Analysis of High School Students' Critical Thinking Skills on Capital Market Material

Anastasya Gladly Nadya Santo*[1], Dini Octoria[1]
[1]Economic Education, Faculty of Teacher Training and Education, Sebelas Maret University
E-mail: anastasyagns@student.uns.ac.id

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Abstract
This study aimed to analyze students' critical thinking skills on the topic of capital markets based on four critical thinking indicators by Facione, namely interpretation, analysis, evaluation, and inference. The research was classified as quantitative descriptive research. The population consisted of 432 tenth-grade students from SMA Negeri 1 Karanganyar in the 2024/2025 academic year. A proportional random sampling technique was employed to select 208 students as the sample. Data were collected through multiple-choice tests that had been validated by experts and tested for reliability. The results showed that, for the interpretation indicator, 56% of students were in the high category, 35% in the medium category, and 9% in the low category. For the analysis indicator, 47% of students were in the high category, 50% in the medium category, and 3% in the low category. For the evaluation indicator, 33% were in the high category, 35% in the medium category, and 32% in the low category. Regarding the inference indicator, 21% were in the high category, 47% in the medium category, and 32% in the low category.

INTRODUCTION

Indonesia has entered the era of the Industrial Revolution 4.0 in the field of education, which is known as 21st-century learning (Utami & Rusdarti, 2021). This learning approach is expected to produce students who not only understand subject matter but also possess skills relevant to the demands of the era. Furthermore, it aims to create a prosperous, dignified, and globally competitive society (Mahrunnisya, 2023). 21st-century learning is expected to develop individuals who not only comprehend the content being taught but also master essential 21st-century skills. These skills are crucial for helping students compete and grow after completing their education. They also assist students in solving real-world problems and in adapting to future challenges and environmental changes (Taar & Palojoki, 2022).

21st-century skills are known as the 4Cs, which consist of communication, collaboration, creativity, and critical thinking (Herlinawati et al., 2024). Communication refers to the ability to convey ideas, information, and emotions to others through words, images, symbols, and other methods in order to receive feedback. Collaboration is the skill of interacting and working together to solve problems. Creativity refers to having an open and responsive mindset. Creative skills involve the ability to generate, explore, reflect on, and apply ideas. Critical thinking is the ability to interpret, analyze, and evaluate information to generate knowledge, understanding, and hypotheses (Saad et al., 2024).

21st-century skills are essential for every individual. However, this study specifically focuses on critical thinking, as it can be cultivated and developed through education. Individuals who have completed their formal education are expected to apply critical thinking skills in addressing real-life problems. The learning process engages students in critical thinking by encouraging them to develop solutions to problems presented by the teacher, using the theoretical concepts they have previously learned.

Critical thinking skills are the ability used to analyze and assess situations logically and reflectively, so that individuals are able to understand their environment, make the right decisions, and act according to their potential and integrity (Siswati et al., 2023). Facione (2020) defines critical thinking skills as the ability to think rationally and logically with the aim of proving, interpreting, and solving problems.

According to Facione (2020), there are six indicators used to measure critical thinking skills, namely interpretation, analysis, evaluation, inference, explanation, and self-regulation. This study uses four indicators, namely interpretation, analysis, evaluation, and inference, because these four indicators are able to measure the critical thinking skills of high school students.

Critical thinking skills are crucial for students to effectively respond to the complex demands of the 21st century. As science and technology continue to advance at an unprecedented pace, these skills are becoming increasingly important for solving various problems and challenges in the 21st century (Suriati et al., 2021). Lack of critical thinking skills can cause individuals to have difficulty analyzing and solving problems faced in everyday life. In addition, students tend to have difficulty making accurate and quick decisions (Anisa et al., 2021). According to Ariadila et al. (2023) critical thinking is a fundamental competency, not only in the educational process but also in professional settings. When students possess these skills, a deeper understanding of theoretical concepts will support their application in solving problems presented during learning. In the workplace, critical thinking is necessary for making decisions that directly impact the sustainability and success of an organization. However, students' critical thinking skills have not met expectations and are generally considered low, including in Indonesia.

Students in Indonesia demonstrate low levels of critical thinking skills. According to the results of the Programme for International Student Assessment (PISA), Indonesia ranked 63rd out of 81 countries, or 19th from the bottom. Furthermore, among the five levels of critical thinking, Indonesian students were only able to reach Level 2 (OECD, 2023). Based on these PISA results, it can be concluded that students' critical thinking skills are not yet optimal, as reflected in their cognitive performance, which is limited to lower-order thinking skills such as remembering and understanding. Meanwhile, higher-order critical thinking skills such as interpreting, analyzing, evaluating, and synthesizing have not yet been achieved.

Teachers have a very important role in addressing various educational problems, including the low level of students' critical thinking skills, which remains a challenge across different levels of education. Teachers can monitor the development of students' critical thinking skills by analyzing the results of critical thinking tests. The results of this analysis can be used to support decision-making related to the management of the learning process, thereby enhancing students' critical thinking skills. This study aimed to analyze students' critical thinking skills on the topic of capital markets based on four critical thinking indicators by Facione, namely interpretation, analysis, evaluation, and inference.

METHODS

This study was a descriptive quantitative research. The population consisted of 432 tenth-grade students at SMA Negeri 1 Karanganyar in the 2024/2025 academic year, distributed across 12 classes (X E1 to X E12). The sample size was determined based on Slovin's formula, resulting in a total of 208 students. The sampling technique used was proportionate random sampling. Based on this technique, 17 students were selected from each class in X E1 to X E8, and 18 students from each class in X E9 to X E12.

The data collection technique employed a test instrument in the form of multiple-choice questions, with a scoring system of 5 points for correct answers and 0 for incorrect ones. The test instrument was designed to assess students' understanding of the capital market material taught in X grade. The following is the test design for the critical thinking test:

Table 1. Test Design

Critical Thinking	Number of Questions
Interpretation	4
Analysis	5
Evaluation	6
Inference	5

Based on Table 1, a critical thinking test instrument was developed. The instrument was validated using content validity, which was assessed by three experts: two lecturers in Economic Education at FKIP UNS and one economics teacher from SMA Negeri 1 Karanganyar. The validity test showed that the

instrument was valid and therefore appropriate for use in this study. In addition, a reliability test was conducted to determine whether the instrument was reliable and capable of producing consistent data. The technique used to test reliability was Cronbach's alpha. The result showed a Cronbach's alpha value of 0.790 > 0.60, indicating that the instrument was reliable and suitable for research purposes.

The data analysis technique used in this study was descriptive quantitative analysis. The test results were analyzed by categorizing them into three levels according to Zakaria et al. (2021) as follows:

Table 1. Critical Thinking Skills Category

Category	Score
High	$Score \geq \bar{x} + SD$
Medium	$\bar{x} - SD \leq Score < \bar{x} + SD$
Low	$Score < \bar{x} - SD$

RESULTS AND DISCUSSION

A. Result

The results of the study revealed students' critical thinking performance across four aspects: interpretation, analysis, evaluation, and inference, within the context of capital market material. The data obtained from the critical thinking test were analyzed and categorized into three levels: low, medium, and high. The distribution of results in each category reflected varying levels of critical thinking skills among students. The findings are presented in the following diagram:

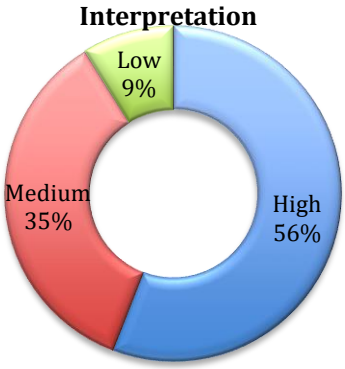

Figure 1. Critical Thinking – Interpretation

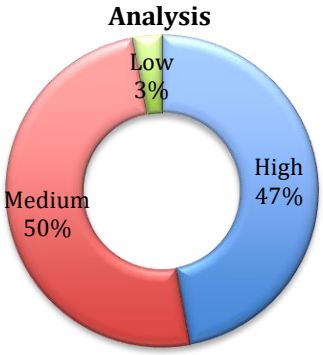

Figure 2. Critical Thinking – Analysis

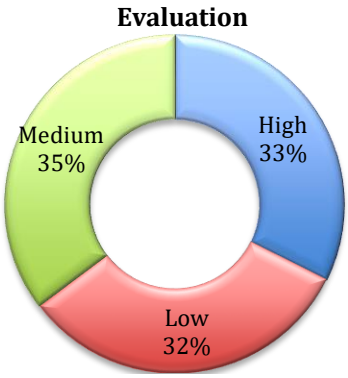

Figure 3. Critical Thinking – Evaluation

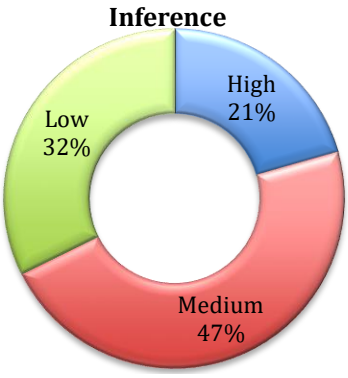

Figure 4. Critical Thinking – Inference

B. Discussion

Based on the results, it was found that students' critical thinking skill in the aspect of interpretation was predominantly in the high category. Interpretation refers to the process of understanding and expressing the meaning of data, situations, phenomena, problems, or events that are the object of study (Facione 2020). This stage represents the initial step taken by individuals when encountering a problem, where they attempt to comprehend the core of the issue. Students who demonstrated a high level of

interpretation skill were able to clearly understand and express the presented statements related to the capital market topic. Those in the medium category had sufficient ability to interpret the meaning of the given statements, but their understanding was not yet optimal, requiring more time and teacher guidance. Students in the low category experienced difficulty in understanding the statements presented to them.

Analysis is the ability to examine, identify, and connect the relationships between statements and the concepts that have been learned (Nuroniyah et al., 2022). Based on the results, students demonstrated a relatively good level of critical thinking skill in the analysis aspect. This was indicated by the majority of students falling into the medium and high categories, which means that students were generally capable of analyzing and relating each statement to the concepts they had learned regarding the capital market. However, some students required more time and needed more practice to strengthen their analytical skills. Students in the low analysis category experienced difficulties in analyzing and breaking down the given statements. These students tended to rely on memorization of the capital market material rather than engaging in deeper analysis.

Evaluation is the stage of assessing the accuracy of a statement, situation, judgment, or opinion that has been made (Facione, 2020). In this stage, individuals consider the results of analysis and the available information as a basis and evidence to support decision-making in response to the given statements. Based on the results, students demonstrated varying levels of ability in the evaluation aspect. Students in the high category showed sharpness in evaluating economic arguments and making decisions based on logical reasoning. However, the proportion of students in the medium and low categories was relatively high, indicating that many students still experienced difficulties in conducting in-depth critical evaluations.

Inference refers to drawing conclusions from the answer choices provided in the questions. At this stage, students are required to understand the statements, analyze each one, and assess the analysis based on relevant theories related to the capital market in order to draw a conclusion (Arini et al., 2023). Based on the results, students' critical thinking skill in the inference aspect was mostly in the medium category. This indicates that most students were reasonably able to draw conclusions from the available information, although not always accurately or in depth. The ability to make predictions or decisions based on evidence and logic still needs to be improved, especially for students in the low category. Students in the high category demonstrated good logical and analytical thinking in constructing inferences from various pieces of information, however, their number remained relatively small.

In general, the results of this study indicated that the majority of students had developed adequate critical thinking skills, particularly in the aspects of interpretation and analysis. This suggests that most students were capable of understanding statements and connecting information to relevant concepts. Moreover, they demonstrated a solid foundation in identifying the core of problems and integrating various pieces of information related to capital market material.

However, students' critical thinking performance in the aspects of evaluation and inference required further improvement, as reflected in the predominance of students categorized at the medium and low levels. This condition indicates that many students still encountered difficulties in logically assessing arguments and drawing conclusions based on the available evidence. Their ability to evaluate the truth of a statement or make sound decisions grounded in thorough analysis had not yet developed optimally. These results highlight that the aspects of evaluation and inference continue to pose challenges for a significant portion of students.

CONCLUSIONS AND SUGGESTIONS

A. Conclusion

The results showed that the critical thinking skill of Grade X students in the capital market topic varied across each indicator. In the interpretation aspect, most students were in the high category, indicating a strong level of mastery. In the analysis aspect, students' critical thinking skill was relatively adequate, with the majority falling into the medium category. Only a small number of students were in the low category in these two aspects. Meanwhile, students' critical thinking skill in the evaluation and inference aspects was less evenly distributed. Although some students were in the high category and able to evaluate and draw conclusions effectively, a considerable number were in the medium and low

categories, indicating they still encountered difficulties. These students required more time to assess the available information and to draw accurate conclusions from the given statements.

B. Suggestion

Students are encouraged to further develop their critical thinking skills, particularly in the aspects of inference and evaluation. In terms of inference, students should be able to draw conclusions from theories, data, or case studies related to capital market topics, for example, by answering questions that require them to conclude the impact of an economic event on stock prices or analyze cases involving the capital market. Meanwhile, to strengthen their evaluation skills, students need to distinguish between opinions supported by data and purely subjective statements, as well as provide critical judgments regarding decisions presented in capital market related problems. In addition, students may enhance their analysis skills by regularly identifying key components in a given case and understanding the interrelationships between concepts in capital market material.

Teachers have an important function in supporting students to develop their critical thinking skills by presenting capital market material in a contextual and practical manner, such as using current news related to the capital market as material for discussion. Teachers should also design assignments that encourage students to think critically, for example by asking them to compare investment strategies or analyze cases related to the capital market. Furthermore, tests developed by teachers should place greater emphasis on the aspects of inference and evaluation.

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