The Implementation of Problem-Based Learning (PBL) Model to Improve Critical Thinking Ability of Class IV Students in Civics Subjects at School

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Abstract: This study aims to enhance students' critical thinking skills through the implementation of the Problem-Based Learning (PBL) model in Pancasila Education, which is designed to foster analytical, evaluative, and problem-solving abilities systematically. The research employed a Classroom Action Research (CAR) approach based on the Kemmis and McTaggart model. The subjects consisted of 16 fourth-grade students from Bangirejo I Elementary School. Data were collected through observation, critical thinking skill tests, and documentation. The data were analyzed using both qualitative descriptive and quantitative descriptive techniques. The findings reveal that: (1) based on observations, students' critical thinking skills showed significant improvement, with mastery learning increasing from 31% in the first cycle to 81% in the second cycle; and (2) the results reinforce the effectiveness of the PBL model in enhancing elementary students' critical thinking abilities. Moreover, the study contributes to the development of active learning strategies aligned with the demands of 21st-century education, particularly in the context of Pancasila Education.
Keywords: critical thinking, problem-based learning, civics education

Introduction

In 2022, the learning process is already allowed to be carried out offline at each school. However, in reality, many learners lack the ability to match their grade level. This condition is commonly referred to as learning loss. All children are at risk of experiencing learning loss, but the effect is more severe for those from families with lower-middle economic abilities (Abraham, 2021). Therefore, educators must catch up with the abilities of the students they teach. So far, educators have primarily focused on catching up with academic skills and materials, without paying sufficient attention to improving thinking skills. Various measures are needed to improve the quality of education. Educators can utilize various innovations, one of which is employing a learning model that fosters students' thinking processes. Innovative learning is student-centred learning (Rakhmawati, 2021). Learning that provides more opportunities for students to develop their knowledge independently (self-directed). The learning model is a framework that enables educators to help students acquire information, ideas, skills, ways of thinking, and ways to express themselves (Handayani, 2018; Ingwarni, 2018; Sari, 2018). The learning model is also defined as a guideline that teachers can use to design learning that will be carried out (Amrullah & Suwarjo, 2018; Yuliastrin et al., 2023; Zhou, 2018).

Based on observations carried out in class IV Bangirejo I Elementary School, several problems have been identified in the learning process, including educators' difficulty in using learning models that focus on improving critical thinking skills. Then, when the educator presents questions, whether in the form of practice questions, quizzes, or exam questions, students complete them "casually" so that they can finish quickly and avoid reconsidering the answers or work that will be collected. Because of this, students work on problems that are less critical to answering the given questions.

Thinking skills play a crucial role in determining an individual's success. Critical thinking, in particular, is defined as the ability to engage in active and systematic efforts to understand information through the integration of analysis and evaluation (Suparman, 2021). According to Pangaribowosakti (2014), critical thinking skills include the ability to: (1) provide simple explanations, (2) build basic skills, (3) draw conclusions, (4) offer further explanations, and (5) develop strategies and tactics. An individual is considered to have critical thinking skills if these components are demonstrated. A study conducted by Permatasari (2023), entitled "Improving the Critical Thinking Ability of Students in Social Studies Learning Using the Problem-Based Learning (PBL) Model in Class V Karangmojo III Elementary School", found that the use of the PBL model in social studies was effective in enhancing the critical thinking skills of fifth-grade students. However, the study also reported several limitations, such as two students not achieving the Minimum Competency Criteria (KKM in the Indonesian context), which required follow-up by the teacher, and limited instructional time that constrained observation and evaluation activities. These findings serve as a reference for conducting classroom action research adapted to the specific needs of fourth-grade students at Bangirejo I Elementary School. The present study aims to improve the critical thinking skills of students in Pancasila Education by applying the Problem-Based Learning (PBL) model, addressing the shortcomings identified in previous research.

Methods

This research used a type of Classroom Action Research (CAR) using the Kemmis & Mc. Taggart model. In general, there are four stages carried out in CAR, namely the planning, implementation, observation, and reflection stages (Suharsimi et al., 2015).
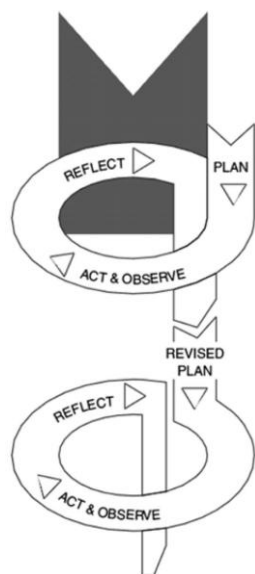
Figure 1. Stages of Classroom Action Research (CAR)

The diagram illustrates the four cyclical stages of the Classroom Action Research (CAR) model, developed by Kemmis & McTaggart, which serves as the foundation for this study's methodology. The process begins with the planning stage, where the researcher identifies problems in the classroom and formulates an action plan aimed at improving learning outcomes, specifically students' critical thinking skills. Next is the action stage, where the designed plan is put into action during classroom teaching. This is followed by the observation stage, where the researcher collects data through tools such as tests and classroom observations to monitor how the intervention is implemented and how students respond. Finally, in the reflection stage, the researcher evaluates the outcomes of the action, identifies what worked well and what needs improvement, and uses these insights to revise the plan for the next cycle. This iterative process enables continuous improvement and adaptation based on real-time classroom dynamics, ensuring that the intervention remains responsive to students' needs.

The location of this research was in Class IV B of Bangirejo I Elementary School, which is located on Wolter Monginsidi St. 36 Yogyakarta, Karangwaru, Tegalrejo, Yogyakarta. This research was conducted from August to September 2024. In August, the researchers conducted observations to identify problems in learning Pancasila Education. The research subjects were fourth-grade students from Bangirejo I Elementary School in the 2024/2025 academic year, totalling 16 students. The group consists of six male students and nine female students.

Data collection techniques used observation, tests, and documentation. The observation technique was used to narrate the process of implementing the PBL model carried out by teachers in Pancasila Education subjects. The test technique is used to obtain data on the critical thinking skills of students after the implementation of the action. In this study, qualitative descriptive analysis is employed to interpret the results of observations on the actions taken by educators during the learning process, while quantitative descriptive methods are used to assess the improvement in critical thinking skills.

Results and Discussion

Results

The purpose of this research is to explain the implementation of the problem-based learning model's steps in improving the critical thinking skills of fourth-grade students in Pancasila Education subjects at Bangirejo I State Elementary School. Before the research was conducted, the researchers conducted observations of learning activities and interviews with teachers to identify the problems experienced by teachers during learning. Based on the results of observations, data obtained that the critical thinking skills of students in Pancasila Education subjects still have several problems. Some students still lack focus when working on evaluation questions to measure critical thinking skills.

Learning Model

The world of education, especially teaching, is experiencing rapid development, which encourages the creation of innovative learning models. Numerous learning models can be employed in education. However, the use of learning models must consider several factors to ensure that learning objectives are achieved. One of the popular innovative learning models is PBL. This learning model has been widely applied in the field of education (Adekantari et al., 2020; Darmawati & Mustadi, 2023; Farindhani & Wangid, 2019; Hastomo, 2024). PBL provides benefits to learners by implementing plans, finding solutions, utilizing intuition, innovation, and imagination (Bayram & Deveci, 2022). PBL can help learners realize their plans in problem-solving (Kodariyati & Astuti, 2016; Rakhmawati et al., 2024).

The PBL learning model has several characteristics, namely: 1) posing questions or problems, 2) utilizing interdisciplinary connections, 3) conducting authentic investigations, 4) producing and publishing products, and 5) fostering collaboration among group members to enhance learning motivation. Each model has steps in its implementation, referred to as syntax (Rahmadani, 2019). There are five stages that must be carried out in using PBL, namely (Shofiyah & Wulandari 2018): 1) orienting students to the problem, 2) organizing students to learn, 3) assisting independent or group investigations, 4) developing and presenting work, and 5) analyzing and evaluating the problem-solving process.

The PBL model offers several advantages, including: 1) enhancing critical thinking skills, increasing intrinsic learning motivation, and fostering interpersonal relationships, 2) providing meaningful learning experiences for students, 3) encouraging students to become independent and self-directed learners, and 4) enabling students to construct new knowledge and take responsibility for their learning through problem-solving activities (Tyas, 2017).

Critical Thinking Skills

Higher-order thinking, also known as critical thinking, is ranked second out of 10 skills that are urgently needed in the near future (Loseby, 2019). These thinking skills do not just appear, they must also be accompanied by efforts to increase student involvement during learning activities, both in class and outside the classroom (Possin, 2014). Someone who possesses critical thinking skills will always review the knowledge they have or the information they have obtained from others. According to Murti (2019), individuals with critical thinking skills possess several important characteristics, namely: 1)

formulate essential questions clearly and thoroughly, 2) generate new ideas that are useful and relevant, 3) gather and consider relevant information carefully, 4) draw conclusions and develop solutions based on strong reasoning and evidence, 5) maintain an open mind by identifying connections among assumptions, implications, and practical consequences, 6) distinguish between facts, theories, opinions, and beliefs, 7) communicate effectively with others, and 8) uphold honesty, scientific credibility, and integrity in all aspects of their thinking and behavior. In addition, critical thinking skills also include the ability to ask relevant questions, gather relevant information, consider assumptions and viewpoints of others, think openly, and communicate ideas/opinions effectively (Irwan et al., 2024).

Critical thinking enables students to prepare for future challenges in both educational and daily life aspects. In this era of globalization, a significant amount of information is not true, making it essential to develop the ability to critically evaluate information (Sari et al., 2021). Critical thinking skills must be prepared and developed early so that students are better equipped to face a complex world, distinguish between facts and opinions, and make informed decisions based on in-depth analysis (Hasyim et al., 2024). With this, the ability to think critically will encourage creativity and the ability to see problems from various perspectives, which is a valuable skill. Learners must go through several stages to develop this ability. Some of the stages that learners must pass through are (Pangaribowosakti, 2014): 1) able to provide simple explanations, 2) able to build basic skills, 3) able to draw conclusions, 4) able to provide further explanations, and 5) able to develop strategies and tactics. Critical thinking skills consist of various core components that are interrelated and complementary. These components include interpretation to understand and convey the meaning of an event, analysis to identify the relationship between concepts and statements, evaluation to assess arguments, inference to draw conclusions, and justification through strong arguments, all of which involve cognitive abilities (Nuraini et al., 2020).

Assessment of Students' Critical Thinking Skills Cycle I

The results of the critical thinking ability test for fourth-grade students of Bangirejo I Elementary School, conducted during classroom learning using PBL, are presented in Table 1 below. This table provides a detailed overview of students' performance across various indicators of critical thinking. The data serve as an initial reference point to evaluate the effectiveness of the implemented learning strategy.

Table 1. Completeness of Critical Thinking Ability of Students Cycle I

Description	Completeness	
	Completed	Not complete
Number of learners	5	11
Percentage	31%	69%

Based on the results of the tests carried out by researchers, the critical thinking test data indicate that five students pass the KKM, namely 31.25% with an average of 53.1. This indicates that the critical thinking skills of fourth-grade students at Bangirejo I State Elementary School have not met the success criteria set by the researcher, specifically achieving a score of $\geq 75\%$ of all students who have reached the KKM of ≥ 75 in learning Pancasila Education. After reflecting, the findings from Cycle I will serve as a basis for preparing an action plan in Cycle II.

Assessment of Critical Thinking Skills of Students Cycle II

The results of the completeness of the critical thinking ability test of fourth-grade students of Bangirejo I Elementary School during classroom learning using PBL can be seen in Table 2. The table presents data on the number of students who achieved the minimum completeness criteria (KKM) as a benchmark for evaluating learning outcomes. These results provide an overview of students' academic improvement following the implementation of PBL in Cycle II.

Table 2. Completion of Critical Thinking Ability of Students Cycle II

Description	Completeness	
	Completed	Not complete
Number of learners	13	3
Percentage	81%	19%

Based on the results of the tests carried out by researchers, the critical thinking test data indicate that 13 students passed the KKM, which is 81%, with an average score of 76. This indicates that the critical thinking skills of fourth-grade students at Bangirejo I State Elementary School have met the success criteria determined by the researcher, namely achieving a score of ≥ 75% among all students who have reached the KKM of ≥ 75 in learning Pancasila Education. Based on the table above, it can be seen that there is an increase in the critical thinking ability of students from Cycle I to Cycle II when the PBL model is applied.

Discussion

The results of the above research show that the application of the PBL model is significantly able to improve the critical thinking skills of fourth-grade elementary school students in learning Pancasila Education. There was an increase in learning completeness from 31% in Cycle I to 81% in Cycle II. This increase demonstrates that the PBL model is effective in encouraging students to be more active in thinking, processing information, and developing solutions to the problems they face.
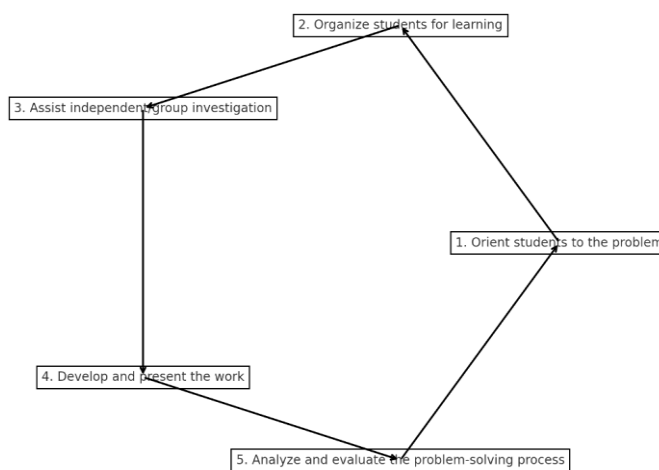

Figure 2. The PBL Model Cycle to Enhance Critical Thinking Skills

PBL Model to Improve Learners' Critical Thinking Skills

Teachers play a crucial role in enhancing the quality of education in Indonesia (Fitiyaningrum, 2023). A teacher must be able to develop an effective and efficient learning program, especially in the subject of Pancasila Education. PBL employs constructivist principles to foster prior knowledge, collaborative learning, and active student involvement (Seibert, 2021). Through the problem-based learning model, students' critical thinking skills will focus on the problems they choose and solve, rather than merely memorizing existing materials. The problems used in this PBL activity are typical and occur in the daily lives of learners (Miner-Romanoff et al., 2019). Learners must focus their attention on the problem to be solved so that they can obtain learning experiences and foster scientific thinking skills, specifically critical thinking.

In the application of the PBL model, learners act as facilitators during learning. The facilitator has the task of helping learners build understanding and connect concepts by providing information, directing exploration, and reinforcing concepts that are difficult for learners to grasp (Salari et al., 2018). The facilitator keeps the learning process of learners in small groups on track, namely, the existing problem-solving process. In addition, the facilitator also encourages the use of this form of motivation and provides feedback as a reflection after learning is carried out. In the implementation of PBL, the teacher, as a facilitator, can provide open-ended questions related to the stages of problem-solving that will be carried out. Through this, students will develop their critical thinking process to find solutions to existing problems (Ulger, 2018).

Critical thinking ability is the capacity to evaluate information from diverse experiences, beliefs, and perspectives that exist within scientific contexts (Masrinah et al., 2019). PBL is believed to improve

critical thinking skills because it employs an authentic problem approach, and students are asked to work together to solve the problem, which can encourage students' thinking processes. Critical thinking skills involve a cognitive process that teaches students to think deeply about a problem by analyzing and drawing conclusions based on facts (Nurbaya, 2021). Learning carried out in schools is student-centred, which is closely related to 21st-century learning, so that students are expected to be able to solve everyday problems (Novitasari et al., 2024).

Similar research results, showing an increase in completeness from 31% in Cycle I to 81% in Cycle II, reflect the effectiveness of the PBL model in creating a challenging, collaborative, and student-centred learning environment. This finding aligns with the results of a meta-analysis by Susilawati & Supriyatno (2023), which demonstrated that PBL consistently has a positive impact on the critical thinking skills of elementary school students.

Furthermore, the use of digital media, such as PBL-based e-books, has also been proven to strengthen learning outcomes. Susanto et al. (2022) found that students who used problem-based e-books demonstrated higher conceptual understanding and analytical skills, as they were encouraged to investigate and solve problems independently and collaboratively.

The application of PBL not only has an impact on students but also benefits the self-efficacy and critical thinking disposition of prospective teachers, as demonstrated by Saputro et al. (2020). Therefore, this approach should be considered in teacher training and the design of elementary school curricula. A comparison of the PBL model with discovery learning concluded that PBL is superior in developing critical thinking skills, especially in the context of mathematics learning, which demands logical and systematic understanding (Chung, 2023; Fitriadi et al., 2025).

However, it should be noted that implementing PBL requires careful preparation from the teacher as a facilitator. The challenges faced include differences in student readiness, long implementation time, and the need for intensive guidance, as stated by Salari et al. (2018). Teachers must be able to provide open-ended questions and constructive feedback, and ensure that all students are actively engaged in the learning process. Thus, the application of the PBL model in this study proved to be effective and relevant as one of the 21st-century learning approaches that support the holistic development of critical thinking skills in primary school students.

Conclusion

Based on the data analysis and discussion regarding the implementation of the Problem-Based Learning (PBL) model in the fourth-grade Pancasila Education class at Bangirejo I Elementary School during the 2024/2025 academic year, two cycles of classroom action were conducted. In the first cycle, students' critical thinking skills showed a completion rate of 31% with an average score of 53.1. In the second cycle, the completeness rate increased to 81% with an average score of 76. These results indicate a significant improvement in students' critical thinking abilities following the application of the PBL model. Thus, the implementation of Problem-Based Learning effectively enhanced the critical thinking skills of fourth-grade students at Bangirejo I Elementary School.

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