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Profile of Critical Thinking Skills of Grade VI Students

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Abstract
Critical thinking ability is an essential skill for students in facing the challenges of the 21st century. This study aims to find the level of student learning outcomes in the IPAS map and identify students' analytical skills in the IPAS map. The research method used is a descriptive quantitative approach with a one group pretest postest design. Data collection was carried out using a critical thinking ability test based on learning outcomes. The research method used is a quantitative approach with data collection techniques in the form of critical thinking skills tests based on two main indicators: interpretation, analysis. The research sample consisted of 49 students from three primary schools in the cluster. The results showed that the level of student learning outcomes was in the Good category with an average score of 83.38. A total of 89.8% of students scored in the 71-100 range, while the rest were in the Fair category, and no students were in the Poor category. In-depth analysis showed that the analysis aspect obtained an average score of 87.15 and interpretation 85.66, both of which were in the high category. This finding indicates that students have a strong ability to understand, decipher, and evaluate information in the context of IPAS learning. This research recommends the implementation of problem-based active learning strategies to develop critical thinking aspects more thoroughly and sustainably since primary education.
Keywords: *critical thinking, primary school students, self-regulation, evaluation, active learning.*

Abstrak
Kemampuan berpikir kritis merupakan keterampilan yang esensial bagi peserta didik dalam menghadapi tantangan abad ke-21. Penelitian ini bertujuan untuk mengetahui tingkat capaian pembelajaran peserta didik pada peta IPAS dan mengidentifikasi keterampilan analisis peserta didik pada peta IPAS. Metode penelitian yang digunakan adalah pendekatan kuantitatif deskriptif dengan rancangan one group pretest postest design. Pengumpulan data dilakukan dengan menggunakan tes kemampuan berpikir kritis berbasis capaian pembelajaran. Metode penelitian yang digunakan adalah pendekatan kuantitatif dengan teknik pengumpulan data berupa tes keterampilan berpikir kritis berbasis dua indikator utama yaitu interpretasi, analisis. Sampel penelitian berjumlah 49 peserta didik dari tiga sekolah dasar dalam gugus tersebut. Hasil penelitian menunjukkan bahwa tingkat capaian pembelajaran peserta didik berada pada kategori Baik dengan skor rata-rata 83,38. Sebanyak 89,8% peserta didik memperoleh skor pada rentang 71-100, sedangkan sisanya berada pada kategori Cukup, dan tidak ada peserta didik yang berada pada kategori Kurang. Analisis mendalam menunjukkan bahwa aspek analisis memperoleh skor rata-rata 87,15 dan interpretasi 85,66 yang keduanya berada pada kategori tinggi. Temuan ini menunjukkan bahwa siswa memiliki kemampuan yang kuat untuk memahami, menguraikan, dan mengevaluasi informasi dalam konteks pembelajaran IPA. Penelitian ini merekomendasikan penerapan strategi pembelajaran aktif berbasis masalah untuk mengembangkan aspek berpikir kritis secara lebih menyeluruh dan berkelanjutan sejak jenjang pendidikan dasar.
Kata kunci: berpikir kritis, siswa sekolah dasar, regulasi diri, evaluasi, pembelajaran aktif

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INTRODUCTION

Critical thinking is a much-needed skill in this era of globalisation, especially in the context of education (Vincent-Lancrin, 2023; Aston, 2024). Critical thinking is not only related to the ability to understand information, but also the ability to analyse, evaluate and process information objectively and systematically to produce logical and rational thinking (López et al., 2023; Dinsmore & Fryer, 2023). In the world of education, critical thinking skills have a very important role to support student learning success (Butler, 2024; Guo & Lee, 2023). In the world of education, critical thinking skills have a very important role to support student learning success (Bailey & Burch, 2023; Franco-Mariscal et al., 2024).

According to the World Economic Forum (2020), critical thinking is one of the ten most needed skills in the 21st century. In addition, data from Kemendikbudristek also shows that most Indonesian students are still at a low level in higher-order thinking skills, including critical thinking (Rahmawati et al., 2023). This points to the importance of educational interventions that focus on improving these skills from primary education onwards.

The lack of critical thinking skills among students is a significant problem in today's education system and can interfere with the development of their academic potential and preparation for the challenges of the 21st century (Bailey & Burch, 2023; Cui & Teo, 2023). Research conducted by (Rizqiyah et al, 2022; Sutarsa & Puspitasari, 2021) found that many teachers still rely on one-way learning, which tends not to stimulate their analytical and critical skills. Classical and less interactive learning can cause students to be insensitive in analysing information, generating solutions, and making decisions that are not based on evidence (Hanscomb, 2023; Kania et al., 2023).

A similar phenomenon was also found in the author's initial observation of 49 grade VI students from three primary schools in Gugus Tampak Siring. Initial results showed that 60% of students were unable to construct data-based arguments and had difficulty in solving open-ended problems logically. This is thought to be due to the lack of learning activities that encourage in-depth exploration and problem solving. For example, there was a lack of group discussion activities and project-based tasks that allowed students to assess and develop solutions to real problems.

In addition, other factors such as a lack of guidance in evaluating arguments and learning experiences dominated by memorisation exacerbate this situation. According to Cottrell (2023), critical thinking skills will not develop without a learning environment that allows students to think freely, express opinions and reflect together. In other words, there is a need for an interactive and constructive learning approach, which focuses on strengthening students' analytical and evaluation skills.

One of the relevant solutions to overcome this problem is the application of problem-based learning methods (*Problem-Based Learning*/PBL) (Akcay & Benek, 2024; Maros et al., 2023; Saad & Zainudin, 2022; Siswanto, 2025). This method is proven to be able to increase students' active involvement, direct them to think critically, and connect theory with real-life practice (Almazroui, 2023; Sukackė et al., 2022). In line with this, this study adopts learning activities that emphasise critical thinking exercises using questions designed based on critical thinking indicators. In the theoretical study, Facione (2015) mentioned six main indicators of critical thinking, namely interpretation, analysis, evaluation, inference, explanation, and self-regulation. These six aspects became an important basis in developing this research instrument. These aspects not only help map students' strengths and weaknesses, but also form the basis for developing more appropriate learning strategies. The advantage of Facione's indicator-based approach lies in its ability to capture students' thinking processes in depth (Isnaeni et al., 2021; Tian et al., 2025). For example, self-regulation

helps students evaluate their own thinking, while analysis and evaluation encourage them to distinguish between valid and invalid arguments.

There has been a lot of research on students' critical thinking skills, especially at the secondary and higher education levels (Darwin et al., 2024; Susongko et al., 2024). Several studies have shown that a more active, problem-solving approach to learning can improve students' critical thinking skills (Obidovna, 2023; Pnevmatikos et al., 2023). In addition, other research by shows that the use of technology in learning, such as audiovisual media using Game Based Learning, can stimulate critical thinking skills in students, as it can facilitate the process of exploring ideas and deeper understanding (Mejia & Sargent, 2023; Campo et al., 2023; Larson et al., 2024).

The empirical evidence from the researcher's pre-survey further strengthens this finding. A preliminary measurement of critical thinking skills was conducted with **82 grade VI students** from three primary schools in Grogol Subdistrict (SDN Cemani 05, SDN Cemani 02, and SDN Cemani 03), consisting of **48 male and 34 female students**. The results showed that students' critical thinking performance was still relatively low across four main indicators. For example, the correct response percentage for induction was only 42.41%**,** credibility of sources and observation 40.82%**,** deduction 36.98%**,** and identification of assumptions 35.11%. These findings indicate that most students had difficulties in evaluating facts, determining reliable information sources, drawing logical conclusions, and recognising assumptions. This empirical evidence highlights the urgency of conducting more in-depth research in the Gugus Tampak Siring context, where the present study aims to fill the gap by analysing students' analytical and interpretive skills within IPAS learning.

Based on this explanation, the main focus of this research is to explore the extent of critical thinking skills of grade VI students in Gugus Tampak Siring. Therefore, the research problems can be formulated as follows: (1) How is the level of critical thinking skills of grade VI students in IPAS learning? (2) What is the level of students' learning outcomes in the IPAS subject? and (3) How are students' analytical skills, particularly in the aspects of interpretation and analysis, reflected in their IPAS learning outcomes? In line with these problems, the objectives of this study are to describe the profile of students' critical thinking skills, to determine their learning outcomes in the IPAS subject, and to analyse students' analytical skills in terms of interpretation and analysis as part of the development of critical thinking in primary education.

RESEARCH METHODS

This study used a quantitative approach with a descriptive method to describe the profile of critical thinking skills of grade VI students in Gugus Tampak Siring. A quantitative approach was chosen because it allows researchers to measure variables objectively and present data in the form of numerical descriptions that can be statistically analysed (Creswell, 2014; Sugiyono, 2019). The research subjects consisted of 49 grade VI students from three schools in the Tampak Siring Cluster: SD Kwarasan 1 (22 students), SD Kwarasan 2 (12 students), and SD Kwarasan 3 (15 students). The population in this study was all grade VI students in Gugus Tampak Siring, while the sample was determined using a purposive sampling technique by considering schools that were representative of the cluster and had relatively similar learning characteristics (Etikan, Musa, & Alkassim, 2016).

The instrument used was a critical thinking skills test consisting of 20 questions based on two main indicators of critical thinking according to Facione (2015), namely: (1) Interpretation, and (2) Analysis. These questions are independent, so that the completion of one question does not depend on other questions. Data collection was carried out by administering the critical thinking skills test to 49 students with a completion time of 45 minutes. Test results were collected and analysed based on score categories.

Data analysis was performed using descriptive statistics with the score categorisation as follows: Less Category (10–40), Fair Category (41–70), and Good Category (71–100). Descriptive statistical analysis was chosen because it enables researchers to present data in the form of frequency, percentage, and mean to provide a clear picture of students' abilities (Miles, Huberman, & Saldaña, 2014; Gravetter & Wallnau, 2021). The analysis was carried out using SPSS software to process data and produce descriptive statistics regarding the distribution of student scores.

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RESULTS AND DISCUSSION

RESULTS

This study aims to find the level of student learning outcomes and analyse students' analytical skills in IPAS learning through a descriptive quantitative approach. This study measures critical thinking skills using two main indicators, namely interpretation, analysis (Facione, 2015). Each item is prepared based on indicators that refer to the mastery of critical thinking skills in accordance with the predetermined sub-indicators. The questions are independent, where the completion of one question does not depend on other questions. The critical thinking skills test consisted of 20 questions given to one cluster involving 22 students from SD Kwarasan 1, 12 students from SD Kwarasan 2, and 15 students from SD Kwarasan 3 grade VI, with a processing time of 45 minutes. The data obtained from the students' work was then analysed by the researcher. Students' critical thinking skills scores were categorised into three classes with score ranges of 10-40, 41-70, and 71-100. The results of the critical thinking ability test can be seen in Table 1 below.

Table 1. Table of Average Level of IPAS Learning Outcomes of Students

Value Range	Centre Value	Frequency	Average Score
10 - 40	25,5	0	0
41 - 70	55,5	5	68
71 - 100	85,5	44	85,11
	Average		83,38

Source: SPSS processed data in 2025

Table one illustrates the profile of critical thinking skills of grade VI students in Gugus Tampak Siring. Critical thinking skills were measured using a test consisting of 20 questions, which was administered to 49 students from three schools in the cluster. The results of the analysis showed that no students were in the Poor category with a score range of 10-40, indicating that all students had critical thinking skills above the Low category. This is a positive indication that the applied learning successfully prevented students from being in the low ability category. In the Moderate category, with a score range of 41-70, there were 5 students in this group with an average score of 68. Although the number of students in this category is relatively small, this indicates the need for some students to get more attention in developing their critical thinking skills. Teachers are expected to increase guidance and use more challenging learning methods so that students in this category can improve their skills more optimally.

Most students, 44 out of 49 students, were in the Good category with a score range of 71-100 and an average score of 85.11. These results show that the majority of students in Gugus Tampak Siring had good learning outcomes. Overall, the average IPAS learning outcome was 83.38, indicating that students generally performed well. The absence of students in the Poor category indicates the success of the learning process that has been implemented. The increase in scores shows the effect of

learning on students' IPAS learning outcomes. The percentage increase of 27.2 points indicates that students made significant progress after following the learning process.

Table 2: Average Table of Levels of Creative Thinking Ability of Learners

No	Assessment Aspect	Skor	Categori
1	Interpreting	85,66	Good
2	Analisis	87,15	Good

Source: Processed Researcher Data in 2025

Based on the data presented in the table, the critical thinking skills of grade VI students in Tampak Siring Group can be categorised at a good level. This is based on the range of categories used, namely 10-40 (Poor), 41-70 (Fair), and 71-100 (Good). All aspects of critical thinking assessment measured in this study obtained scores in the range of 85.65 to 87.15, which means all aspects fall into the Good category. When reviewed in more detail, the Interpretation aspect obtained a score of 85.6 indicating that students have strong metacognitive awareness in organising, controlling and evaluating their thinking processes. This ability is very important in critical thinking as it allows students to independently monitor and adjust their thinking strategies in solving problems or analysing information.

Furthermore, the Analyse aspect scored 87.15, which indicates that students have a good ability to identify patterns, compare information, and examine relationships between concepts. This shows that they can understand information well and sort it out based on relevance.

From the results of this analysis, it can be concluded that grade VI students in Tampak Siring Sub-Group generally have good critical thinking skills. However, there are differences in scores between aspects which indicate that evaluation and inference skills can still be improved through learning strategies that emphasise in-depth analysis and justification of arguments. Therefore, teachers can develop problem-solving and critical discussion-based learning methods to further hone students' critical thinking skills, especially in the evaluation and inference aspects.

DISCUSSION

Critical thinking is a form of higher-order thinking that is very important in the learning process. This ability helps students to increase their curiosity, encouraging them to continue to seek information and consider ways of solving the problems at hand. Critical thinking is also used to assess the truth of information, so that a decision can be made whether the information should be accepted or rejected (Almulla & Al-Rahmi, 2023; Darvishi et al., 2022; Halpern & Dunn, 2021; Supena et al., 2021). Individuals with critical thinking skills tend to evaluate information in depth and draw conclusions based on facts to make informed decisions (O'Reilly et al., 2022; Plummer et al., 2022; Setiana et al., 2021). The hallmark of someone who thinks critically is their tendency to always seek and relate the problem at hand to other relevant experiences.

The results of the analysis show that students in grade VI in Tampak Siring Group have good IPAS learning outcomes, with an average score of 83.38. A total of 44 out of 49 students were in the Good category (71-100), while 5 students were in the Fair category (41-70). The absence of students in the Lack category indicates the effectiveness of the applied learning. However, students in the Fair category require more attention to improve learning outcomes. This is in line with research conducted by (Muhamad Afandi et al., 2024; Rahmawati et al., 2023; Sarwanto et al., 2021) which states that the IPAS learning outcomes of elementary school students are in the good category. Most students were able to identify problems appropriately, analyse information effectively, and make logical decisions in solving the critical thinking

problems given. This shows that students not only understand the concepts taught, but are also able to apply them effectively in various situations (Booth et al., 2013; Rencitia, 2024; Szabo et al., 2020). This success is influenced by active learning methods, the use of adequate learning resources, and teacher involvement in facilitating critical discussions in the classroom (Børte et al., 2023; Musa'ad et al., 2024; Nguyen et al., 2021). In addition, students are accustomed to being given regular critical thinking exercises, which helps them to develop these skills consistently. (Paul & Elder, 2007).

The results of the analysis of the level of students' critical thinking skills showed that the Analysis aspect obtained an average score of 87.15, while the Interpretation aspect reached an average score of 85.66, both of which were in the high category. This achievement indicates that most students have a good ability to examine the structure of information, recognise patterns of relationships between concepts, and understand the meaning of information presented in the form of text, images, graphs, or everyday phenomena related to IPAS subjects.

Analytical skills in the context of critical thinking include the process of breaking down complex information into simpler parts, recognising assumptions, comparing data, and assessing cause-and-effect relationships among interrelated variables (Teo et al., 2023). Meanwhile, interpretation refers to students' ability to understand and give meaning to the information provided, including explaining ideas, interpreting symbols, and linking new information to existing knowledge (Ennis, 2011; Paul & Elder, 2007). In IPAS learning, these two indicators are very important because students are not only required to memorise facts, but also understand the scientific and social principles underlying the events or symptoms observed in the surrounding environment.

The high scores on both aspects indicate that the learning approach implemented has successfully created a learning atmosphere that stimulates students' intellectual engagement. When students are used to being given open-ended questions, case studies and challenging problem-based scenarios, they will be encouraged to not only passively receive information, but also actively decipher, analyse and relate the information within a logical thinking framework. This is in line with the findings of Halpern and Dunn (2021) who emphasise that active, problem-based and reflective learning strategies have a significant contribution in developing students' critical thinking skills, especially in the aspects of interpretation and analysis.

Furthermore, research conducted by Almulla and Al-Rahmi (2023) also showed that a learning environment that supports dialogue, collaboration, and independent exploration of information can improve students' overall critical thinking skills. In this context, analytical skills help students to evaluate the validity of information sources, connect seemingly unrelated data, and construct weighty arguments. Meanwhile, interpretation helps students to understand the implied meaning of information, as well as re-present it in a form of representation that can be understood by others. Both of these abilities are crucial in today's information age, where students not only need to know something, but also understand and explain why and how something happened.

Thus, students' success in the analysis and interpretation aspects is an indicator that IPAS learning has successfully developed higher-order cognitive dimensions that are not only important for academic achievement, but also for real life. The improvement in these two aspects also shows that the learning process is not only declarative, but also applicative and transformative. Therefore, these results provide evidence that with the right learning strategies, even primary school students can demonstrate strong critical thinking skills, especially in interpreting and analysing complex and diverse information, as demanded in 21st century learning (Bailin et al., 2022; Nguyen et al., 2021; Ritchhart et al., 2011).

CONCLUSIONS

This study concludes that the critical thinking skills of grade VI students in Gugus Tampak Siring are generally in the good category. The overall IPAS learning outcomes reached an average score of 83.38**,** with 89.8% of students in the Good category (71–100) and only 10.2% in the Fair category (41–70)**,** while no students were found in the Poor category. These findings indicate that students have achieved satisfactory learning outcomes in IPAS. In terms of analytical skills, the results also show strong performance, where the analysis aspect scored 87.15 and the interpretation aspect 85.66**,** both of which are categorised as high. This demonstrates that students are able to identify patterns of information, evaluate relationships between concepts, and interpret data effectively in the context of IPAS learning. However, further efforts are still needed to strengthen other aspects of critical thinking, such as evaluation, inference, and explanation. Thus, the objectives of this study to describe the profile of students' critical thinking skills, to determine their IPAS learning outcomes, and to analyse their analytical skills have been achieved. These results provide valuable empirical evidence for the development of learning strategies that focus on enhancing critical thinking skills from the primary school level.

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