Ta'dibuna Jurnal Pendidikan Islam
P-ISSN: 2252-5793
E-ISSN: 2622-7215
Vol.14, No.4, Agustus 2025, hlm.315-324
DOI: 10.32832/tadibuna.v14i4.21054
http://ejournal.uika-bogor.ac.id/index.php/TADIBUNA/

The Relationship between Learning Methods and Problem-Solving Effectiveness in Islamic Learning

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Abstract

This study analyzes the influence of lecture, discussion/problem-based learning (PBL), and contextual teaching and learning (CTL) methods on students' problem-solving skills in Islamic Religious Education (PAI). The background of this research lies in the low problem-solving ability of Indonesian students, as shown in PISA and TIMSS, and the dominance of lecture methods in PAI which are less effective in fostering critical thinking. The main problem is the limited implementation of interactive approaches such as PBL and CTL, despite their proven effectiveness. Using a quasi-experimental design with 90 eighth-grade students in a Tsanawiyah Madrasah, data were collected through pretest-posttest problem-solving tests and observations. The results show that discussion/PBL (N-Gain 0.58) and CTL (N-Gain 0.50) significantly improve problem-solving skills compared to the lecture method (N-Gain 0.17). These findings indicate that interactive and contextual learning is more effective in strengthening students' critical thinking and Islamic values, and provide recommendations for transforming PAI teaching practices in line with the Independent Curriculum and Pancasila Student Profile.

Keywords: *Learning Methods; Problem Solving; Islamic Religious Education; PBL; CTL.*

Abstrak

Penelitian ini menganalisis pengaruh metode ceramah, diskusi/pembelajaran berbasis masalah (PBL), dan pembelajaran kontekstual (CTL) terhadap kemampuan pemecahan masalah siswa pada mata pelajaran Pendidikan Agama Islam (PAI). Latar belakang penelitian ini adalah rendahnya kemampuan pemecahan masalah siswa Indonesia yang ditunjukkan oleh PISA dan TIMSS, serta dominasi metode ceramah dalam pembelajaran PAI yang kurang efektif dalam menumbuhkan kemampuan berpikir kritis. Masalah utamanya adalah masih terbatasnya implementasi pendekatan interaktif seperti PBL dan CTL, meskipun telah terbukti efektif. Dengan menggunakan desain kuasi-eksperimental dengan 90 siswa kelas delapan di sebuah Madrasah Tsanawiyah, data dikumpulkan melalui tes pemecahan masalah pretest-posttest dan observasi. Hasil penelitian menunjukkan bahwa diskusi/PBL (N-Gain 0,58) dan CTL (N-Gain 0,50) secara signifikan meningkatkan kemampuan pemecahan masalah dibandingkan dengan metode ceramah (N-Gain 0,17). Temuan ini menunjukkan bahwa pembelajaran interaktif dan

Diserahkan: 16-07-2025 **Disetujui**: 05-08-2025. **Dipublikasikan**: 29-08-2025

Kutipan: Rivaldy, N., Syarifudin, E., & Hidayatullah, H. (2025). Prophetic Leadership, Social Media, and Technology in Integrated Islamic School Reputation Management. Ta'dibuna Jurnal Pendidikan Islam, 14(4), 290–314. https://doi.org/10.32832/tadibuna.v14i4.21012

kontekstual lebih efektif dalam memperkuat pemikiran kritis siswa dan nilai-nilai Islam, dan memberikan rekomendasi untuk mengubah praktik pengajaran PAI yang sejalan dengan Kurikulum Mandiri dan Profil Mahasiswa Pancasila.

Kata Kunci: Metode Pembelajaran; Pemecahan Masalah; Pendidikan Agama Islam, PBL, CTL..

I. Introduction

The Indonesian education system has made progress in expanding access, as reflected in the achievement of 12 years of compulsory education and a literacy rate above 95%. However, the quality of learning outcomes remains a major concern. International assessments such as the Programme for International Student Assessment (PISA) 2018 and the Trends in International Mathematics and Science Study (TIMSS) 2015 consistently show that Indonesian students' performance in mathematics and science is far below the OECD average. Only about one-third of students are able to solve problems at level 2 or higher in PISA mathematics, while more than a quarter of fourth graders failed to meet basic mathematical competency in TIMSS. The PISA 2022 results further reveal significant socio-economic disparities, where students from disadvantaged backgrounds scored far lower than those from wealthier groups. These findings demonstrate that students' problem-solving abilities are weak and strongly influenced by the quality of teaching and learning methods.

The current learning culture in Indonesia, including Islamic Religious Education (PAI), is still dominated by teacher-centered strategies, particularly lectures and rote learning. Such approaches prioritize memorization and examination results rather than fostering higher-order thinking skills such as critical thinking, creativity, and problem solving. As a consequence, students often struggle to apply knowledge in real-life contexts. This condition contradicts the mandate of Law No. 20 of 2003 on the National Education System, which emphasizes the holistic development of intellectual, spiritual, and moral potential, as well as the standards of student-centered learning outlined in Regulation of the Ministry of Education and Culture (Permendikbud) No. 22 of 2016.

In the context of Islamic Religious Education, the challenge is even more pressing. PAI is expected not only to transmit religious knowledge but also to shape students' character, morals, and capacity to address contemporary social and moral challenges through Islamic values. However, many teachers continue to rely primarily on conventional lectures, with limited integration of interactive approaches such as Problem-Based Learning (PBL), Cooperative Learning, or Contextual Teaching and Learning (CTL). Empirical evidence from several studies shows that these interactive approaches are more effective in enhancing critical thinking and problem-solving skills. For example, PBL enables students to analyze real-world issues critically, while CTL links learning materials to daily life experiences, thereby making religious values more applicable and meaningful. Nevertheless, systematic implementation of these methods in PAI classrooms—particularly in madrasahs—remains limited.

The demands of the 21st century further highlight the need for a transformation of PAI learning. Globalization, digitalization, and complex social dynamics require graduates to master the competencies of critical reasoning, collaboration, creativity, and communication (the 4Cs). These competencies are also central to the Pancasila Student Profile promoted by the Independent Curriculum, which emphasizes not only cognitive achievement but also character building, independence, and contextual problem solving. Strengthening students' ability to solve problems through PAI is therefore both an educational and moral imperative, as it prepares them to apply Islamic principles in addressing real-world challenges such as intolerance, radicalism, technological misuse, and moral decline among youth.

Based on this background, there is a clear need to empirically examine the effectiveness of different learning methods in PAI. While prior research has confirmed the potential of PBL and CTL to enhance problem-solving abilities in general education contexts, few studies have directly compared these methods with conventional lectures within Islamic Religious Education at the madrasah level. This study seeks to fill that gap by employing a quasi-experimental design to analyze the influence of lecture, discussion/PBL, and CTL methods on students' problem-solving skills in PAI.

The novelty of this study lies in its systematic comparison of three distinct learning approaches within the framework of Islamic education, thereby offering empirical insights that are not only academically significant but also practically relevant for curriculum development and teacher practice. By aligning with the goals of the Independent Curriculum and the Pancasila Student Profile, the findings of this study are expected to provide recommendations for transforming PAI teaching into a more participatory, contextual, and value-oriented process.

II. Research Method

This study uses a quantitative approach with a quasi-experimental design, namely Non-Equivalent Control Group Design. This design was chosen because the classroom conditions have been administratively formed so that the researcher does not randomize the classes. Each group was given a pretest and a posttest to find out changes in problem-solving abilities after treatment.

The research population is all grade VIII students in one of the Tsanawiyah Madrasah in Bogor Regency which amounts to 110 students (fill in the actual population). From this population, 90 students were selected as a research sample using purposive sampling techniques based on the following criteria: (1) the school has implemented the Independent Curriculum or K13, (2) has at least three parallel classes at the same level, and (3) the academic conditions and behavior of students are relatively homogeneous. The sample was divided into three classes, each totaling 30 students, namely: (1) experimental class 1 using the discussion/Problem-Based Learning (PBL) method, (2)

experimental class 2 using the Contextual Teaching and Learning (CTL) method, and (3) control class using the conventional lecture method.

The research instruments include: (1) problem-solving ability tests in the form of Islamic case-based questions (pretest–posttest), (2) observation sheets to observe student involvement and consistency in the application of learning methods by teachers, and (3) documentation in the form of lesson plans, syllabus, and teaching tools to ensure the suitability of the application of methods. Data analysis techniques were carried out through assumption tests (Kolmogorov–Smirnov normality test and Levene homogeneity test), paired sample t-test, one-way ANOVA, Tukey follow-up test to determine differences between groups, and N-Gain analysis to measure improved problem-solving ability.

Conceptually, this study places learning methods (lectures, PBL, and CTL) as independent variables, while students' problem-solving ability as dependent variables. The relationship between variables is described in the research design as follows: population → sample selection → pretest → treatment according to learning methods → posttest → data analysis.

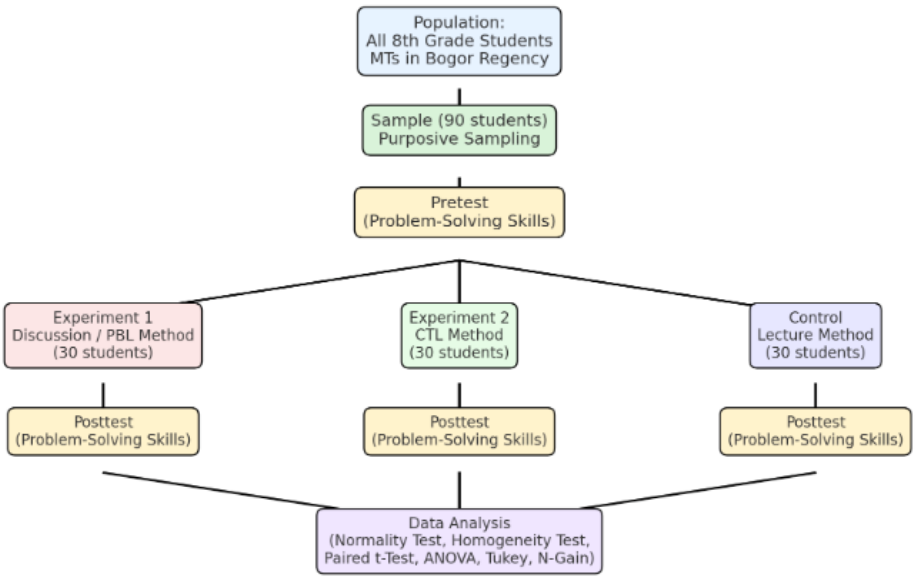

Figure 1. Schema Design research

This research departs from the population of all grade VIII students in one of the Tsanawiyah Madrasah in Bogor Regency. From this population, 90 students were selected as a sample using purposive sampling techniques based on certain criteria, namely the school has implemented the Independent Curriculum or K13, has at least three parallel classes, and the academic conditions and behavior of students are relatively homogeneous.

Before being given treatment, all samples were first taken a pretest to measure the initial problem-solving ability in Islamic Religious Education (PAI) subjects. After that, students are divided into three treatment groups. Experimental class 1 consisted of 30 students who were taught using the Discussion or Problem-Based Learning (PBL) method. Experimental class 2 consisted of 30 students who were taught using the Contextual Teaching and Learning (CTL) method. Meanwhile, the control class amounted to 30 students who received learning by conventional lecture methods.

After the learning process, the whole group went back to the posttest with the same instrument to see the difference and improve problem-solving skills after the treatment. The data from the pretest and posttest results were then analyzed in several stages, namely normality and homogeneity tests to determine the feasibility of parametric tests, paired sample t-tests to determine differences in each group, One-Way ANOVA to see the average differences between groups, and Tukey's follow-up test to identify significantly different groups. In addition, N-Gain analysis was used to measure the effectiveness of each learning method on improving students' problem-solving skills.

Thus, the design of this study places learning methods (PBL, CTL, and lectures) as independent variables and students' problem-solving ability as dependent variables. The research flow takes place systematically starting from population, sampling, pretest, treatment according to learning methods, posttest, to data analysis

III. Result and Discussion

This study aims to evaluate the effectiveness of Discussion/Problem-Based Learning (PBL), Contextual Teaching and Learning (CTL), and Conventional Lectures in improving students' problem-solving skills in Islamic Religious Education (PAI) subjects. The research subjects consisted of 90 grade VIII students in one of the Tsanawiyah Madrasas, which were divided into three groups purposively: two experimental groups and one control group. Each group totals 30 students.

A. Pretest and Posttest Result

The results of the initial test (pretest) and final test (posttest) showed an improvement in problem solving skills in all groups, although the rate of improvement was different.

Table 1. Pretest and Posttest Result

Group	Pretest (Average)	Posttest (Average)	N-Gain	N-Gain Category
Experiment 1 (Discussion)	68,37	85,20	0,58	Medium–High
Experiment 2 (CTL)	69,20	82,14	0,50	Keeping

Control (talk)	65,22	70,01	0,17	Low

B. Statistical Test

a) The Paired Sample t-Test was performed for each group. Results showed a significant improvement between pretest and posttest in experimental group 1 (p = 0.000) and experimental group 2 (p = 0.000). In contrast, in the control group, the increase was not significant (p = 0.082).
b) The ANOVA One-Way test showed a significant difference in posttest results between the three groups (p = 0.000), which means that the learning method had a different impact on problem solving skills.
c) Tukey's Post Hoc test showed that there was a significant difference between the experimental groups (1 and 2) compared to the control group. However, there was no statistically significant difference between experimental group 1 and.

C. Effectiveness of Discussion/ Problem-Based Learning (PBL) Method

Experimental group 1 that used the PBL-based discussion method showed the highest improvement in problem solving ability. This method allows students to be actively involved in identifying problems, exploring solutions, and reflecting on the results of discussions in the context of Islamic values. The problem-based learning process encourages students' intellectual and emotional engagement, thereby improving higher-level thinking skills (HOTS). The PBL approach is in line with the constructivist theories of Piaget and Vygotsky which emphasize the importance of active and social learning. These results are in line with the research of Hmelo-Silver (2004) and Savery (2015), which stated that PBL significantly improves the ability to analyze, synthesize, and solve problems in students in various fields of study. In the context of PAI, the application of problem solving discussions is a means to contextualize Islamic teachings in daily life. Students not only understand the concepts of faith, worship, and morals theoretically, but also how these values are applied in real situations. This process strengthens students' spiritual, social, and cognitive competencies simultaneously.

D. Effectiveness of The Contextual Teaching and Learning (CTL) Method

Experimental group 2 also showed a significant improvement in problem-solving ability. The CTL method provides students with the opportunity to connect the subject matter with the social and cultural realities they are experiencing. In PAI learning, CTL encourages students to understand the context of religious values in an applicative and meaningful way. According to Johnson (2002), CTL creates meaning for students through their involvement in real-world contexts. CTL helps students understand that religious knowledge is not only memorization, but also guidance in daily decision-making. Learning with CTL in this study is presented through case studies, simulations, and reflection on religious values that are directly related to the students' experiences. These results are strengthened by the findings of Hidayati & Yusuf (2021) in the Journal of

Islamic Religious Education, which show that the CTL approach significantly increases learning motivation and internalization of Islamic values in madrasah students.

E. Limitations of Conventional Reading Methods

The control group that used the lecture method showed the lowest increase in scores. Lectures as a learning method tend to be one-way, placing students as passive objects in the learning process. Lack of interaction and involvement in problem-solving inhibits the development of critical and reflective thinking skills. Freire (1970) criticized the lecture method in the concept of "banking education," in which the teacher is considered the only source of knowledge and the student is only the repository of information. In PAI learning, this method can make religious teachings feel rigid, normative, and far from the reality of students' lives. This has an impact on the low ability of students to integrate religious values in solving the social problems they face.

F. Relation to The Independent Curriculum and Pancasila Student Profile

The findings of this study are very relevant to the spirit of the Independent Curriculum which emphasizes differentiated, project-based, and oriented learning to strengthen the Pancasila Student Profile. In the context of PAI, strengthening problem-solving skills through PBL and CTL can support the formation of the character of students who fear God, are globally diverse, independent, critically reasoning, creative, and work together. In practice, PAI teachers need to be encouraged to become facilitators who design active learning, provide space for value exploration, and create a collaborative learning climate. Problem- and context-based learning provides a real experience for students to develop spiritual and moral literacy as a whole**.**

G. Reflection on Observation and Documentation Result

The results of the observations showed that students in the experimental group were more active in discussing, asking questions, making arguments, and presenting solutions. This shows that learning strategies that emphasize active participation can create a constructive and meaningful learning atmosphere. The learning tool documentation also shows that teachers in the experimental group are more consistent in developing process-oriented lesson plans, not just results. Assessments are not only carried out on cognitive aspects, but also affective and psychomotor, especially in terms of the courage to express opinions, respect for different views, and make decisions in accordance with Islamic values.

H. Additional Data Support:

Data analysis shows the distribution of individual score improvements as follows:

- Experiment 1: 83% of students experienced an increase of >15 points, 17% an increase of 10–15 points.

- Experiment 2: 76% of students increased >12 points, the rest between 8–12 points.
- Control: Only 32% of students experienced a >5-point increase.

This data shows that methods that place students as active subjects of learning play a major role in improving problem solving skills.

I. Research Implications

This research provides a concrete picture that PAI learning needs to be transformed from a teacher-centered approach to a student-centered approach. Teachers must be able to adopt approaches that stimulate active thinking, applicator spirituality, and contextual understanding of Islamic values. In education policy, these findings can be an input for the development of PAI teacher training, especially in applying the PBL and CTL methods appropriately. In addition, schools and madrasas need to be given flexibility in developing value-based learning innovations and students' life experiences.

IV. Conclusion

This study aims to evaluate the effectiveness of three learning approaches in improving students' problem-solving skills in Islamic Religious Education (PAI) subjects, namely the Discussion/Problem-Based Learning (PBL), Contextual Teaching and Learning (CTL), and Conventional Lecture method. Based on the results of quantitative data analysis supported by observational and documentation data, it can be concluded that the active and contextual learning approach has a significant contribution in improving students' problem-solving skills, especially in the context of Islamic values. The group of students who were guided by the Discussion/PBL method showed the most significant improvement in problem-solving skills. The average student posttest score increased from 68.37 to 85.20 with an N-Gain value of 0.58 which is included in the medium-high category. This shows that the PBL method is able to create meaningful learning, foster students' intellectual and emotional engagement, and encourage active participation in solving real-life problems associated with Islamic values. These findings reinforce previous literature that states that problem-based approaches are highly effective in developing students' critical and reflective thinking skills.

This finding has important implications for the implementation of the Independent Curriculum and efforts to strengthen the Pancasila Student Profile, especially in the dimensions of piety to God Almighty, critical reasoning, and independence. Active learning methods such as PBL and CTL have been proven to be able to support the formation of character and competence of students who not only understand Islamic teachings textually, but are also able to apply them in real life. Therefore, the transformation of PAI learning needs to be directed towards a more participatory, exploratory, and value-based approach. As a recommendation, Islamic Religious Education teachers need to be given adequate training in designing and implementing

active learning models such as PBL and CTL in the Learning Implementation Plan (RPP). In addition, madrassas and schools need to create a learning climate that supports pedagogical innovation by providing time, resources, and policies that favor a learning approach that emphasizes the full involvement of students, both intellectually, spiritually, and socially. Thus, this study emphasizes that students' problem-solving skills in the context of Islamic Religious Education learning can be significantly improved through an active, dialogical, and contextual learning approach. This is in line with the demands of the times and the needs of students in facing the complexities of modern life with a strong foundation of Islamic values.

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