in the moderate category were able to find the correct solution, but their analysis process was still limited to the information directly visible in the questions. This finding is supported by the results of *Word Cloud* and *Word Tree*, which show the dominance of words such as questions, answers, analysis, accounts, and completion. *Word Tree* This indicates that students begin by reading the question first, then understanding its contents, identifying the accounts involved, and conducting a step-by-step analysis, as well as considering the most appropriate solution before deciding on an answer. This demonstrates that analysis and evaluation of argumentative ability are not only reflected in the accuracy of the answer, but also in the thought process applied to reach that answer.

The findings of this study align with those of Mastuti, Abdillah, Sehuwaky, and Risahondua (2022), who stated that critical reasoning skills encompass the interpretation, analysis, evaluation, inference, and explanation of information before making a decision. Furthermore, research by Denia, Nawawi, and Haryani (2025) revealed that skills in analyzing and evaluating information are crucial elements in solving problems that require high-level thinking, where students must be able to consider various available information before determining the appropriate solution. Therefore, analytical and evaluation skills in the Islamic Banking Accounting learning process play a vital role in helping students understand interactions between transactions, detect recording errors, and determine problem solutions based on rational and systematic considerations.

3.2.3. Reflection of Thought in Decision Making

Research findings identified that students with high critical reasoning skills had better reflection skills than those with low ones. These students were able to recognize errors they made, assess the causes of those errors, and formulate strategies to improve their understanding. In contrast, students with low critical

reasoning skills were still dependent on teacher support and were not yet fully independent in reflecting on their learning process. These results were supported by the analysis *Word Cloud* and *Word Tree*, which displays the dominance of the words material, understanding, error, teacher, explanation, and repair. Analysis *Word Tree* The results showed that students reflected by reviewing the material, rereading their notes, correcting any errors they detected, asking the teacher for clarification, and seeking additional learning resources to deepen their understanding. These findings suggest that reflection serves not only as self-evaluation but also as an effort to improve future learning.

The results of this study align with those of Khasanah and Muthali'in (2023), who explained that reflective thinking is a crucial component in strengthening critical reasoning, as it helps students assess their reasoning processes and correct any deficiencies. These findings are further supported by Riani, Rejkiningsih, and Santosa (2024), who stated that critical reasoning can develop when students are allowed to reflect on their learning experiences, evaluate their work, and formulate appropriate improvement strategies. Therefore, reflective thinking in decision-making is a crucial element in learning Islamic Banking Accounting, as it helps students understand their mistakes, improve their mastery of the material, and develop more efficient learning strategies in the future.

4. CONCLUSION

This study reveals that critical reasoning skills in Islamic Banking Accounting learning at SMK Muhammadiyah Sampit exhibit various characteristics at each ability level. Students' critical reasoning skills are seen in three main indicators: the acquisition and processing of information and ideas, analysis and evaluation of reasoning, and reflection on thinking in decision-making. The results show that students with high critical reasoning skills are able to understand and manage information more deeply, analyze problems systematically, and reflect on their learning experiences to improve their existing understanding. In contrast, students with medium and low ability levels still face difficulties in linking information to learned concepts, developing logical arguments, and conducting independent reflection on errors they encounter.

Overall, the ability to acquire information, analyze problems, and reflect on learning experiences is an interrelated element in developing students' critical reasoning skills. Therefore, Islamic Banking Accounting learning needs to provide students with more opportunities to identify information, critically analyze problems, and reflect on the learning process and outcomes to maximize critical reasoning skills development.

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