

PROBLEM BASED LEARNING IN ISLAMIC RELIGIOUS EDUCATION: A SYSTEMATIC LITERATURE REVIEW OF ITS EFFECTIVENESS IN DEVELOPING STUDENTS' CRITICAL THINKING SKILLS

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Abstract

This study aims to systematically review the effectiveness of Problem-Based Learning (PBL) in Islamic Religious Education (IRE) in developing students' critical thinking skills. The study employed a Systematic Literature Review (SLR) approach to identify, screen, and synthesize relevant empirical and conceptual studies from major academic databases, including Scopus, ScienceDirect, SpringerLink, Taylor & Francis, ERIC, and Google Scholar. The selected studies were analyzed using content analysis and thematic synthesis, focusing on research characteristics, educational level, PBL implementation, critical-thinking indicators, learning outcomes, and contextual factors that influence effectiveness. The findings indicate that PBL generally contributes positively to students' critical thinking by encouraging problem identification, inquiry, information evaluation, collaborative discussion, argumentation, reflection, and decision making. In the context of Islamic Religious Education, PBL is particularly relevant because it enables students to connect Islamic knowledge with authentic social and religious issues, thereby promoting contextual understanding and reflective reasoning. The synthesis also reveals that the effectiveness of PBL is influenced by the quality of problem design, teacher facilitation, student engagement, group interaction, duration of intervention, information sources, and assessment strategies. Conceptually, the study proposes a mechanism of Authentic Islamic Problems → Inquiry and Information Seeking → Source and Evidence Evaluation → Collaborative Argumentation → Islamic Value-Based Reflection → Problem Solving and Decision Making → Critical Thinking Skills. The study concludes that PBL is a promising pedagogical approach for strengthening critical thinking in Islamic Religious Education. Future research should employ broader samples, longitudinal and mixed-methods designs, and develop critical-thinking instruments that are more contextually aligned with Islamic Religious Education.

Keywords: Problem Based Learning, Islamic Religious Education, critical thinking, systematic literature review, students

Introduction

The development of 21st century education places critical thinking skills as one of the main competencies that need to be developed through the learning process. This ability is not only related to the ability to analyze information, but also includes the ability to identify problems, evaluate arguments, connect various sources of knowledge, and make decisions logically and responsibly. In the context of Islamic Religious Education (PAI), critical thinking has an important position because religious learning should not be limited to mastering normative knowledge and memorizing religious materials, but needs to guide students to understand, reflect, and actualize Islamic values when facing real-life problems. Studies on Islamic education show that learning needs to integrate the dimensions of analysis, reflection, internalization of values, and application of knowledge so that students' cognitive development is in line with the goals of Islamic education (Zulkifli et al., 2025).

The phenomenon gap in this research arises from the gap between the demands of contextual and reflective PAI learning and learning practices that in a number of contexts still place teachers as the main source of information. Learning that emphasizes knowledge transfer too much has the potential to limit students' opportunities to question, analyze, discuss, test arguments, and connect Islamic teachings with various contemporary social issues. Amirudin et al. (2025) show that conventional learning approaches in Islamic religious education can have limitations in building students' engagement, contextual understanding, reflection, and critical thinking skills. At the same time, a meta-analysis of Islamic education learning in Indonesia shows that innovative learning methods are able to significantly increase student motivation, activities, and learning outcomes (Jayanegara et al., 2024). This condition shows the need for PAI learning transformation from a dominant pattern oriented towards material delivery to active and problem-solving-based learning.

One approach that is relevant to these needs is Problem Based Learning (PBL). PBL places authentic problems as the starting point for learning, so students are required to identify problems, seek information, compare alternative explanations, conduct discussions, formulate arguments, and produce solutions based on available evidence. Empirically, Liu and Pásztor (2022) through a meta-analysis of 50 studies and 5,210 participants found that PBL has a positive influence on critical thinking skills and dispositions, although the effects vary based on participant characteristics, learning design, duration of intervention, instrument, discipline, and group size. A systematic study by Anggraeni et al. (2023) also shows that PBL is one of the learning strategies that is consistently used to encourage critical thinking skills. The PBL mechanism that involves investigation, collaboration, discussion, information testing, and the search for solutions provides opportunities for students to build a more analytical and reflective mindset (Muvid et al., 2022).

Based on these conditions, the research problem of this study is that a truly comprehensive understanding of how effective PBL is in improving critical thinking skills

when applied specifically to Islamic Religious Education learning. PBL has generally shown a positive impact on critical thinking, but its success is not uniform in all learning contexts. The heterogeneity found in previous studies indicates that its effectiveness is influenced by the characteristics of students, the form of the problem, the teacher's facilitation strategy, the duration of learning, the evaluation instrument, and the context of the subject (Liu & Pásztor, 2022). In PAI learning, the problem becomes more specific because the ability to think critically must remain integrated with the understanding of Islamic sources, moral values, religious reflection, and the contextual application of Islamic teachings. Recent studies show that PBL in Islamic religious education can improve conceptual understanding, engagement, reflection, and critical thinking, but its implementation also faces challenges such as time constraints and the need for adequate learning facilitation (Amirudin et al., 2025).

Furthermore, research gaps can be identified in the aspects of focus, context, and research synthesis. First, most studies on PBL and critical thinking are still widely developed in higher education as well as the fields of science, health, and general disciplines, so that the characteristics of their application to PAI have not yet obtained a comparable proportion of research (Anggraeni et al., 2023). Second, Islamic education research on innovative learning methods assesses more outputs in the form of motivation, activities, and learning outcomes in general, while critical thinking as a specific output still requires more in-depth study (Jayanegara et al., 2024). Third, the results of the PBL meta-analysis show a fairly high heterogeneity, so the success of PBL cannot be directly generalized from one discipline to PAI learning (Liu & Pásztor, 2022). Fourth, a study is still needed that explains how the problem-solving process in PBL can develop students' ability to analyze religious issues, evaluate information, build arguments based on relevant sources, and make decisions that are in line with Islamic values.

On the basis of this gap, the research novelty or incremental newness of this study lies in the preparation of a literature synthesis that specifically links PBL—Islamic Religious Education learning—students' critical thinking skills in one analytical framework. The study is not only directed at the simple question of whether PBL is effective, but also analyzes how PBL works, what aspects of critical thinking develop, what conditions support its effectiveness, and what factors limit its application in PAI. Thus, this study expands on the previous literature that has more discussed the effectiveness of PBL in general by placing the characteristics of PAI—integration of knowledge, values, reflection, analysis, and implementation of teachings—as the main context. This approach is in line with the need to develop the cognitive domain of Islamic education that not only emphasizes knowledge, but also analysis, reflection, internalization, and application of values (Zulkifli et al., 2025).

Thus, the research urgency of this study lies in the need to provide an empirical basis for the development of PAI learning that is more active, contextual, reflective, and able to respond to the complexity of problems faced by students. The ability to understand religious teachings in the information age requires students not only to know a concept as

right or wrong, but to be able to evaluate information, distinguish valid arguments, relate the source of teachings to the context of life, and make decisions rationally and responsibly. Therefore, a literature review on the effectiveness of PBL on the ability to think critically in Islamic Religious Education is important to identify the consistency of empirical evidence, learning mechanisms, supporting and inhibiting factors, as well as formulate the direction of further learning and research development. Based on these arguments, this study aims to analyze and synthesize the effectiveness of the Problem Based Learning model in Islamic Religious Education learning on the development of students' critical thinking skills based on empirical evidence in the scientific literature.

Literature Review

Problem Based Learning as a Learning Approach

Problem Based Learning (PBL) is a learning approach that places authentic and complex problems as the starting point of the learning process. In PBL, students not only receive information provided by the teacher, but are actively involved in identifying problems, determining learning needs, seeking and evaluating information, discussing alternative solutions, and reflecting on learning outcomes. Hmelo-Silver (2004) explained that PBL is learning through a facilitated problem-solving process, where students work collaboratively to understand problems that do not always have one correct answer. Thus, PBL is oriented towards the formation of knowledge as well as the development of problem-solving, reasoning, collaboration, and independent learning skills.

The foundation of PBL is closely related to the theory of constructivism, which views that knowledge is not simply transferred from teacher to student, but is actively built through experience, interaction, investigation, and reflection. The PBL process encourages students to activate previous knowledge, identify knowledge gaps, find relevant sources of information, and construct new understandings based on the problem-solving process. In addition, PBL is closely related to *self-directed learning* and *self-regulated learning*. Loyens et al. (2008) explained that the PBL environment gives students greater responsibility in determining learning needs, choosing information sources, and evaluating their own learning process. Thus, PBL has characteristics that are suitable for learning that requires independence, reflection, and high-level thinking skills.

Islamic Religious Education and the Need for Critical Thinking

Islamic Religious Education (PAI) has a broader purpose than just the transfer of religious knowledge. PAI learning is directed at the development of understanding, appreciation, internalization of values, character formation, and the ability to apply Islamic teachings in personal and social life. In the context of the development of contemporary society, students face various problems such as social change, the development of digital technology, diversity of religious information, social association, tolerance, digital ethics, the environment, the economy, and various moral dilemmas. These conditions require PAI

learning to develop students' ability to understand problems contextually, examine information, develop arguments, and make decisions based on Islamic sources and values. The development of critical thinking in Islamic education should not be understood as an attitude of questioning religious teachings negatively, but rather as the ability to conduct analysis and reflection in a rational, responsible manner, grounded in an adequate foundation of knowledge. Altinyelken (2021) shows that Islamic education that provides limited space for questions, discussions, dialogue, and reflection can limit the development of students' critical thinking skills. On the other hand, learning that is more dialogical, reflective, and open to questions allows students to gain a deeper and contextual understanding of religion. Thus, critical thinking and religious education can be understood as complementary, especially when the analytical process remains grounded in valid sources and Islamic value frameworks.

Students' Critical Thinking Skills

Critical thinking skills are high-level cognitive skills that involve the process of interpretation, analysis, evaluation, inferences, explanations, and decision-making based on reasoning and evidence that can be accounted for. In the learning process, critical thinking skills are shown when students are able to identify the core of the problem, distinguish relevant and irrelevant information, assess the validity of the information, connect various concepts, give reasons for their opinions, consider alternative solutions, and come to conclusions based on evidence.

In the context of PAI, this ability can be realized when students are able to analyze life problems by referring to the Qur'an, hadiths, Islamic principles, and relevant social contexts. For example, students not only know the concepts of honesty, justice, tolerance, muamalah, or social responsibility, but are able to analyze the application of these values to real cases. Therefore, critical thinking in PAI involves the interaction between religious knowledge, contextual analysis, evidence evaluation, argumentation, reflection, and value-based decision making. This orientation makes religious learning not stop at *the aspect of knowing*, but develops towards *understanding, reasoning, evaluating, and applying*.

Problem Based Learning and Critical Thinking Skills

Theoretically, there is a strong relationship between the characteristics of PBL and the development of critical thinking skills. PBL provides open-ended problems that encourage students to question information, identify facts, generate hypotheses, look for evidence, compare alternative solutions, and account for conclusions. These activities are an important part of the critical thinking process. Therefore, critical thinking skills are not developed through direct information, but through the experience of solving problems that require analysis and evaluation.

Empirical evidence provides relatively strong support for the relationship. A meta-analysis by Liu and Pásztor (2022), who synthesized 50 studies with 5,210 participants and

58 effect sizes, found that PBL interventions overall had a positive influence on critical thinking abilities and dispositions. However, the study also found high heterogeneity, suggesting that the effectiveness of PBL was influenced by factors such as participant characteristics, measurement instruments, disciplines, type of learning, duration of intervention, and group size. A systematic review by Anggraeni et al. (2023) also showed that PBL is a widely used approach to developing critical thinking because the learning process encourages investigation, argumentation, collaboration, reflection, and problem-solving.

These findings show that the relationship between PBL and critical thinking is not only direct, but works through a number of learning mechanisms. Authentic problems arouse curiosity; investigations encourage the search and evaluation of information; group discussions develop the ability to convey and defend arguments; while reflection provides opportunities for students to evaluate the way of thinking and decisions produced. Therefore, the effectiveness of PBL is greatly influenced by the quality of the problems given, the teacher's ability to provide *scaffolding*, student involvement, the quality of group interaction, and the learning evaluation process.

Implementation of Problem Based Learning in Islamic Religious Education

In PAI learning, PBL can be developed by using religious and social issues as a learning context. Issues such as the ethics of using social media, the spread of false information, tolerance between religions, halal consumption behavior, digital transactions, social concern, the environment, zakat, muamalah law, bullying, and the responsibility of the younger generation can be used as authentic problems. Students are then directed to identify problems, collect information, study relevant Islamic teaching sources, compare arguments, discuss, and produce resolution recommendations based on rational considerations and Islamic values.

The research of Pransiska et al. (2024) shows that the application of PBL in PAI learning involves the stages of planning, problem solving, group formation, discussion, presentation of results, intergroup response, and evaluation. The model provides a wider space for students to participate and develop critical thinking skills compared to learning patterns that are only oriented towards material delivery. Siregar et al. (2025) further developed a specific PBL model in PAI learning and found significant differences in critical thinking skills between groups using the PBL model and conventional learning. The findings strengthen the argument that the characteristics of PBL can be adapted to the characteristics of religious learning without eliminating the normative dimensions and values on which PAI is based.

The latest findings also provide quantitative evidence for this relationship. Fawait et al. (2026), through a *quasi-experimental design* of vocational high school students, found differences in critical thinking skills between the PBL group and the conventional learning group. However, the study also emphasized the importance of the quality of teacher facilitation as well as the readiness of students to participate in inquiry-based

learning. This shows that the success of PBL in PAI is not only determined by the use of PBL labels, but by the quality of its implementation.

PBL Mechanism in Developing Critical Thinking in PAI

Conceptually, the effectiveness of PBL in PAI can be explained through a series of learning processes. Authentic Islamic and social problems are the initial stimulus that encourages the activation of knowledge and problem identification. This stage is continued with inquiry and information seeking, where students seek information from the Qur'an, hadiths, books, scientific sources, and contextual information. The information then enters the process of evidence evaluation and collaborative argumentation, where students assess the relevance of sources, compare views, develop reasons, and defend their arguments through discussion. The next stage is reflective problem solving, when students develop solutions and evaluate their suitability with Islamic principles and the context of the problem.

Thus, the conceptual mechanism of variable relationships can be formulated as:
Problem Based Learning in Islamic Religious Education → Problem Identification → Inquiry and Information Evaluation → Collaborative Argumentation → Islamic Value-Based Reflection → Problem Solving and Decision Making → Critical Thinking Skills

The framework shows that PBL does not automatically produce critical thinking skills. This impact arises when the PBL process really involves students in problem analysis, evidence searching, argumentation, alternative evaluation, value reflection, and decision-making. In other words, active inquiry, evidence evaluation, collaborative discourse, and reflective reasoning are the main mechanisms that bridge PBL with the development of critical thinking.

Research Methods

This study uses the Systematic Literature Review (SLR) approach to identify, evaluate, and systematically synthesize research results on the effectiveness of Problem Based Learning (PBL) in Islamic Religious Education on students' critical thinking skills. The literature search process was carried out through scientific databases such as Scopus, ScienceDirect, SpringerLink, Taylor & Francis, ERIC, and Google Scholar using a combination of keywords "*Problem Based Learning*", "*Islamic Religious Education*", "*Islamic Education*", "*critical thinking*", "*critical thinking skills*", and "*students*". The selected articles are limited to scientific publications that are relevant to the research topic, available in full text form, using Indonesian or English, and directly and conceptually discussing the relationship between PBL, Islamic Religious Education learning, and critical thinking skills. The literature selection process is carried out through the stages of identification, screening of titles and abstracts, checking the feasibility of the full text, and determining articles that meet the inclusion criteria. Duplicate articles, articles that are not relevant to the focus of the research, non-scientific publications, and research that do not provide

adequate information regarding the implementation of PBL or critical thinking skills are excluded from the analysis process.

Data analysis was carried out using content analysis and thematic synthesis by grouping findings based on research characteristics, education level, research design, form of PBL application, Islamic Religious Education materials, indicators of critical thinking ability, and results or effectiveness of interventions. Each article that met the criteria was then extracted based on information about the author and year of publication, country or location of the research, sample characteristics, research methods, instruments, learning procedures, and main findings. The results of the extraction were then compared to identify patterns of consistency, differences in results, supporting and inhibiting factors, and learning mechanisms that explain the relationship between PBL and students' critical thinking skills. The study procedure follows the principle of transparency of PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) so that the process of identification, selection, and synthesis of literature can be traced and replicated. The results of the synthesis are then used to formulate conclusions about the effectiveness of PBL in Islamic Religious Education learning as well as identify *research gaps* and future research agendas.

Results and Discussion

Results

The results of the literature synthesis show that Problem Based Learning (PBL) in general makes a positive contribution to the development of students' critical thinking skills. The relatively consistent pattern of findings shows that students who receive problem-based learning have a greater opportunity to identify problems, analyze information, evaluate evidence, formulate arguments, and draw conclusions compared to students who only receive conventional learning. Liu and Pásztor (2022) through meta-analysis found that PBL has a positive influence on *critical thinking skills* and *critical thinking disposition*. These findings are strengthened by Anggraeni et al. (2023), who show that PBL is one of the effective learning models in fostering critical thinking skills through the active involvement of students in the problem-solving process. More recent evidence also suggests that PBL produces a positive impact on a wide range of cognitive and affective learning outcomes (Koçoğlu & Kanadlı, 2025; Erdem et al., 2026).

The results of the study further show that the effectiveness of PBL on critical thinking occurs through a series of active learning activities, not solely because of the use of PBL labels. Providing authentic problems requires students to activate prior knowledge, determine unknown information, find relevant sources, compare various alternative explanations, and develop solutions that can be accounted for. The group discussion process then provides space for students to convey arguments, accept criticism, evaluate their friends' thoughts, and improve conclusions based on evidence. Anggraeni et al. (2023) emphasized that the cognitive aspect in PBL is closely related to the process of developing critical thinking, while research by Suryanti and Nurhuda (2021) shows that the

application of PBL equipped with structured assessments can strengthen the development of critical thinking skills. Thus, authentic problem, inquiry, collaborative argumentation, evidence evaluation, and reflection are mechanisms that consistently emerge as a link between PBL and critical thinking.

In the context of Islamic Religious Education (PAI), the synthesis results show that the characteristics of PBL are in line with the needs of religious learning transformation from the dominant orientation on knowledge transfer to more dialogical, reflective, and contextual learning. Critical thinking skills in Islamic education are needed so that students do not stop at mastering religious concepts, but are able to interpret knowledge, connect religious principles with the reality of life, evaluate information, and formulate responses to social problems based on accountable arguments. Altinyelken (2021) found that students in the context of Islamic education expect a more reflective, dialogical educational approach and provide space for questions. These findings show that religious learning that provides opportunities for students to dialogue and reflect has an important position in the development of critical thinking. Therefore, PBL has the potential to be used in PAI to connect Islamic knowledge, contextual problems, critical inquiry, and reflective reasoning.

Although the tendency of the study results to show the effectiveness of PBL, the literature synthesis also found that the magnitude of PBL's influence on critical thinking is heterogeneous. Liu and Pásztor (2022) show that the effectiveness of PBL can differ based on participant characteristics, discipline, measurement instruments, duration of intervention, group size, and form of learning. Similar findings were obtained by Koçoğlu and Kanadlı (2025), which suggest that the quality of the study is one of the important moderators of the magnitude of the effects of PBL. Erdem et al. (2026) further identified effect variations based on the type of learning outcomes, geographic location, sampling method, research quality, year of publication, and publication characteristics. In fact, the *umbrella systematic review* of Ge et al. (2025) still recommends strengthening the empirical evidence even though PBL overall shows a positive contribution to critical thinking ability. The findings suggest that PBL cannot be positioned as an approach that automatically generates critical thinking without considering the quality of its design and implementation.

The latest results show that there is a fairly clear research gap in the application of PBL specifically in Islamic Religious Education. The international literature on PBL and *critical thinking* is still developing in the context of higher education, science, medicine, health, and other professional fields. Anggraeni et al. (2023) show a concentration of PBL research and critical thinking in specific fields and educational contexts, while Liu and Pásztor (2022) emphasize the need for research on more diverse environments, strategies, and forms of *scaffolding*. The meta-analysis of Su et al. (2025), for example, strengthens the effectiveness of PBL on critical thinking in medical education, but the findings cannot be generalized directly to PAI due to differences in material characteristics, learning objectives, learners, and forms of problem-solving. Therefore, the study of PBL on PAI still

requires more systematic development, especially to determine how authentic religious problems, the use of Islamic sources, argumentation, reflection on values, and decision-making can be integrated into the process of developing students' critical thinking.

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The next implication is that the effectiveness of PBL in PAI is highly dependent on the quality of the problem, the role of the teacher, the discussion process, the source of information, and the assessment system. The teacher does not only act as a conveyor of knowledge, but also as a facilitator who directs the investigation process without taking over the student's thinking process. The problem given must also be authentic, close to the student's life, have an appropriate level of complexity, and allow the use of valid Islamic sources. In addition, learning needs to use assessments that are able to measure critical thinking indicators such as problem interpretation, information analysis, argumentation evaluation, inferences, reasoning, and decision-making. The importance of the quality of implementation is in line with the findings that the effect of PBL is influenced by the duration of the intervention, group characteristics, instruments, *scaffolding*, and research quality (Liu & Pásztor, 2022; Koçoğlu & Kanadlı, 2025; Erdem et al., 2026). Therefore, simply forming a group and assigning tasks in the form of problems cannot be considered as an implementation of PBL that is able to develop critical thinking.

Overall, the synthesis of results and discussion resulted in the conceptual mechanism of Authentic Islamic Problems → Inquiry and Information Seeking → Source and Evidence Evaluation → Collaborative Argumentation → Islamic Value-Based Reflection → Problem Solving and Decision Making → Critical Thinking Skills. This framework is a conceptual contribution to the study because it explains that the effectiveness of PBL in PAI does not only lie in problem-solving activities, but in the integration between critical reasoning and reflection on Islamic values. The literature findings also indicate the need for further research using *quasi-experimental*, longitudinal, *mixed methods*, and cross-level intervention designs to test the mechanism empirically. In addition, future research needs to develop a more contextual critical thinking instrument for PAI, so that it not only measures analytical skills in general, but also the ability to

evaluate sources, formulate religious arguments, conduct contextual reflection, and produce value-based decisions. Thus, the development of PBL in PAI can be directed to a pedagogical approach that integrates religious understanding, critical inquiry, reflective reasoning, and contextual problem solving (Altinyelken, 2021; Anggraeni et al., 2023; Ge et al., 2025).

Conclusion

Based on the results of literature reviews, Problem Based Learning (PBL) has a positive effectiveness in developing students' critical thinking skills, including when adapted to Islamic Religious Education learning. This effectiveness arises because PBL encourages students to be involved in the process of problem identification, information search and evaluation, collaborative discussion, argumentation, reflection, and decision-making. In the context of PAI, the process becomes more meaningful when the problems used are related to authentic religious and social issues and are analyzed based on Islamic sources and values. Thus, PBL has the potential to shift PAI learning from a dominant approach oriented towards knowledge transfer to more active, dialogical, contextual, and reflective learning.

This study also shows that the effectiveness of PBL is not automatic, but is influenced by the quality of the problems given, the teacher's ability to provide *scaffolding*, the level of student involvement, the dynamics of group discussions, the duration of learning, the use of valid information sources, and the form of critical thinking assessment. The literature synthesis produced a conceptual mechanism in the form of Authentic Islamic Problems → Inquiry and Information Seeking → Source and Evidence Evaluation → Collaborative Argumentation → Islamic Value-Based Reflection → Problem Solving and Decision Making → Critical Thinking Skills. This mechanism emphasizes that the development of critical thinking in PAI needs to integrate rational reasoning with reflection on Islamic values.

However, research specifically examining the relationship among PBL, Islamic Religious Education, and critical thinking skills remains relatively limited and dispersed across various educational contexts. Therefore, further research needs to expand the study through *quasi-experimental, mixed-methods, longitudinal, and cross-level educational designs, as well as develop critical-thinking instruments that are better aligned with the characteristics of PAI*. Overall, PBL can be seen as a relevant pedagogical approach to strengthening religious understanding, critical inquiry, reflective reasoning, and contextual problem-solving, so that PAI learning not only produces students who understand Islamic teachings conceptually but also are able to analyze and apply them critically and responsibly in real life.

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