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The Effect of Critical Thinking Ability and Learning Motivation on IPAS Learning Outcomes

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Abstract: This study aims to analyze the effect of critical thinking skills and student learning motivation on the learning outcomes of IPAS. The research was conducted at SD Negeri 2 Petobo using a survey method with a quantitative approach. Data collection involved administering critical thinking skills test questions and distributing learning motivation questionnaires, while IPAS learning outcomes were obtained from the mid-term test results of fifth-grade students. The sample consisted of 19 students, including 13 male and 6 female students. The collected data were analyzed using multiple regression analysis with SPSS. The normality test results confirmed that the data met the assumptions required for further statistical testing. The findings indicate that critical thinking skills and learning motivation significantly influence IPAS learning outcomes, as evidenced by an F-count value of 184.417 and an R-value of 0.967. Additionally, critical thinking skills were found to have a significant impact on student achievement in IPAS. Similarly, learning motivation was identified as a crucial factor affecting learning outcomes. These findings highlight the importance of fostering critical thinking and motivation to enhance students' academic performance. This study underscores the need for educators to integrate strategies that strengthen these aspects of the learning process.

Keywords: Critical Thinking Skills, IPAS Learning Outcomes, Learning Motivation

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INTRODUCTION

Student learning outcomes serve as a key indicator of educational success. However, in Indonesia, learning outcomes, particularly in the subject of Natural and Social Sciences (Ilmu Pengetahuan Alam dan Sosial—IPAS), often remain suboptimal despite continuous efforts to enhance learning quality. IPAS, introduced at the elementary school level from grade III, integrates knowledge of natural and social sciences to help students understand their environment and develop problem-solving skills (Putra & Widiari, 2023). Given its interdisciplinary nature, mastery of IPAS requires not only memorization but also critical thinking skills that enable students to analyze and solve real-world problems effectively.

Several factors influence student learning outcomes, with critical thinking skills and learning motivation being among the most significant. Critical thinking is an essential cognitive ability that enables students to analyze, interpret, and evaluate information systematically. Students with strong critical thinking skills tend to be more engaged in the learning process, enjoy problem-solving, and persist in overcoming academic challenges (Raj et al., 2022; Safirah et al., 2024). Meanwhile, learning motivation plays a crucial role in shaping students' enthusiasm for acquiring knowledge, influencing their willingness to participate actively in lessons and persevere through academic difficulties (Zhao, 2024).

Education in the 21st century is expected to produce a generation that is not only academically proficient but also capable of thinking critically, creatively, and adaptively in response to rapid societal and technological changes (Tanantong et al., 2024). The modern learning paradigm emphasizes the development of essential skills such as critical thinking, problem-solving, communication, and collaboration. Therefore, fostering critical thinking skills and enhancing learning motivation is fundamental to improving human resources and preparing students to navigate complex global challenges.

Previous research has demonstrated a significant relationship between critical thinking, learning motivation, and academic achievement. Both critical thinking skills and learning motivation positively influence learning outcomes in social studies subjects (Almulla & Al-Rahmi, 2023; Yu et al., 2021). Similarly, students' ability to analyze and draw conclusions significantly correlates with science learning outcomes (Li & Xue, 2023; Shanta & Wells, 2022). Furthermore, learning motivation and perceptions of critical thinking skills contribute to students' performance in economics (Safna &

Wulandari, 2022). These studies reinforce the importance of these two factors in enhancing learning outcomes, though they vary in focus, methodologies, and target education levels.

Despite existing research, a gap remains in studies examining the combined effect of critical thinking skills and learning motivation on IPAS learning outcomes. Most prior studies have analyzed these variables separately, without exploring their collective impact on student achievement. Additionally, studies focusing specifically on elementary school students in the context of IPAS learning remain limited. Addressing this gap is crucial, as understanding the interplay between these factors can help educators design more effective teaching strategies tailored to students' needs.

Based on this research gap, the present study aims to analyze the simultaneous influence of critical thinking skills and learning motivation on IPAS learning outcomes among elementary school students. The findings are expected to provide valuable insights into effective instructional strategies that can enhance student achievement and contribute to educational development. By identifying how these two factors interact, educators can formulate targeted approaches to improve students' cognitive abilities, engagement, and overall academic performance in IPAS.

METHODS

This study employed a survey method with a quantitative research approach. The survey method is a widely used quantitative research technique that involves collecting data from a group of respondents to analyze relationships between variables (Dehalwar & Sharma, 2023). The survey method allows researchers to obtain data systematically from a specific population by using structured instruments such as tests and questionnaires (Karunarathna et al., 2024). This method is particularly useful for understanding the influence of multiple factors on learning outcomes, making it suitable for this study.

The research was conducted at SD Negeri 2 Petobo with a total sample of 29 fifth-grade students, consisting of 13 male and 16 female students. The sample selection was carried out using a purposive sampling technique, where students were chosen based on specific criteria, namely those who had taken the mid-term test (UTS) in IPAS and were actively participating in classroom learning. This sampling technique ensures that the selected participants are relevant to the research objectives and can provide meaningful insights into the relationship between critical thinking skills, learning motivation, and

IPAS learning outcomes.

To measure students' critical thinking skills, a test consisting of 10 multiple-choice and essay questions was administered. The test items were designed to assess various aspects of critical thinking, including analyzing, evaluating, and drawing conclusions based on the given information. The questions were constructed based on the IPAS curriculum, specifically covering topics related to environmental sustainability, the interaction between living things, and natural resource management. The test instrument underwent expert validation by education professionals to ensure content accuracy and alignment with learning objectives. Additionally, empirical validation was conducted through a pilot test with a small group of students to refine question clarity and difficulty levels.

Students' learning motivation was assessed using a questionnaire consisting of 20 statements. The questionnaire measured intrinsic and extrinsic motivation, including students' interest in learning, perseverance in overcoming challenges, and their attitude toward the subject. The questionnaire was developed based on established motivation theories and underwent expert validation before being tested for reliability.

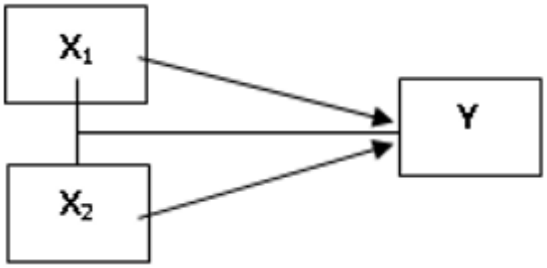

Figure 1. Research Design

The student's learning outcomes in IPAS were determined using their mid-term test (UTS) scores. The UTS covered the same material as the critical thinking test to ensure consistency in measuring students' understanding and analytical abilities. By aligning the test content with the curriculum and research objectives, this study aimed to provide a comprehensive analysis of how critical thinking skills and motivation influence academic performance in IPAS. The collected data were then analyzed using multiple regression analysis with SPSS to examine the relationship between the variables.

RESULTS

The validity test was conducted to assess the consistency of the test items used in measuring students' critical thinking skills. The results showed that 75% of the test items met the validity criteria, while 25% were deemed invalid and removed from further analysis. The reliability test, conducted using Cronbach's Alpha, indicated a reliability coefficient of 0.76, suggesting a high level of consistency in the measurement instruments.

The normality test confirmed that the data for critical thinking skills, learning motivation, and IPAS learning outcomes followed a normal distribution. Furthermore, the linearity test demonstrated that both independent variables (critical thinking skills and learning motivation) had a linear relationship with the dependent variable (IPAS learning outcomes). Additionally, the multicollinearity test showed that the variance inflation factor (VIF) values for both independent variables were below the threshold of 10, confirming the absence of multicollinearity issues.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.967[a]	.934	.929	2.24540

a. Predictors: (Constant), Motivasi Belajar, Kemampuan Berpikir Kritis

Figure 2. Hypothesis Test

The hypothesis testing revealed a strong correlation between the independent variables and the dependent variable. The multiple regression analysis showed that critical thinking skills and learning motivation together contributed to 93.4% of the variance in IPAS learning outcomes. The t-test results indicated that both critical thinking skills and learning motivation had a significant individual impact on students' academic performance. Additionally, the F-test confirmed that the combined effect of these two factors was statistically significant.

These findings align with previous research that highlights the positive influence of critical thinking skills and learning motivation on academic performance. However, this study specifically focuses on IPAS subjects, distinguishing it from earlier studies that primarily examined other subjects such as social sciences or economics. The results underscore the importance of fostering critical thinking skills and motivation in elementary school students to enhance their academic achievement, particularly in

interdisciplinary subjects like IPAS. These findings provide valuable insights for educators in designing effective teaching strategies that integrate critical thinking development and motivation enhancement to improve student learning outcomes.

DISCUSSION

The Effect of Critical Thinking Skills (X_1) on IPAS Learning Outcomes (Y)

This study found that critical thinking skills significantly influence students' IPAS learning outcomes. Students with higher critical thinking skills tend to achieve better academic performance, as they can analyze problems, evaluate information critically, and formulate well-reasoned solutions. These findings align with previous studies that highlight the role of critical thinking in improving student learning outcomes (Anggraeni et al., 2023; Safna & Wulandari, 2022). Critical thinking enables students to develop a deeper understanding of the subject matter, construct logical arguments, and apply knowledge in various contexts, ultimately enhancing their academic achievements.

The relationship between critical thinking and academic performance can be explained by the cognitive processes involved. When students think critically, they engage in higher-order thinking skills, such as analyzing, evaluating, and synthesizing information (List & Sun, 2023). These cognitive abilities support the learning process, as students become more adept at solving complex problems and making informed decisions. Furthermore, students with well-developed critical thinking skills are less likely to accept information passively. Instead, they question, reflect, and seek evidence before concluding, leading to a more profound and meaningful learning experience (Sukackė et al., 2022).

The findings also emphasize the importance of fostering critical thinking in the classroom. Effective teaching strategies, such as inquiry-based learning, problem-solving activities, and open-ended questioning, can help develop students' ability to think critically (Novandri et al., 2021). Teachers play a crucial role in stimulating students' critical thinking by encouraging discussion, prompting them to justify their reasoning, and providing opportunities for collaborative learning (Sholihah & Amaliyah, 2022). Additionally, selecting appropriate teaching models that align with the subject matter is essential in helping students grasp fundamental concepts and develop independent learning habits (Mukherjee et al., 2024).

These results contribute to the growing body of research on the role of critical thinking in education, particularly in the context of elementary school students learning IPAS. While previous studies have focused on different subjects such as social sciences and economics, this study specifically highlights the impact of critical thinking on interdisciplinary learning. The findings reinforce the need for educational institutions to integrate critical thinking development into curricula and teaching methodologies, ensuring that students acquire the cognitive skills necessary for academic success and lifelong learning.

The Effect of Learning Motivation (X_2) on IPAS Learning Outcomes (Y)

The findings of this study indicate that learning motivation significantly influences students' IPAS learning outcomes. Higher motivation levels correspond to better academic performance, suggesting that students who are more engaged and enthusiastic about learning are likely to achieve higher results. Learning motivation is a crucial factor affecting students' academic achievements (Wilkesmann, 2021). Motivation serves as an internal drive that encourages students to invest effort in their studies, sustain their learning process, and persist despite challenges.

These results are consistent with previous research findings. A significant relationship between learning motivation and academic achievement in social studies, reinforcing the idea that motivation plays a vital role in student performance (Chang & Tsai, 2022). Similarly, students with higher motivation levels achieved better learning outcomes, confirming that motivation acts as a driving force that enhances learning engagement and academic success (David & Irsyadunas, 2022). The consistency between this study and prior research underscores the universal impact of motivation on students' learning experiences across different subjects and educational settings.

The role of motivation in learning is well-established in educational psychology. Motivation not only drives students to engage in learning activities but also influences their persistence, effort, and overall attitude toward education. When students are highly motivated, they are more likely to enjoy the learning process, seek deeper understanding, and develop resilience in overcoming academic difficulties (Julyanti, 2021). This highlights the importance of fostering motivation in the classroom through various strategies, such as providing positive reinforcement, setting achievable goals, and encouraging self-directed learning.

The results of this study emphasize the need for educators to create a learning environment that nurtures and sustains student motivation. Teachers can employ various techniques, such as praise, rewards, and constructive feedback, to enhance students' enthusiasm for learning. Additionally, adopting student-centered teaching approaches that promote active participation and engagement can help sustain motivation throughout the learning process (David & Irsyadunas, 2022). Given the strong correlation between motivation and learning outcomes, future research should explore effective strategies to enhance motivation in different educational contexts and among diverse student populations.

The Effect of Critical Thinking Skills (X_1) and Learning Motivation (X_2) Simultaneously on IPAS Learning Outcomes (Y)

The findings of this study indicate that critical thinking skills and learning motivation jointly have a significant positive impact on students' IPAS learning outcomes. These results align with the fundamental educational principle that cognitive abilities and motivation work together to enhance academic performance. Students with strong critical thinking skills are better equipped to analyze and process complex information, while those with high motivation are more persistent in their learning efforts. The interplay between these two factors creates a supportive environment for improved comprehension and academic achievement.

These results are consistent with previous studies. Critical thinking and motivation together significantly influence student performance in social studies (Almulla, 2023). Similarly, critical thinking is shaped by various internal and external factors, including family and social environments (Fatullah et al., 2023). This suggests that fostering both cognitive skills and motivation in students can lead to meaningful improvements in learning outcomes. The consistency of these findings across different contexts highlights the universality of the relationship between these variables and student success.

Motivation plays a crucial role in directing students' cognitive efforts. Highly motivated students are more likely to engage actively in learning, apply critical thinking strategies, and persist through challenges. Motivated individuals tend to maximize their potential to achieve optimal learning outcomes (Julyanti, 2021). This reinforces the notion that motivation does not act in isolation but complements cognitive skills, making students more effective learners.

Given the strong relationship between critical thinking, motivation, and academic performance, educators should focus on strategies that simultaneously enhance both aspects. Encouraging analytical discussions, problem-solving exercises, and inquiry-based learning can help students develop critical thinking skills. Meanwhile, fostering intrinsic motivation through goal-setting, constructive feedback, and a supportive learning environment can sustain students' enthusiasm for learning. Future research should explore specific instructional methods that effectively integrate these elements to maximize student success.

CONCLUSION

The study concludes that critical thinking skills and learning motivation significantly influence students' IPAS learning outcomes at SD Negeri 2 Petobo. Higher critical thinking ability and motivation correlate with better academic performance, emphasizing the need to develop these aspects in the learning process. To enhance critical thinking, teachers should implement activities that encourage deep analysis, discussions, and reflective learning. Additionally, fostering motivation through positive feedback, recognition of achievements, and engaging learning environments can further improve student outcomes. These findings highlight the importance of integrating cognitive skill development and motivational strategies in primary education. Future research should explore effective instructional methods that optimize both aspects, ensuring sustainable improvements in student learning.

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