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ENHANCING HIGHER-ORDER THINKING SKILLS AND STUDENT DISCIPLINE THROUGH THE IMPLEMENTATION OF PROBLEM-BASED LEARNING IN IPAS LEARNING

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ABSTRACT

This study was motivated by the low level of Higher-Order Thinking Skills (HOTS) and weak learning discipline among fifth-grade students at an elementary school in Muaro Jambi during IPAS lessons. Initial observations and pretest results showed that students' higher-order thinking abilities were still limited, with an average score of **54.76** and **0%** of students meeting the minimum mastery criteria. Learning discipline was also low, as only 4% of students were categorized as good. These conditions encouraged the implementation of the Problem-Based Learning (PBL) model to improve cognitive performance and discipline. This research employed Classroom Action Research, conducted in two cycles: planning, action, observation, and reflection. Data were collected using HOTS tests, observation sheets, and discipline rating scales. The findings revealed a significant improvement: the average HOTS score increased to **66.24** in Cycle I and **82.92** in Cycle II, with learning mastery reaching **92%**, and a normalized gain of **0.613**. Student discipline also improved, with **96%** categorized as good in Cycle II. These results indicate that PBL is effective in enhancing HOTS and learning discipline in IPAS learning.

Keywords: Problem-Based Learning, Higher-Order Thinking Skills, Student Discipline, IPAS Learning.

INTRODUCTION

Elementary education plays a crucial role in developing higher-order thinking skills and shaping students' character, serving as a foundation for learning at subsequent levels (Nugroho et al., 2023). The *Kurikulum Merdeka* emphasizes a learning process that encourages students to analyze, evaluate, and create through learner-centered activities. However, the implementation of learning in elementary schools often does not fully reflect these expectations, particularly in the *Ilmu Pengetahuan Alam dan Sosial* (IPAS) subject, which emphasizes the integration of concepts and problem-solving abilities. The discrepancy between curricular demands and actual classroom practices remains a critical issue that requires further investigation.

Field conditions indicate that students' Higher-Order Thinking Skills (HOTS) remain relatively low. Students often struggle to connect information, analyze phenomena, and generate alternative ideas independently. Learning processes that focus predominantly on memorization have left students unaccustomed to making decisions based on analytical reasoning. This

situation highlights a gap between the expected learner profile and the reality observed in classrooms.

In addition to low cognitive performance, students' discipline is a challenge that affects learning effectiveness. Several students exhibit difficulties in managing time, frequently violate classroom rules, and show a lack of responsibility in completing assignments. Such conditions hinder IPAS learning activities that require collaboration and investigative processes. The lack of disciplined behavior weakens the overall quality of the learning process. These issues are inseparable from the predominance of conventional, teacher-centered learning approaches. Teachers tend to rely heavily on direct instruction, while students remain passive recipients of information. This type of learning does not provide sufficient opportunities for students to explore problems, consider alternative solutions, or develop arguments. Consequently, both HOTS and learning discipline fail to develop optimally.

Previous studies have demonstrated that Problem-Based Learning (PBL) can enhance higher-order thinking skills by providing authentic, problem-oriented learning experiences (Hamdani et al., 2022; Darwati & Purana, 2021; Muhartini et al., 2023). Several studies have also found that through group work and independent inquiry, this model fosters students' sense of responsibility and discipline (Kumalasari, 2025; Pasani et al., 2018). However, most of these studies focused on science (*IPA*) or social studies (*IPS*) separately, rather than on *Ilmu Pengetahuan Alam dan Sosial* (IPAS), which integrates both disciplines under the *Kurikulum Merdeka*. This indicates a research area that remains relatively unexplored.

Furthermore, most previous research has emphasized improving cognitive abilities without considering students' disciplinary development. In fact, IPAS learning demands the integration of higher-order thinking processes and disciplined character as prerequisites for scientific inquiry (Saputra et al., 2024). The lack of studies that integrate both dimensions within the context of IPAS learning suggests a significant research gap. Research that successfully connects cognitive and character dimensions would make both theoretical and practical contributions to advancing educational practices.

The novelty of this study lies in its dual focus on simultaneously improving HOTS and discipline through the implementation of PBL in fifth-grade elementary classrooms. This study not only evaluates cognitive learning outcomes but also observes behavioral changes in students throughout the learning process. Such an approach offers a more comprehensive understanding of PBL's effectiveness within the Kurikulum Merdeka framework, particularly in the IPAS subject, which requires complex thinking. As a Classroom Action Research (CAR), this study also provides direct benefits for teachers by facilitating continuous improvement in instructional

practices. Through iterative action cycles, teachers can identify instructional weaknesses, test solutions via PBL implementation, and reflect on their impact on both learning processes and outcomes. Therefore, this study not only yields empirical findings but also offers a replicable intervention model for other classroom contexts.

Based on these conditions, this study was conducted to analyze how implementing Problem-Based Learning (PBL) can enhance students' Higher-Order Thinking Skills (HOTS) and discipline in IPAS learning. This research is expected to provide empirical evidence of PBL's effectiveness in addressing both cognitive and affective learning challenges simultaneously. The findings are also anticipated to enrich the existing body of literature on problem-based learning in elementary education, in alignment with the goals of the *Kurikulum Merdeka*.

Thus, this study not only aims to improve the quality of classroom learning processes but also contributes theoretically to the development of instructional strategies that integrate higher-order thinking skills and disciplined character. The research findings are expected to serve as a reference for educators in designing IPAS learning that is more effective, adaptive, and relevant to students' needs in the modern era.

LITERATURE REVIEW

IPAS learning in the *Kurikulum Merdeka* is designed to develop scientific thinking skills, scientific literacy, and an understanding of the interconnectedness between natural and social concepts. IPAS emphasizes investigative activities, problem-solving, and the interpretation of real-life phenomena encountered in daily experiences (Aprina et al., 2024). This approach aligns with the direction of 21st-century education, which demands that students possess critical and creative thinking skills, as well as the ability to solve problems independently. Therefore, IPAS learning requires an instructional model that provides opportunities for exploration and authentic experiences.

Higher-Order Thinking Skills (HOTS) represent an essential competence within IPAS, as they involve processes of analysis, evaluation, and creation. Anderson and Krathwohl (2019) explain that HOTS require the ability to transform information, assess arguments, and generate new ideas based on evidence. Recent studies indicate that elementary school students still face difficulties in developing HOTS when learning activities do not provide opportunities for open and reflective thinking (Kurniasari et al., 2025). Hence, a learning model capable of systematically stimulating higher-order thinking processes is needed.

Disciplinary character is also a crucial aspect of learning success, particularly in inquiry-based activities that demand orderliness, punctuality, and adherence to procedures. Learning discipline is defined as the students' ability to regulate their actions in accordance with

established rules and learning responsibilities (Sobri, 2020). Recent research has shown that discipline can be enhanced through collaborative activities, the assignment of group roles, and the implementation of learning models that require active participation and accountability (Burke, 2008). This suggests that problem-based learning has the potential to positively influence students' disciplinary behavior.

Problem-Based Learning (PBL) is an instructional model that provides learning experiences through the resolution of authentic problems, thereby stimulating higher-order thinking activities. According to Nazareth et al. (2019), PBL positions students at the center of the learning process by presenting open-ended problems that must be analyzed, discussed, and solved collaboratively. Recent findings also indicate that PBL is effective in developing critical and creative thinking skills, as it requires students to evaluate information and generate alternative solutions (Nurkhin & Pramusinto, 2020). This makes PBL a highly relevant model for implementation in IPAS learning.

In addition to enhancing cognitive abilities, Problem-Based Learning (PBL) has been shown to strengthen students' disciplinary character. The collaborative nature of PBL requires students to adhere to rules, complete tasks on time, and maintain accountability for their respective roles. A study by Sihotang (2024) revealed that PBL improves discipline through precise task distribution, process monitoring, and student involvement in group decision-making. Thus, PBL not only develops higher-order thinking skills but also shapes more independent and organized learning behaviors.

Several studies conducted over the past seven years have reported that implementing PBL in elementary science subjects consistently leads to significant improvements in students' HOTS (Untari et al., 2018; Ratno et al., 2024). However, most of these studies remain focused on cognitive aspects without adequately considering the development of character traits such as discipline. Moreover, limited research has examined the application of PBL in the context of IPAS, an integrative subject within the *Kurikulum Merdeka*. This gap highlights the need for research that integrates both cognitive and character dimensions within a single instructional design.

Considering the development of theory and previous research findings, this study reinforces the foundation that PBL can serve as an effective strategy to enhance both HOTS and students' discipline. The novelty of this research lies in its focus on the IPAS curriculum for Phase C, its dual emphasis on cognitive and character aspects, and its use of Classroom Action Research (CAR) design to capture processual changes. This literature review demonstrates that the conducted research is theoretically relevant, addresses a clear research

gap, and provides a significant contribution to the development of effective instructional practices in elementary education.

METHODOLOGY

This study employed the Classroom Action Research (CAR) design developed by Kemmis and McTaggart, comprising four main stages: planning, action implementation, observation, and reflection. The CAR design was selected because it provides direct solutions to classroom learning problems and enables continuous improvement based on findings from each cycle. The research was conducted in two cycles, with each cycle comprising two meetings. The participants were 25 fifth-grade students from an elementary school in Muaro Jambi Regency, serving as the core group for implementing the Problem-Based Learning (PBL) model.

Data collection techniques included a HOTS test, classroom observation sheets, and a student discipline rating scale. The HOTS test was used to measure analytical, evaluative, and creative abilities through context-based IPAS essay questions. The observation sheet was used to assess participation, engagement, and classroom dynamics during PBL implementation. Meanwhile, the discipline assessment covered indicators of rule compliance, punctuality, responsibility, and neatness of work, using a 1–4 rating scale. All instruments were validated by experts prior to use to ensure data validity.

Data were analyzed using descriptive quantitative techniques, including calculating the mean score, learning mastery percentage, and normalized gain to measure improvement in HOTS across cycles. Discipline data were analyzed by score category and the percentage change in students who met the "good" criterion. Qualitative analysis of observation notes was conducted to enrich the quantitative findings. The results of each cycle were reviewed to assess the effectiveness of the actions and identify necessary improvements for the subsequent cycle, ensuring that the research process was systematic and evidence-based.

Figure 1. Classroom Action Research (CAR) Syntax

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PLANNING → ACTION → OBSERVATION → REFLECTION → IMPROVEMENT → CYCLE II
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RESULT AND DISCUSSION

The findings of this study indicate a substantial improvement in students' Higher-Order Thinking Skills (HOTS) following the implementation of the Problem-Based Learning (PBL) model in IPAS instruction. This improvement is reflected in the comparison of the average scores obtained from the pretest, Cycle I, and Cycle II assessments, as presented in Table 1. The initial data revealed that students' higher-order thinking abilities remained low, with an

average score of 54.76, and no students met the minimum mastery criteria. This condition shows that students experienced difficulties in performing analytical, evaluative, and creative thinking when confronted with learning problems.

Table 1. Students' HOTS Mean Scores Across Action Stages

Assessment Stage	Mean Score	Mastery (%)
Pretest	54.76	0%
Cycle I	66.24	16%
Cycle II	82.92	92%

The implementation of PBL in Cycle I began to show a positive impact on HOTS development, as evidenced by an increase in the average score to 66.24 and an improvement in mastery learning to **16%**. Students demonstrated progress in understanding the problem, identifying relevant information, and providing simple explanations based on the contextual issues presented. Nonetheless, their higher-order thinking skills had not yet developed optimally, as many students continued to rely on teacher guidance and had not fully demonstrated the ability to construct independent arguments.

A more substantial improvement was observed in Cycle II, with the average score reaching 82.92 and the mastery level increasing to 92%. At this stage, students demonstrated more advanced abilities in analyzing data, evaluating alternative solutions, and generating evidence-based conclusions. Changes in learning behavior also became more apparent, as students engaged more actively in group discussions and carried out problem-solving processes in a more systematic manner. These findings reinforce the notion that PBL provides learning experiences that continuously foster higher-order thinking among students (Syamsudin, 2020).

The *normalized gain* (N-gain) value of 0.613 indicates an improvement that falls within the "medium–high" category. This value confirms that the increase in scores was not merely a result of repeated exposure to the material but rather a direct effect of the PBL intervention, which offered students opportunities to engage in complex cognitive processes. Activities such as problem formulation, hypothesis testing, and the presentation of investigative findings were found to significantly contribute to the development of students' analytical and evaluative skills.

An improvement was also evident in student discipline. Positive behavioral changes were reflected in increased compliance with classroom rules, enhanced collaborative work, improved punctuality, and greater responsibility in completing tasks. The data on improvements in student discipline, summarized in Table 2, show a significant shift from the pre-action stage to Cycle II. These findings demonstrate that PBL not only enhances HOTS but also contributes

to the development of student discipline through mechanisms of collaboration, role distribution, and accountability in group work (Jailani et al., 2017).

Table 2. Improvement of Students' Discipline

Assessment Stage	Average Discipline Score	"Good" Category (%)
Pre-action	2.1	4%
Cycle I	2.8	36%
Cycle II	3.6	96%

The improvement of HOTS in Cycle II was further reinforced by observational findings that revealed notable changes in students' learning activities. At the beginning of the study, students tended to be passive, wait for teacher instructions, and participate little in discussions. However, after the consistent implementation of PBL, students began to demonstrate initiative in gathering information, engaging in discussions to formulate solutions, and communicating their findings. This indicates that problem-based learning enhances not only learning outcomes but also students' overall cognitive engagement throughout the learning process.

The disciplinary aspect also showed significant development as students were assigned clear group responsibilities within the PBL structure. Role divisions, such as group leader, recorder, and presenter, encouraged students to adhere to rules and complete tasks on time. These changes suggest that PBL naturally cultivates discipline through collaborative demands and shared problem-solving responsibilities. When students perceive themselves as accountable for their group's success, they tend to exhibit more orderly and responsible behavior (Pratiwi & Bektiningsing, 2025).

Compared with previous studies, this research's results align with those of Narmaditya et al. (2018), who reported that PBL significantly enhances critical thinking skills. Furthermore, the study by Kusniati & Hasan (2019) also demonstrated that collaborative work within PBL contributes meaningfully to improving student discipline. Nevertheless, the present study offers a new contribution by examining these two aspects simultaneously within the integrative context of the IPAS subject. Thus, this research enriches the academic discourse on the implementation of PBL within the latest elementary school curriculum.

Attaining a 92% mastery level in Cycle II indicates that the majority of students successfully met the competency standards established for IPAS learning. This improvement demonstrates the effectiveness of the instructional actions implemented and further underscores the PBL model's capacity to stimulate higher-order thinking processes. Additionally, the increase in the "good" discipline category to 96% reinforces the finding that problem-based learning can shape positive learning behaviors. This is particularly important, as

discipline is a prerequisite for the success of scientific inquiry and collaborative work in IPAS instruction.

Overall, this study's findings show that implementing PBL not only enhances cognitive learning outcomes but also positively transforms classroom dynamics. Students became more active, responsible, and engaged throughout the learning process. The improvements observed in both aspects suggest that PBL can serve as a strategic alternative to enhance the quality of IPAS learning within the context of the Merdeka Curriculum. These results also demonstrate that instructional strategies that provide space for exploration, collaboration, and problem-solving can strengthen both students' higher-order thinking abilities and their disciplinary character.

CONCLUSION

The results of this study demonstrate that the systematic implementation of Problem-Based Learning (PBL) across two cycles of Classroom Action Research effectively enhanced students' Higher-Order Thinking Skills (HOTS) and discipline in IPAS learning. The improvement in the average HOTS scores from 54.76 in the pre-action stage to 66.24 in Cycle I and 82.92 in Cycle II, accompanied by a 92% mastery level and a normalized gain value of 0.613, indicates significant cognitive development among students. Simultaneously, students' discipline scores improved markedly, with the proportion categorized as "good" rising from 4% in Cycle I to 36% in Cycle I and 96% in Cycle II, confirming that PBL fosters more orderly, responsible, and structured learning behavior. These findings affirm that PBL is a practical and relevant instructional model for improving both the processes and outcomes of IPAS learning, while also serving as a valuable reference for teachers designing learning strategies that holistically promote higher-order thinking and student character development.

REFERENCE

Aprina, E. A., Fatmawati, E., & Suhardi, A. (2024). Penerapan model problem based learning untuk mengembangkan keterampilan berpikir kritis pada muatan IPA sekolah dasar. *Didaktika: Jurnal Kependidikan*, *13*(1), 981-990. https://doi.org/10.58230/27454312.496

Burke, K. (Ed.). (2008). *What to do with the kid who...: Developing cooperation, self-discipline, and responsibility in the classroom*. Corwin Press.

Darwati, I. M., & Purana, I. M. (2021). Problem Based Learning (PBL): Suatu model pembelajaran untuk mengembangkan cara berpikir kritis peserta didik. *Widya Accarya*, *12*(1), 61–69. Doi:10.46650/WA.12.1.1056.61-69

Hamdani, A. D., Nurhafsah, N., & Rustini, T. (2022). Pengaruh Penerapan Model Problem Based Learning (PBL) dalam Pembelajaran IPS terhadap Kemampuan Berpikir Tingkat Tinggi (HOTS) pada Siswa Sekolah Dasar. *Journal on Education*, *5*(1), 460–468. DOI:10.31004/joe.v5i1.620

Kumalasari, S. (2025). Penerapan Model Pembelajaran Kolaboratif Tipe Group Investigation Dalam Menumbuhkan Perilaku Jujur Dan Tanggung Jawab. *Jurnal Perseda: Jurnal Pendidikan Guru Sekolah Dasar*, *8*(2), 56-66. https://doi.org/10.37150/z8xn3247

Kurniasari, K., Kastur, A., Julianto, J., & Rahmawati, E. (2025). Analisis Kualitatif Terhadap Kemampuan Berpikir Reflektif Peserta Didik Pada Pembelajaran Ipa Kelas Iv Sekolah Dasar: kemampuan berpikir reflektif. *DIDAKTIKA: Jurnal Pemikiran Pendidikan*, *31*(2), 267-276. https://doi.org/10.30587/didaktika.v31i2.10033

Kusniati, E., & Hasan Mahfud, C. (2019). Penerapan model problem based learning untuk meningkatkan nilai karakter disiplin peserta didik di sekolah dasar. *Jurnal Pendidikan Dasar*, *7*(1).

Muhartini, M., Mansur, A., & Bakar, A. (2023). Pembelajaran kontekstual dan pembelajaran problem based learning. *Lencana: Jurnal Inovasi Ilmu Pendidikan*, *1*(1), 66-77. https://doi.org/10.55606/lencana.v1i1.881

Narmaditya, B. S., Wulandari, D., & Sakarji, S. R. B. (2018). Do/es problem-based learning improve critical thinking skills?. *Cakrawala Pendidikan*, 267264. https://doi.org/10.21831/cp.v38i3.21548

Nazareth, E., Romlah, S., Safitri, J., Yuliati, N., Sarimanah, E., Monalisa, L. A., & Harisantoso, J. (2019, March). The students' creative thinking ability in accomplishing collaborative learning-based open-ended questions. In *IOP Conference Series: Earth and Environmental Science* (Vol. 243, No. 1, p. 012145). IOP Publishing. **DOI** 10.1088/1755-1315/243/1/012145

Nugroho, M. T., Syahrial, S., & Yantoro, Y. (2023). Pengembangan Modul Tema Ekosistem Kelas V Terintegrasi Keterampilan 4C (Critical Thingking and Comunication). *JIIP-Jurnal Ilmiah Ilmu Pendidikan*, *6*(8), 5765-5771. https://doi.org/10.54371/jiip.v6i8.2053

Nurkhin, A., & Pramusinto, H. (2020). Problem-Based Learning Strategy: Its Impact on Students' Critical and Creative Thinking Skills. *European Journal of Educational Research*, *9*(3), 1141–1150. https://doi.org/10.12973/eu-jer.9.3.1141

Pasani, C. F., Kusumawati, E., & Imanisa, D. (2018). Penerapan model pembelajaran kooperatif tipe scramble dalam pembelajaran matematika untuk membina karakter tanggung jawab dan disiplin siswa. *EDU-MAT: Jurnal Pendidikan Matematika*, *6*(2). http://dx.doi.org/10.20527/edumat.v6i2.5682

Pratiwi, D. C., & Bektiningsih, K. (2025). Penerapan Tata Tertib Sekolah dalam Membantu Meningkatkan Karakter Disiplin Peserta Didik di SD Bangunsari. *Jurnal Pendidikan dan Pembelajaran Indonesia (JPPI)*, *5*(2), 854-865. https://doi.org/10.53299/jppi.v5i2.1401

Ratno, S., Fadillah, S., Situmeang, E., Azzahrawani, F., Pos, M. P., Sagala, P. V., & Naibaho, R. Y. (2024). Analisis Implementasi Problem Based Learning (PBL) Berbasis Hots Untuk Meningkatkan Berfikir Kreatif Siswa Dalam Pembelajaran IPAS Di SDN 060874 Medan. *Jurnal Intelek Dan Cendikiawan Nusantara*, *1*(6), 9183–9191. https://jicnusantara.com/index.php/jicn/article/view/1674

Saputra, G. F., Asrin, A., & Novitasari, S. (2024). Analisis Penerapan Perangkat Pembelajaran Berbasis Keterampilan Berpikir Tingkat Tinggi Pada Materi Ipas. *Social: Jurnal Inovasi Pendidikan IPS*, *4*(4), 709-716. https://doi.org/10.51878/social.v4i4.4526

Sihotang, M. J. (2024). Peran Model Pembelajaran Problem-Base Lerning (PBL) Dalam Meningkatkan Kompetensi Peserta Didik Di Era Digital. *Basilius Eirene: Jurnal Agama Dan Pendidikan*, *3*(1), 42-57.

Sobri, M. (2020). *Kontribusi kemandirian dan kedisiplinan terhadap hasil belajar*. Guepedia.

Syamsudin, S. (2020). Problem based learning dalam mengembangkan kemampuan berpikir kritis dan keterampilan sosial. *ELSE (Elementary School Education Journal): Jurnal Pendidikan Dan Pembelajaran Sekolah Dasar*, *4*(2), 81-99. https://doi.org/10.30651/else.v4i2.4610

Untari, E., Rohmah, N., & Lestari, D. W. (2018). MODEL pembelajaran problem based learning (PBL) sebagai pembiasaan higher order thinking skills (HOTS) pada pembelajaran ipa di sekolah dasar. In *Prosiding SNPS (Seminar Nasional Pendidikan Sains)* (pp. 135–142).