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Developing Students' Critical Thinking Skills Through Problem-Based Learning in Islamic Education Based on the Facione Framework

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Abstract

This study aims to analyze the construction of students' critical thinking skills through the application of Problem-Based Learning (PBL) in Islamic Religious Education (PAI) learning by referring to Peter A. Facione's critical thinking framework. The study used a qualitative approach with a case study design at SMK Muhammadiyah 1 Kepanjen involving one PAI teacher and 22 students. Data were collected through observation, interviews, and documentation, and analyzed using the Miles and Huberman interactive model. The results showed that each stage of PBL contributed to the development of critical thinking dimensions, including interpretation, analysis, evaluation, inference, explanation, and self-regulation. Students were not only able to understand and analyze contextual problems, but also to construct arguments, draw conclusions, and reflect on values in decision-making. PBL also encouraged active involvement through collaborative discussions, although there were still obstacles such as time constraints and variations in student readiness. These findings confirm that critical thinking is constructed gradually through structured learning experiences. This study contributes by positioning PBL as a pedagogical framework that facilitates the construction of critical thinking through the integration of cognitive processes and social interactions in PAI learning.

Keywords: Islamic Religious Education; Problem-Based Learning; Critical Thinking; Adultery Prohibition

INTRODUCTION

Islamic Religious Education (*Pendidikan Agama Islam* [PAI]) has a strategic role in shaping students' character so that they possess noble morals and can make decisions in accordance with Islamic values. However, in practice, PAI learning still tends to focus on textual cognitive aspects, causing students to understand theoretical lessons without being able to relate them to real life. This condition indicates that learning has not fully encouraged processes of deep reflection and meaning-making. In fact, the ability to analyze, evaluate, and reflect on information is an essential component of critical thinking so that students not only understand but are also able to internalize and practice Islamic values contextually.

On the other hand, the development of globalization and technology demands learning approaches that equip students with critical thinking skills. Traditional teacher-centered learning approaches are considered less effective in developing students' potential holistically. This is in line with the demands of the 21st century, which are marked by significant social, technological, and cultural changes that affect the way individuals obtain and process information.

The low level of critical thinking ability is also reflected in the condition of literacy in Indonesia, which remains relatively low. Data show that public reading interest is only around 0.001%, according to UNESCO, and Indonesia ranks 60th out of 61 countries in the Central Connecticut State University literacy index. This condition impacts weak analytical and evaluative skills, making people more vulnerable to invalid information. This low level of ability is influenced by various factors, such as a lack of literacy culture, limited access to reading materials, and learning methods that are not optimal for developing critical thinking skills.

In PAI learning, the ability to think critically cannot be separated from the cultivation of Islamic values because both encourage students to think reflectively, understand reality, and make decisions based on religious values. Therefore, low critical thinking ability is related not only to cognitive aspects but also to the suboptimal process of internalizing Islamic values among students. However, in practice, PAI learning still largely focuses on delivering material cognitively and normatively, so students tend to understand Islamic teachings only theoretically without being able to relate them to daily life. This condition indicates that the reflective dimension of learning has not developed optimally.

In fact, within the critical thinking framework proposed by Peter A. Facione, critical thinking includes not only analysis and evaluation but also self-regulation, which plays a role in reflection and the formation of meaning, including the internalization of values. Therefore, a learning model is needed that not only emphasizes cognitive aspects but also encourages students' active involvement and reflection. In this regard, Problem-Based Learning (PBL) is a relevant approach because it places students in real problem situations that encourage analysis, collaboration, and reflection in finding solutions. Through this process, students not only understand concepts theoretically but also internalize values through direct experience in problem-solving activities.

In the context of PAI learning, the application of Problem-Based Learning (PBL) can be carried out by raising issues that are close to students' lives, such as the prohibition of adultery, which discusses the prohibition against approaching acts that may lead to adultery. This topic was selected because adolescents today are vulnerable to exposure to media that promote adultery or deviant behavior, making it a contextual learning experience that can direct students to analyze, reflect, and make value-based decisions in responding to this reality.

Through this material, PBL encourages analysis, reflection, and critical decision-making based on real-world problems. In addition, learning that connects concepts to real experiences has been shown to increase understanding while training critical thinking skills through exploration and reflection. This is important considering that PAI learning still tends to be trapped in a cognitive-dogmatic approach that does not adequately address students' reflective dimensions.

Research shows that PBL tends to produce positive outcomes in fostering critical thinking through problem analysis and reflection, although its effectiveness varies across learning contexts. Several studies confirm that PBL can encourage students' active involvement while also building deeper understanding. In addition, PBL can facilitate conceptual change through processes of exploration and collaborative discussion, as well as contribute to the development of higher-order thinking skills and increased student participation in learning.

Although Problem-Based Learning (PBL) is known to improve critical thinking skills, its effectiveness tends to vary across contexts, and research still predominantly focuses on final outcomes (Liu & Pásztor, 2022; Lu & Song, 2025). As a result, the process of developing critical thinking throughout learning has not been explained in depth, including how its cognitive mechanisms develop based on structured conceptual dimensions.

Therefore, this study offers novelty by integrating the Facione critical thinking framework as a basis for analysis in examining the PAI learning process based on Problem-Based Learning (PBL)

in depth, to understand how each dimension of critical thinking develops throughout the learning process.

METHODS

This study used a qualitative approach with a case study design to examine the application of Problem-Based Learning (PBL) in Pendidikan Agama Islam (PAI) learning at SMK Muhammadiyah 1 Kepanjen. A qualitative approach was chosen because it enabled the researcher to explore the meaning, processes, and dynamics of learning that occurred naturally in the classroom (Assyakurrohim et al., 2022). Since this study focused on a specific context, namely the development of critical thinking skills in PAI learning through the PBL method, a case study design was considered appropriate for understanding the learning process and the factors influencing its implementation (Lim, 2025).

The researcher acted as the primary research instrument and was directly involved in the processes of data collection and analysis. In the field, the researcher functioned not only as an observer but also interacted with teachers and students to gain a more authentic understanding of the learning dynamics. To support data collection, several instruments were used, including interview guidelines, observation sheets, and field notes.

The subjects of this study consisted of one PAI teacher and 22 tenth-grade students from the TKJ class at SMK Muhammadiyah 1 Kepanjen. The subjects were selected using a purposive sampling technique because the participants were directly involved in the implementation of the PBL model and were therefore able to provide relevant and in-depth information related to the phenomenon being studied (Ahmad & Wilkins, 2025; Bell et al., 2022).

Data collection was conducted through observation, interviews, and documentation. Observation was used to examine the classroom learning process, particularly how teachers implemented the PBL model and how students participated in learning activities. In-depth interviews were conducted with teachers and students to obtain their perspectives and experiences regarding the implementation of PBL.

The data were analyzed using the Miles and Huberman model, which consisted of data reduction, data display, and conclusion drawing or verification (Rijali, 2019). The analysis was conducted continuously throughout the data collection process until the final conclusions were reached. To ensure data validity, this study applied source and method triangulation, member checking, and external auditing, as suggested by Cresswell (2018). Triangulation was conducted by comparing data obtained from interviews, observations, and documentation to strengthen the credibility of the findings.

Through these stages, this study was expected to provide a comprehensive understanding of the implementation of the Problem-Based Learning model in PAI learning at SMK Muhammadiyah 1 Kepanjen and its contribution to the development of students' critical thinking skills and religious attitudes in the modern educational context.

RESULTS AND DISCUSSION

This research was carried out at SMK Muhammadiyah 1 Kepanjen with a focus on the application of Problem-Based Learning (PBL) in the learning of Islamic Religious Education (PAI). Data were obtained through observation and interviews to understand in depth the learning process and how the process constructs students' critical thinking skills. The analysis was carried out by referring to the critical thinking framework developed by Peter A. Facione which includes the dimensions of interpretation, analysis, evaluation, inference, explanation, and self-regulation.

Application of the Problem Based Learning (PBL) Model in PAI Learning

In daily life, humans cannot be separated from the decision-making process, either spontaneously or through deeper consideration. Therefore, critical thinking skills are important in helping students analyze situations and determine appropriate solutions (Turan et al., 2019). In the context of learning, this need can be accommodated through the application of the Problem-Based Learning (PBL) model that places problems as the basis of learning activities (Hmelo-Silver, 2004; Wang, 2021)

Based on the results of observations and interviews, the application of the Problem Based Learning (PBL) model in the subject of Islamic Religious Education (PAI) at SMK Muhammadiyah 1 Kepanjen, PBL is implemented through a series of structured syntax, this is an illustration of the transformation of paradigms and basic learning practices from traditional approaches to more modern and effective approaches (Jaganathan et al., 2024). However, more than just procedural stages, this implementation shows the existence of a process of constructing students' critical thinking that can be analyzed through dimensions within the framework of Facione. (Why?)

The operational details of the application of the PBL model in this study are as follows:

1. Student Orientation to Contextual Problems: The teacher begins learning by presenting real phenomena that are relevant to students' lives, such as the problems of promiscuity and social media ethics. In this stage, students begin to identify the meaning and understand the problems presented. This process shows the emergence of the interpretation dimension, which is the ability of students to understand and interpret initial information as a basis for thinking.
2. Organizing Students to Learn: The teacher divides students into small groups and assists them in defining learning tasks related to the problem. Interaction in groups encourages students to decompose information, compare opinions, and clarify ideas. This activity reflects the dimension of analysis, where students begin to identify the relationships between information and develop a framework for understanding the problem.
3. Guiding Independent and Group Investigations: Students are encouraged to gather appropriate information, look for Naqli postulates (Qur'an and Hadith), and conduct in-depth analysis to find solutions to the problems raised. In this process, students not only collect information, but also assess the relevance and truth of the sources used. This shows the development of the evaluation dimension, which is the ability to assess the credibility of information and the strength of arguments.

4. Development and Presentation of Results: Each group compiles the results of their discussion and presents it in front of the class. This process reflects the dimension of explanation, where students can convey arguments systematically and can be understood by others. Meanwhile, in the process of discussion and drawing conclusions, students also show the ability to formulate conjectures or solutions to the problems they face. This is related to the dimension of inference, which is the ability to draw logical conclusions based on available information.
5. Analysis and Evaluation of Problem-Solving Processes: Teachers help students reflect or evaluate the investigations and thought processes they use in solving problems. This process shows the development of the self-regulation dimension, which is the ability to reflect and control the thought process independently.

Based on these findings, the application of PBL in PAI learning not only increases student activity, but also constructs the critical thinking process gradually and systematically. Each PBL syntax contributes to the emergence of the critical thinking dimension as formulated in the framework of Peter A. Facione, so that learning no longer focuses on knowledge transfer, but on the formation of reflective, analytical, and contextual thinking skills.

The use of problems close to students' lives also strengthens the process, as it allows for the connection between concepts and real experiences, thus encouraging students to conduct more in-depth analysis and evaluation (Amirudin et al., 2025; Hidayati & Purwaningsih, 2023).

Analysis of Students' Critical Thinking Skills in Learning

The critical thinking ability in this study does not appear instantaneously, but develops through a gradual process during problem-based discussions and investigations. This can be seen when students not only passively receive the material, but begin to engage in understanding the problem, processing information, and expressing opinions accompanied by reasons. This condition shows a change in the way students respond to learning, from previously more oriented to receiving information to being more active in the thinking process. According to Rodríguez-Rojas et al. 2024) critical thinking includes the ability to analyze, evaluate, and structure arguments logically. In line with that, research by Purwanto et al. (2025) in the context of learning in Indonesia shows that student involvement in problem-based discussions can encourage the emergence of defensive critical thinking skills.

If analyzed further using Peter A. Facione's critical thinking framework, the students' thinking process in this study can be understood through the following dimensions. In the early stages, students show the ability to understand and interpret the given problems. This can be seen when students are able to identify issues related to daily life, such as the use of social media, and relate them to the learning context. One of the students stated that *"the material is close to what I often see, such as the use of social media, so it is easier to understand"* (Student 3). This ability reflects the dimension of interpretation, which is the ability to understand and give meaning to the information received.

Furthermore, students' involvement in group discussions shows that there is a process of analysis of information. Students not only receive opinions, but also begin to compare, clarify, and

connect various information obtained from different sources. This is reflected in the student's statement that *"if I learn like this, I will understand better because I have to find answers myself and discuss"* (Student 2). This activity is in line with the finding that interaction in group discussions contributes to the development of students' analytical skills (Kuhn, 2019), as well as reflecting the dimension of analysis in a critical thinking framework.

The critical thinking process is also seen from the students' ability to evaluate information and formulate arguments. Students no longer receive information passively, but try to assess and corroborate the opinions conveyed, as it is revealed that *"we do not immediately receive answers, but must first confirm and find the right reasons"* (Student 4). This is reinforced by the teacher's observation that *"with this method, students are better able to give reasons and convey opinions supported by evidence"*. This ability shows the development of *the evaluation* dimension, namely the ability to assess the credibility of information and the strength of arguments. In this context, problem-based learning provides space for students to develop higher-level thinking skills through complex problem-solving processes Razak et al. (2022), students are also encouraged to construct knowledge through exploration and interaction (Zheng et al., 2024).

In addition, students also show the ability to draw conclusions based on the available information, especially when they formulate solutions to the problems discussed. This process is reflected in the student's statement that *"after discussion, we can conclude which is correct and how the solution is"* (Student 5). This reflects the *inference dimension*, which is the ability to draw logical conclusions based on the results of the analysis carried out.

The student's ability to think critically is also seen in the ability to convey arguments in a structured manner, both in discussions and presentations. Students begin to show courage and clarity in expressing opinions, as it is revealed that *"I became more courageous to express my opinion because I already have a reason from the results of the discussion"* (Student 6). This shows the development of the explanation dimension, which is the ability to communicate the results of thought systematically. In PAI learning, this ability is important because it is not only related to logic, but also to the ability to relate knowledge to Islamic values. This is in line with the view that critical thinking involves the ability to give rational reasons and evaluate information reflectively (Ennis (2018), and is supported by the findings that problem-based learning can develop more systematic argumentation skills in the educational context of Tarigan and Efrizah (2022).

Furthermore, the reflection process carried out by students in understanding Islamic values shows the existence of *a self-regulation* dimension, namely the ability to evaluate and control the thought process independently. This can be seen when students not only understand the material, but also begin to reflect on the values contained in learning and its relevance to daily life, as stated that *"from this learning I have better understood and can assess which ones are in accordance with Islamic teachings in daily life"* (Student 7).

Based on this analysis, the students' critical thinking skills in this study are not understood as final outcomes, but as a process that develops gradually through learning experiences. These findings show that problem-based learning acts as a space that allows the emergence of various dimensions of critical thinking as formulated in the Facione framework, and is in line with the study

that affirms that PBL encourages students' active involvement in the analysis and evaluation process through contextual problem-solving (Yew & Goh, 2016). However, these findings are contextual according to the research setting, so they are not intended to be generalized widely.

Student Engagement in PBL-Based Learning

Before the implementation of Problem-Based Learning (PBL), students tended to wait for explanations from the teacher and were less involved in the learning process, which can be seen from the dominance of note-taking activities and the lack of questions or responses during learning. After PBL was implemented, student involvement increased significantly through group discussions and active participation in questions and answers. This change was reflected in the increased courage of students in expressing opinions, as expressed by one of the students; "*Yes, be baller,... so you can express your opinions*." (Student 1). The same thing was conveyed by another student who stated that *"It is better to study in groups.., understand better because you can ask questions directly to your friends and are not afraid of making mistakes*." (Student 2). However, there are some groups that are actually more passive and need extra direction and guidance from teachers.

The involvement not only increases quantitatively, but also undergoes a qualitative shift characterized by the emergence of two-way interactions, the courage to put forward ideas, and the tendency of students to respond to each other's arguments, but this result is noted that in certain groups intensive assistance is needed to demonstrate these results. In some discussion situations, some students not only express their opinions, but also provide rebuttals and ask for clarification on other groups' answers. This condition shows that student involvement develops from just passive participation to more reflective and interactive involvement, which opens up space for the development of critical thinking processes.

If analyzed using Peter A. Facione's critical thinking framework, discussion activities in PBL function as a mechanism that facilitates the emergence of various dimensions of critical thinking. The process of comparing and assessing various opinions reflects the development of the dimension of analysis and evaluation, especially when students begin to consider alternative answers and choose the most logical arguments. Meanwhile, the ability to formulate and express opinions in a structured manner indicates the development of the explanation dimension.

Furthermore, students' involvement in interpreting the material through discussion shows the process of interpretation, which can be seen when students relate the material to the context of daily life. The dimension of self-regulation appears when students begin to reflect and evaluate their own thoughts, as expressed by one of the students; "*So think again whether my opinion is correct or not, so try to improve."* (Student 3). These findings show that students' thinking processes not only develop in the cognitive realm, but also in deeper reflective abilities. Although some students showed good results, some showed a more passive attitude.

The teacher's observation reinforces the findings, where some students who appear to be more active and begin to take the initiative in the discussion; "*After using PBL, some students look more active and begin to take the initiative in discussions.* " (Teacher). Group discussions in this context not only serve as a medium of interaction, but also as a space for the exchange of perspectives that

support cognitive development through social interaction. These findings are in line with the concept of student involvement that includes social aspects (Fredricks et al., (2020), and are supported by research showing that group discussions increase students' active participation (Wibowo and Suryani (2021).

Furthermore, student involvement in this study reflects a multidimensional construct involving behavioral, cognitive, and emotional aspects of Bond and Bedenlier (2021). Discussion and problem-solving activities in PBL encourage cognitive engagement through exploration and interaction Narmaditya et al. (2018), as well as contributing to increased student participation in various learning contexts (Theobald et al. (2020). In the context of education in Indonesia, the problem-based learning model has also been proven to provide a wider space for student involvement through discussions and group work (Chusna & Chisbiyah, 2024).

Thus, student involvement in this study is not only interpreted as presence or participation, but as an active process that facilitates the development of critical thinking skills through interaction and reflection. Nevertheless, these findings are understood in a limited research context, so they are not intended to be generalized widely.

Obstacles in the Implementation of Problem-Based Learning (PBL)

On the other hand, the application of Problem-Based Learning (PBL) in this study also shows that there are several obstacles that arise during the learning process. Based on the results of the interviews, the main obstacles are related to the limited learning time as well as the readiness and motivation of students to follow a learning pattern that is different from previous habits. These obstacles not only have an impact on the technical aspects of learning, but also affect the optimization of students' critical thinking processes.

Time constraints can be seen from teachers' difficulties in completing all stages of PBL in one meeting, as stated by the teacher, "Time in class is often not enough to complete all stages of PBL." This condition shows that the implementation of PBL requires more flexible time management than conventional learning. This time constraint has the potential to limit the process of exploring and deepening problems, so that students do not have enough opportunities to compare various alternative solutions and evaluate arguments in depth. As a result, the dimensions of analysis and evaluation in critical thinking have not been optimally developed. These findings are in line with research that states that the implementation of PBL requires a longer time for discussion and investigation activities by Dolmans et al. (2021), and is supported by findings in the context of learning in Indonesia that show that time constraints are an obstacle in the implementation of innovative learning models (Mulyadi & Ratnaningsih, 2022).

In addition, students' readiness and motivation to learn also affect the implementation of PBL. The findings show that some students do not have strong intrinsic motivation, so their involvement in discussions tends to arise after external stimuli, such as appreciation or rewards. In the perspective of Edward L. Deci and Richard M. Ryan, this reflects the role of external motivation as an initial driver of learning engagement (Deci & Ryan, 2000; Ryan & Deci, 2020). This condition requires an adaptation process, because in the early stages students are not able to process information in depth, so the ability to formulate arguments (explanations) and draw conclusions

(inference) has not developed optimally. These findings are in line with research that emphasizes the importance of student readiness in the success of PBL (Arifin, 2025; Hadi Mogavi et al., 2021).

Furthermore, the adaptation process is not only related to students' initial readiness, but also reflects changes in learning culture in the classroom. PBL requires students to be more active, brave to speak their minds, and be able to work together in groups, thus requiring a learning environment that supports student involvement gradually Nemakhavhani, (2024). In the perspective of critical thinking, this process becomes an advanced stage that allows students to not only actively engage, but also gradually develop the ability to control and evaluate their own thought processes. In Peter A. Facione's framework, this ability is known as the self-regulation dimension.

Synthesis of Research Findings

In summary, the findings of this study show that the application of Problem-Based Learning (PBL) in Islamic Religious Education (PAI) learning not only functions as a learning strategy that increases student involvement, but also as a constructive mechanism that forms a gradual and integrated critical thinking process. Each stage in PBL contributes to the development of the critical thinking dimension as formulated by Peter A. Facione, starting from interpretation, analysis, and evaluation at the problem exploration stage, to inference, explanation, and self-regulation at the reflection and problem-solving stage (Facione, 1990).

Furthermore, the development of critical thinking in this study did not take place in a linear manner, but was influenced by the dynamics of student involvement, learning readiness, and motivational factors. Active involvement through discussion and social interaction is the main medium in the knowledge construction process, in line with studies that emphasize that PBL encourages cognitive engagement through contextual problem solving (Yew & Goh, 2016). However, the limited time and variation in students' motivation suggest that the process is contextual and adaptive, so critical thinking does not emerge as an instant result, but develops through the interaction between learning design, student characteristics, and the learning environment.

Thus, these findings expand the understanding that has tended to position critical thinking as the final outcome of learning, by showing that PBL is more appropriately understood as a pedagogical space that allows integration between cognitive processes, social interaction, and value reflection. Therefore, the main contribution of this study lies in the affirmation that the development of critical thinking in PAI learning is gradual, contextual, and influenced by the dynamics of learning implementation itself.

CONCLUSION

This study demonstrated that the application of Problem-Based Learning (PBL) in Pendidikan Agama Islam (PAI) learning not only increased student engagement but also facilitated the gradual development of critical thinking skills through processes of problem identification, information analysis, argument evaluation, and reflective thinking. The findings confirmed that critical thinking developed dynamically through students’ active participation, social interaction, learning readiness, and motivational factors, indicating that the effectiveness of PBL was contextual and adaptive. The

study also highlighted that PBL functioned not merely as a learning model but as a pedagogical framework that supported the construction of critical thinking through contextual learning experiences and reflection. Therefore, the findings emphasized the importance of designing learning processes that focus not only on outcomes but also on the sustainable development of students' critical thinking skills. Future research is recommended to examine the long-term impact of PBL on students' critical thinking development across different educational contexts and subject areas, as well as to explore the integration of digital learning technologies in supporting PBL implementation.

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