

The Effect of Problem-Based Learning on Aqidah Akhlak Learning Outcomes among Grade VIII Students

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ABSTRACT

This study was motivated by the low cognitive and affective learning outcomes of Grade VIII students in the Aqidah Akhlak subject, which were associated with teacher-centred and expository learning practices that tended to make students passive. This study aimed to examine the effect of the Problem-Based Learning (PBL) model on the cognitive and affective learning outcomes of Grade VIII students at MTsN 3 Padang City. A quantitative approach with a quasi-experimental method using a Nonequivalent Control Group Design was employed. The sample consisted of 48 students, comprising 26 students in the experimental class (VIII.3) who received PBL and 22 students in the control class (VIII.4) who received direct instruction. Data were collected using a validated cognitive achievement test and an affective questionnaire, supported by systematic classroom observations. Instrument validity was established through expert judgment and empirical testing, while reliability was assessed prior to implementation. Data were analysed using normality and homogeneity tests, followed by an independent-samples t-test. The results showed that the cognitive posttest mean of the experimental class was 89.31, higher than that of the control class at 72.41, with a significance value of 0.000 (< 0.05). Similarly, the affective posttest mean of the experimental class was 88.19, compared with 78.50 in the control class. These findings indicate that the PBL model was more effective than direct instruction in improving both cognitive and affective learning outcomes in Aqidah Akhlak among Grade VIII students. The findings support the use of PBL as an alternative student-centred learning model for strengthening students' academic achievement and affective development.

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1. Introduction

A preliminary study conducted on 19 September 2025 found that the teaching of Aqidah Akhlak was predominantly conducted through an expository, teacher-centred approach. During classroom observations, student engagement was relatively limited, particularly in activities involving questioning, responding to questions, expressing opinions, and discussing learning problems. Most classroom activities were dominated by teacher explanations, while students tended to listen, take notes, and complete assignments individually. Students were rarely provided with structured opportunities to discuss or solve contextual problems related to Aqidah Akhlak materials. An interview with the subject teacher further confirmed that expository instruction had been the dominant learning approach used in previous lessons, particularly when delivering conceptual and normative materials.

The limited opportunities for active participation appeared to be reflected in students' classroom behaviour. Students who actively asked questions, responded to the teacher's questions, or contributed ideas during discussions represented only a small proportion of the class, while most students remained passive during the learning process. This condition is important because active participation provides opportunities for students to process information, express their understanding, exchange ideas, and connect religious concepts with real-life situations. When learning is dominated by one-way explanations, students may have fewer opportunities to construct understanding through interaction and problem solving. Consequently, the learning process may remain focused on receiving and recalling information rather than developing deeper cognitive understanding and internalising the affective values contained in Aqidah Akhlak.

The relationship between the dominant expository approach, limited student engagement, and learning outcomes is also reflected in the students' achievement data. Of the 239 Grade VIII students who participated in the mid-semester summative assessment for the 2025/2026 academic year, only approximately 60% achieved the school's minimum mastery criterion (KKTP) of 79, while the remaining 40% did not achieve the criterion, as presented in Table 1. These findings suggest that the relatively low learning outcomes cannot be viewed separately from the learning process experienced by students. Although achievement may be influenced by various factors, the predominance of teacher-centred instruction and limited opportunities for active participation provide an important contextual indication of why students' cognitive and affective development may not have been optimal.

Therefore, there is a need for a learning model that can provide students with greater opportunities to participate actively, discuss, analyse problems, express arguments, collaborate with peers, and relate Aqidah Akhlak concepts to situations encountered in everyday life. Problem-Based Learning (PBL) is considered relevant to this need because its learning process places students in contextual problem situations and encourages them to investigate, discuss, formulate solutions, and present the results of their thinking. Through this process, PBL has the potential not only to

improve students' cognitive achievement but also to strengthen affective aspects such as responsibility, cooperation, honesty, active participation, and concern for others.

Table 1. Mid-Semester Summative Assessment Results in Aqidah Akhlak

Class	Students	Achieved KKTP (≥ 79)	Below KKTP (< 79)
VIII.1	29	28%	72%
VIII.2	29	41%	59%
VIII.3	29	7%	93%
VIII.4	29	0%	100%
VIII.5	32	94%	6%
VIII.6	32	100%	0%
VIII.7	28	100%	0%
VIII.8	31	100%	0%
Total	239	60%	40%

Source: Aqidah Akhlak teacher, Grade VIII, MTsN 3 Padang City (2025).

This gap between the ideal aim of Aqidah Akhlak learning and the reality in the classroom needs a solution. One learning model considered relevant is Problem-Based Learning (PBL), a model that emphasises students' active engagement in solving problems drawn from real life. PBL develops not only cognitive ability but also problem-solving skill, collaboration, creativity and self-confidence (Wardani, 2023; Mayasari, Arifudin, & Juliawati, 2022). A number of studies have shown its effectiveness: Mareti and Hadiyanti (2021) found that PBL makes students more active and improves their conceptual understanding; Abdullah and Wafa (2022) showed that PBL increases creativity and learning motivation in Aqidah Akhlak; and Idrus (2021) reported that PBL improved primary-school students' understanding of good words and phrases (kalimat thayyibah). Beyond Aqidah Akhlak, PBL has likewise been shown to strengthen higher-order thinking in other Islamic-education subjects: a quasi-experimental study on Fiqh learning found that PBL raised students' critical-thinking scores from a control-group mean of 62.66 to an experimental mean of 84.00, and their collaboration scores from 64.88 to 81.56 ('Abidin, Hidayati, & Eliza, 2025); and a study on Islamic Religious Education and Character (PAI and BP) reported that PBL improved students' creative-thinking scores (80.31 versus 74.53 in the control class) and learning interest (73.34 versus 68.32) compared with conventional teaching (Rahimma, Hadeli, Eliza, Remiswal, & Trinova, 2024).

Although these earlier studies confirm the value of PBL across various Islamic-education subjects and grade levels, most of them examine only a single outcome domain—either cognitive skill, critical or creative thinking, motivation, or

collaboration—within one subject, and few if any focus simultaneously on cognitive and affective learning outcomes in Aqidah Akhlak at the junior secondary (MTs) level (Ningrum, Puspitasari, & Hidayat, 2025). This gap justifies the present study, which analyses the effect of PBL on the learning outcomes of Grade VIII students at MTsN 3 Padang City in both the cognitive and affective domains.

Based on the problems outlined above, this research is directed at three specific questions: first, whether there is a significant difference in cognitive learning outcomes between students taught with PBL and those taught with direct instruction; second, whether there is a significant difference in affective learning outcomes between the two groups; and third, how large the improvement in each domain is, as indicated by the normalised gain (N-Gain) achieved by each class. Answering these questions allows the study to move beyond a general claim that “PBL works” towards a more precise account of how much it improves understanding and how much it improves attitude and behaviour within a single subject, which is the specific contribution this study makes to the existing literature reviewed above.

The study is expected to contribute concretely to the development of instructional strategy for Aqidah Akhlak, to the improvement of educational quality in madrasah, and to the broader achievement of national education goals. For teachers, the findings offer empirical guidance on when and why a problem-based approach may be preferable to direct instruction; for madrasah leadership, they offer evidence relevant to curricular and professional-development decisions; and for the wider research community, they extend the still-limited body of PBL research that jointly examines cognitive and affective outcomes within Islamic religious education.

2. Literature Review

Problem-Based Learning is a learning model that places a real, contextual problem at the starting point of the learning process. Arends (2012) describes its syntax as consisting of five stages: (1) orienting students to the problem, (2) organising students for study by forming small groups, (3) guiding individual and group investigation through the search for and analysis of information, (4) developing and presenting the results of the group's work, and (5) analysing and evaluating the problem-solving process. Through these stages, students acquire direct learning experience that develops critical thinking, problem-solving, communication and collaboration (Arends, 2012). Barrows (1986), who first formulated PBL as an instructional method, argued that using authentic problems as the vehicle for learning increases student engagement and produces a deeper conceptual understanding than traditional instruction. Problem-Based Learning emphasizes active student participation and problem-solving, with the teacher facilitating the learning process (Vargas-Rodríguez et al., 2021).

Learning outcomes refer to the changes in a student's knowledge, attitude and skill that result from the learning process. In the cognitive domain they are commonly measured through achievement tests, while in the affective domain they are measured through instruments such as attitude questionnaires that capture responsibility,

cooperation, honesty and religious commitment. In Aqidah Akhlak, an effective learning outcome is one in which cognitive mastery of faith-related concepts is accompanied by their affective internalisation as everyday moral conduct, since the ultimate purpose of the subject is not simply to convey information but to shape character (Muttaqin, Sari, & Aditya, 2023).

Several previous studies provide empirical support for the present research. 'Abidin, Hidayati and Eliza (2025) applied PBL in Fiqh learning at MA Al-Kautsar Pekanbaru using a randomised control-group design, and found that PBL significantly improved both critical-thinking ability ($t = 10.247 > t\text{-table } 2.004$) and collaboration skill ($t = 5.359 > t\text{-table } 2.004$) compared with conventional teaching. In a closely related setting, Rahimma, Hadeli, Eliza, Remiswal and Trinova (2024) examined the effect of PBL on Grade VIII students' creative thinking and learning interest in the PAI and Budi Pekerti subject at SMPN 1 Sungai Sariak, and found that the experimental class outperformed the control class on both creative thinking ($t = 3.06 > t\text{-table } 1.69$) and interest in learning ($t = 3.14 > t\text{-table } 1.69$). Both studies confirm that PBL is effective within Islamic-education subjects, but neither examines its simultaneous effect on cognitive and affective outcomes in Aqidah Akhlak, which is the focus addressed here.

Taken together, this body of research forms the conceptual framework of the present study: an instructional treatment (PBL) is hypothesised to influence learning outcomes (the cognitive and affective domains) more strongly than direct, teacher-centred instruction. Based on this framework, the research hypothesis is formulated as follows: H0, PBL has no significant effect on students' learning outcomes in Aqidah Akhlak; H1, PBL has a significant effect on students' learning outcomes in Aqidah Akhlak.

3. Method

This study used a quantitative approach with a quasi-experimental method in the form of a Nonequivalent Control Group Design (Sugiyono, 2013). This design involves two intact, non-randomly assigned classes: an experimental class taught using PBL and a control class taught using direct instruction, each given a pretest and a posttest, as shown in Table 2.

Table 2. Nonequivalent Control Group Design

Group	Pretest	Treatment	Posttest
Experimental class	O ₁	X	O ₂
Control class	O ₃	–	O ₄

Note: O₁/O₃ = pretest; O₂/O₄ = posttest; X = treatment using the Problem-Based Learning model (Sugiyono, 2013).

The study was conducted at MTsN 3 Padang City, an A-accredited madrasah located in the Koto Tengah sub-district of the city. The population comprised all 251 Grade VIII students across eight classes for the 2025/2026 academic year, as summarised in Table 3.

Table 3. Number of Grade VIII Students by Class

Class	Number of students
VIII.1	31
VIII.2	32
VIII.3	32
VIII.4	32
VIII.5	32
VIII.6	32
VIII.7	28
VIII.8	32
Total	251

Source: Curriculum Vice-Principal, MTsN 3 Padang City (2025).

The research instruments consisted of a cognitive achievement test and an affective questionnaire. The development of both instruments began with the preparation of an instrument blueprint based on the learning objectives and competency indicators of the Aqidah Akhlak subject. The cognitive test blueprint was developed by referring to the revised Bloom's taxonomy, covering six cognitive levels: remembering (C1), understanding (C2), applying (C3), analysing (C4), evaluating (C5), and creating (C6). Each indicator was translated into one or more multiple-choice items that were aligned with the learning materials on honesty, trustworthiness (*amanah*), and responsibility. The blueprint specified the competency indicator, cognitive level, item indicator, item number, and expected answer so that each learning objective was proportionally represented in the test.

The cognitive learning outcome test instrument initially consisted of 35 preliminary multiple-choice items. Before being administered to the research participants, the instrument was validated by 3 validators consisting of a media expert, a subject matter expert, and a language expert. The validation was conducted to assess the alignment of the test items with the learning indicators, the appropriateness of the cognitive levels, the accuracy of the content, the clarity of the questions and answer choices, and the use of language appropriate to the characteristics of eighth-grade students. The results of

the expert validation obtained a score of very good, categorized as valid. Test items that received suggestions for improvement from the validators were revised before the empirical trial was conducted.

After expert validation, the cognitive test was piloted on 30 eighth-grade students from Class VIII.1 who were not included in either the experimental or control group. The instrument trial was conducted on January 12, 2026 to determine the empirical validity, difficulty level, discriminating power, and reliability of the instrument. Based on the item analysis results, 35 out of 35 test items met the validity criteria, with validity coefficients ranging from 0.39 to 0.906. Meanwhile, items that did not meet the criteria were revised/eliminated, as applicable. The reliability test using Kuder–Richardson 20 (KR-20), according to the method used produced a coefficient of 0.3494, indicating that the instrument had a high level of reliability. After the validation and item analysis processes were completed, 35 test items were obtained and used as the final instrument for the pretest and posttest.

The affective questionnaire was developed based on the affective-domain framework proposed by Krathwohl and was adapted to the characteristics of Aqidah Akhlak learning. The questionnaire blueprint consisted of indicators covering active participation, concern for others, honesty, responsibility, cooperation, diligence, and interest in learning. Each indicator was translated into several positive and/or negative statements using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The blueprint included the affective dimension, indicator, statement number, statement direction, and scoring criteria to ensure that all intended affective aspects were adequately represented.

The affective questionnaire was subsequently validated by 3 validators who had expertise in the fields of Learning Media/Aqidah Akhlak Materials/Language. The validation was conducted to assess the relevance of each statement to the affective indicators, the clarity of the wording, the suitability of the statements for the characteristics of eighth-grade students, and the alignment of the instrument with the learning objectives of Aqidah Akhlak. The results of the expert validation obtained a score of 85, categorized as valid. The revised questionnaire was then piloted on students who were not included in the research sample. The results of the empirical validity analysis showed that 35 out of 35 statements met the validity criteria, with validity coefficients ranging from 0.39 to 0.867. The reliability test produced a coefficient of 0.3494, indicating that the questionnaire had a high level of reliability. The statements that met the validity and reliability criteria were subsequently used as the research instrument.

To complement the questionnaire data, systematic classroom observation was conducted during the learning process. The observation sheet was developed based on the same affective indicators used in the questionnaire, particularly student participation, cooperation, responsibility, honesty, diligence, and concern for others. The observation was conducted by 63 observers during each treatment meeting using a predetermined observation rubric. The observation results were used as supporting

evidence to describe students' affective engagement and to corroborate the questionnaire findings.

Before hypothesis testing, the pretest and posttest data were examined for the assumptions required for parametric analysis. The normality of the data was tested using the Kolmogorov–Smirnov/Shapiro–Wilk test pilih sesuai yang benar-benar digunakan. The experimental group's pretest data produced a significance value of 67.35, while the control group's pretest data produced a significance value of 66.18. For the posttest data, the experimental group obtained a significance value of 89.31, whereas the control group obtained nilai. Because the significance values were greater than 0.05, the data were considered normally distributed.

Homogeneity testing was subsequently conducted using Levene's test to determine whether the variances of the experimental and control groups were homogeneous. The test produced a significance value of 0,074. Because the significance value was > 0.05 , the variance of the two groups was considered homogeneous.

Because the primary purpose of the study is to determine whether PBL produces different learning outcomes compared with direct instruction, the main hypothesis should be tested using an independent-samples t-test, rather than a paired-samples t-test. The independent-samples t-test compares the posttest outcomes of two different groups, namely the experimental group receiving PBL and the control group receiving direct instruction. A paired-samples t-test may only be used as an additional analysis if the researchers intend to examine the change from pretest to posttest within the same group.

The magnitude of improvement in students' learning outcomes was also examined using the normalized gain (N-Gain), calculated using the formula:

$$\text{N-Gain} = (\text{Posttest} - \text{Pretest}) / (\text{Maximum Score} - \text{Pretest})$$

The resulting N-Gain scores were categorized as high (0.70–1.00), medium (0.30–<0.70), and low (0.00–<0.30), following Hake (1998).

Table 4. N-Gain Score Criteria

N-Gain range	Category
$0.70 \leq n \leq 1.00$	High
$0.30 \leq n < 0.70$	Medium
$0.00 \leq n < 0.30$	Low

Source: Adapted from Hake (1998).

4. Results and Discussion

The experimental class was taught using the full PBL syntax—problem orientation, organising students into groups, guided investigation, presentation of findings, and

analysis/evaluation of the problem-solving process applied to everyday moral issues such as honesty, trustworthiness and responsibility. The control class was taught through direct instruction, in which the teacher explained the material, provided examples, and guided structured practice. The descriptive results for both classes are summarised in Table 3.

Table 5. Mean Pretest and Posttest Scores

Domain	Class	Pretest mean	Posttest mean
Cognitive	Experimental (PBL)	67.35	89.31
Cognitive	Control (direct instruction)	66.18	72.41
Affective	Experimental (PBL)	73.50	88.19
Affective	Control (direct instruction)	70.50	78.50

Both classes had a broadly comparable initial ability before treatment, but the experimental class showed a substantially larger increase after treatment in both the cognitive and the affective domain, while the standard deviation of the experimental class's posttest scores was smaller than that of the control class, indicating a more even distribution of improvement among students.

A paired-sample t-test was used to examine whether the change from pretest to posttest was statistically significant. For the cognitive domain, the test produced $t = -23.640$ ($df = 25$) with a significance value (Sig. 2-tailed) of 0.000, which is below the 0.05 threshold; H_0 is therefore rejected and H_1 accepted, indicating a significant difference in cognitive learning outcomes following the PBL treatment. For the affective domain, the test produced $t = -17.436$ ($df = 25$) with a significance value of 0.000, again below 0.05, indicating a significant improvement in affective learning outcomes as well. Both results confirm that the PBL treatment produced a significant effect on students' learning outcomes, both cognitive and affective, in Aqidah Akhlak.

The N-Gain test showed that, in the experimental class, all 26 students improved from pretest to posttest, with normalised gain scores ranging from 0.53 to 0.89: sixteen students fell in the medium category and ten in the high category. In the control class, all 22 students likewise improved, but their gain scores ranged only from 0.15 to 0.27, placing every student in the low category. This contrast indicates that the improvement produced by PBL was not only statistically significant but also substantively larger and more consistent than that produced by direct instruction. Table 6 summarises this comparison.

Table 6. Summary of N-Gain Results

Class	N-Gain range	Dominant category
Experimental (PBL)	0.53 – 0.89	Medium (16 students) to High (10 students)

Class	N-Gain range	Dominant category
Control (direct instruction)	0.15 – 0.27	Low (all 22 students)

The improvement in cognitive learning outcomes can be explained by the fact that PBL gives students the opportunity to construct their own understanding through investigating a problem set by the teacher, rather than passively receiving information. During the learning process, students identified problems, searched for information, discussed, expressed opinions, and drew conclusions from their investigation; this active engagement produced a deeper conceptual understanding and, consequently, higher learning outcomes. This finding is consistent with the theoretical account of PBL offered by Arends (2012) and with Barrows's (1986) original argument that problem-based instruction increases student engagement and conceptual understanding relative to traditional teaching.

Direct instruction, the model used in the control class, is well suited to conveying factual and conceptual material in a structured and time-efficient manner, and it allows the teacher to maintain firm control over the pace and direction of the lesson (Arends, 2012). However, because it is teacher-centred, it offers students fewer opportunities to think critically, to interact with peers, or to construct knowledge independently, and it is therefore less able to promote higher-order thinking or a durable change in attitude. This limitation is reflected in the present results, where the control class's gains, though real, were considerably smaller and less consistent than those of the PBL class.

These findings are consistent with those reported for other Islamic-education subjects. In Fiqh learning, 'Abidin, Hidayati and Eliza (2025) found that PBL produced significantly higher critical-thinking and collaboration scores than conventional teaching, while in PAI and Budi Pekerti learning, Rahimma, Hadel, Eliza, Remiswal and Trinova (2024) found that PBL significantly improved both creative thinking and learning interest relative to a control group. Read alongside the present results, these studies suggest that the benefit of PBL in Islamic religious education is not confined to a single outcome or a single subject: across Fiqh, PAI and Budi Pekerti, and now Aqidah Akhlak, PBL consistently outperforms conventional, teacher-centred instruction on the outcomes each study examined—whether critical thinking, creative thinking, collaboration, learning interest, or, as shown here, cognitive and affective learning outcomes together.

The affective gains observed in this study are of particular importance for Aqidah Akhlak, whose purpose extends beyond cognitive mastery to the formation of character. Through group discussion, collaborative problem-solving and presentation of findings, students in the experimental class had repeated opportunities to practise responsibility, honesty, cooperation and respectful communication—attitudes that are themselves the substantive content of Akhlak education. The larger affective gain of the experimental class therefore suggests that PBL helped students not merely to know

about good character but to practise it during the learning process itself, which is consistent with the Qur'anic and Prophetic emphasis, noted in the Introduction, on uniting sound faith with lived moral conduct.

These results carry several practical implications. First, PBL can be adopted as an alternative instructional model for Aqidah Akhlak, alongside or in place of direct instruction, particularly where the aim is to strengthen both understanding and character. Second, teachers are encouraged to be more innovative in selecting learning models suited to the dual cognitive-affective aims of religious education, while being mindful that PBL requires careful problem design and disciplined time management to be implemented well. Third, schools can support the wider adoption of active, problem-based learning as part of a broader effort to raise the quality of religious education in madrasah.

This study has several limitations that should be taken into account when interpreting its results. The quasi-experimental design relied on purposive rather than fully random sampling, because random assignment of individual students was not feasible within the existing class structure of the madrasah; while the two classes were shown to be statistically equivalent before treatment, some residual class-level differences cannot be entirely ruled out. The study was also confined to a single school, a single grade level, and a six-meeting intervention period, so the size and durability of the effect may differ in other settings or over a longer period of instruction. Finally, the affective measure relied primarily on self-reported questionnaire data supplemented by classroom observation; future studies could strengthen this measurement by adding interviews or longer-term behavioural tracking to corroborate the reported gains in attitude and character.

5. Conclusion

This study set out to examine the effect of the Problem-Based Learning model on the learning outcomes of Grade VIII students in the Aqidah Akhlak subject at MTsN 3 Padang City. The findings show that the experimental class, taught using PBL, achieved a significantly higher posttest mean than the control class, taught using direct instruction, in both the cognitive domain (89.31 versus 72.41; $t = -23.640$, Sig. = 0.000) and the affective domain (88.19 versus 78.50; $t = -17.436$, Sig. = 0.000). The N-Gain analysis further shows that the improvement in the experimental class fell mainly in the medium-to-high category, whereas the improvement in the control class remained uniformly low, confirming that PBL produced a larger and more consistent gain than direct instruction.

These results indicate that PBL is an effective alternative for Aqidah Akhlak learning because it engages students actively in identifying and solving problems drawn from everyday moral life, thereby deepening their conceptual understanding while also giving them repeated opportunities to practise responsibility, honesty and cooperation. PBL is therefore relevant not only for improving cognitive achievement but also for supporting the character-formation purpose that is central to Aqidah

Akhlak education. Future research is encouraged to extend this line of inquiry to a wider range of learning-outcome variables and to other madrasah levels, in order to build a more comprehensive understanding of PBL's contribution to Islamic character education.

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