



Improving Students' Conceptual Understanding by Implementing the Project Based Learning Model in Islamic Education Learning at SD Negeri 13 Kuala Batee

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ABSTRACT

This study aims to improve students' conceptual understanding through the implementation of the Project Based Learning (PjBL) model in Islamic Education learning at SD Negeri 13 Kuala Batee. The research employed a Classroom Action Research (CAR) design conducted in two cycles, each consisting of planning, action, observation, and reflection stages. The participants were 28 fifth-grade students. Data were collected through conceptual understanding tests, observation sheets, and field notes. Quantitative data were analyzed using descriptive statistics to measure improvement across cycles, while qualitative data were analyzed through interactive analysis techniques to support the interpretation of findings. The results indicate a significant improvement in students' conceptual understanding after the implementation of the PjBL model. The mean pre-cycle score was 62.14, with only 39.29% of students achieving the minimum mastery criterion (MMC). After Cycle I, the mean score increased to 74.86, with 67.86% of students meeting the MMC. In Cycle II, the mean score further improved to 84.21, and 89.29% of students achieved mastery. The normalized gain (N-gain) score of 0.61 indicates a moderate-to-high improvement category. Observational data also revealed increased student engagement, collaboration, and critical thinking skills during project activities. These findings demonstrate that the Project Based Learning model effectively enhances students' conceptual understanding in Islamic Education by fostering active participation, contextual learning, and collaborative inquiry. The study contributes to the growing body of empirical evidence supporting innovative pedagogical approaches in Islamic Education at the elementary level and provides practical implications for teachers seeking to strengthen conceptual learning outcomes through student-centered strategies.

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Introduction

Education in the twenty-first century is increasingly oriented toward the development of higher-order thinking skills, conceptual understanding, and meaningful learning experiences. In this context, conceptual understanding is widely recognized as a central goal of instruction because it enables students to internalize knowledge structures, relate new information to prior schemas, and apply concepts in diverse contexts. Conceptual understanding transcends rote memorization and encourages learners to construct coherent cognitive frameworks that support critical reasoning and problem solving (Bransford, Brown, & Cocking, 2000). Within elementary education, fostering conceptual understanding is particularly crucial, as foundational misconceptions at this stage may persist and hinder subsequent learning trajectories.

In the field of Islamic Education, conceptual understanding holds a distinctive significance. Islamic Education does not merely transmit doctrinal knowledge; it seeks to cultivate moral awareness, spiritual consciousness, and ethical reasoning grounded in Islamic principles. Therefore, students' comprehension of concepts such as faith, worship, morality, and social responsibility must be deep, contextual, and reflective rather than superficial. However, instructional practices in many elementary classrooms remain predominantly teacher-centered, relying heavily on lecture-based methods that emphasize factual recall over conceptual mastery (Darling-Hammond et al., 2020). Such approaches often limit students' opportunities to engage actively with learning materials and construct meaning independently.

Constructivist learning theory provides a strong theoretical foundation for addressing these challenges. According to Piaget (1972), learners actively construct knowledge through interaction with their environment, while Vygotsky (1978) emphasizes the social dimension of learning and the importance of collaborative engagement within the zone of proximal development. From this perspective, meaningful learning occurs when students participate in authentic activities that require inquiry, reflection, and dialogue. These principles align closely with contemporary pedagogical reforms that advocate for student-centered instruction and experiential learning models (Fosnot, 2013).

Project Based Learning (PjBL) has emerged as one of the most influential constructivist-oriented instructional models. PjBL engages students in sustained inquiry through authentic projects that address real-world problems and culminate in tangible products or presentations (Thomas, 2000). By integrating investigation, collaboration, and reflection, PjBL promotes deeper conceptual understanding and enhances students' intrinsic motivation (Blumenfeld et al., 1991). Research in various educational contexts has demonstrated that PjBL can significantly improve students' academic achievement, critical thinking skills, and engagement (Bell, 2010; Krajcik & Shin, 2014).

In elementary education, PjBL has shown particular promise in fostering conceptual change and knowledge integration. When students participate in project-based activities, they are encouraged to question assumptions, connect abstract concepts with practical experiences, and synthesize information from multiple sources. This process supports the development of integrated knowledge structures rather than fragmented facts (Hmelo-Silver, 2004). Moreover, collaborative project work cultivates social interaction and peer scaffolding, which further enhances conceptual growth (Slavin, 2014).

Despite the growing body of research on PjBL, its implementation in Islamic Education remains relatively underexplored, particularly at the elementary level. Most empirical studies have focused on science, mathematics, or technology subjects, leaving a gap in understanding how project-based approaches may influence religious and moral education. Given the integrative and value-oriented nature of Islamic Education, PjBL offers a promising framework for contextualizing religious concepts within students' lived experiences. Authentic projects related to ethical dilemmas, community service, or environmental stewardship may enable students to internalize Islamic values in meaningful ways.

Furthermore, conceptual understanding in Islamic Education requires not only cognitive comprehension but also affective and behavioral integration. Bloom's taxonomy highlights the interplay between cognitive, affective, and psychomotor domains in comprehensive learning processes (Anderson & Krathwohl, 2001). Through project-based activities, students can explore religious concepts cognitively while simultaneously practicing values in collaborative settings. This holistic approach aligns with the objectives of Islamic pedagogy, which emphasizes the unity of knowledge and action.

Empirical evidence suggests that student engagement plays a mediating role in improving conceptual understanding. Fredricks, Blumenfeld, and Paris (2004) conceptualize engagement as encompassing behavioral, emotional, and cognitive dimensions. PjBL naturally integrates these dimensions by involving students in sustained inquiry, teamwork, and reflective presentation. Consequently, students are more likely to invest effort and demonstrate persistence in learning tasks. In contrast, passive instructional models may reduce opportunities for meaningful engagement and hinder conceptual development.

In the Indonesian educational context, curriculum reforms have increasingly encouraged innovative pedagogical approaches that promote active learning and character development. The national curriculum emphasizes higher-order thinking skills and student-centered methodologies as essential components of quality education. However, classroom practices often remain constrained by traditional paradigms,

particularly in religious subjects where instructional routines may prioritize textual explanation over experiential learning. This discrepancy highlights the need for empirical research examining the effectiveness of innovative models such as PjBL in Islamic Education settings.

Classroom Action Research (CAR) offers a systematic framework for implementing and evaluating pedagogical innovations within authentic classroom environments. CAR enables educators to identify instructional problems, design interventions, and iteratively refine practices based on reflective analysis (Kemmis & McTaggart, 1988). By combining action and reflection, CAR not only generates empirical evidence but also fosters professional growth among teachers. In the present study, CAR is employed to examine the impact of PjBL implementation on students' conceptual understanding in Islamic Education at SD Negeri 13 Kuala Batee.

Previous studies have documented positive outcomes of PjBL in enhancing conceptual mastery across disciplines. For instance, Hattie (2009) reports that student-centered instructional approaches yield substantial effect sizes in promoting learning outcomes. Similarly, a meta-analysis by Schroeder et al. (2007) indicates that inquiry-based and project-based strategies significantly outperform traditional lecture-based instruction in fostering conceptual comprehension. These findings suggest that PjBL may hold comparable potential in the context of Islamic Education.

Theoretically, the effectiveness of PjBL can be explained through the lens of cognitive elaboration and situated learning. Situated learning theory posits that knowledge is constructed within authentic contexts and social interactions (Lave & Wenger, 1991). When students engage in projects that reflect real-life situations, they develop contextualized understanding that is more transferable and durable. Additionally, cognitive elaboration theory suggests that explaining, discussing, and applying concepts in varied contexts strengthens memory and comprehension (Pressley et al., 1992).

In Islamic Education classrooms, contextualization is particularly relevant because religious concepts are inherently connected to daily life practices. For example, understanding the concept of social justice in Islam becomes more meaningful when students design projects addressing community needs. Such experiential learning fosters not only intellectual comprehension but also moral commitment. Consequently, PjBL aligns with the transformative aims of Islamic Education, which seek to integrate knowledge, faith, and action.

Nevertheless, the successful implementation of PjBL requires careful planning, scaffolding, and assessment. Teachers must design projects that align with curricular objectives, provide clear guidance, and facilitate reflective discussions. Without adequate support, project-based activities may devolve into superficial tasks lacking

conceptual depth. Therefore, systematic evaluation through Classroom Action Research is essential to ensure that PjBL effectively enhances conceptual understanding rather than merely increasing activity levels.

At SD Negeri 13 Kuala Batee, preliminary observations indicated that students' conceptual understanding in Islamic Education was relatively low. Classroom instruction was predominantly lecture-oriented, and assessment focused primarily on short-answer tests emphasizing factual recall. Students demonstrated limited ability to explain concepts in their own words or apply them in contextual scenarios. This situation underscores the urgency of implementing innovative pedagogical strategies to address conceptual gaps.

The present study seeks to contribute to the literature by empirically examining the effectiveness of PjBL in improving students' conceptual understanding within Islamic Education at the elementary level. By employing a cyclical CAR design, the study systematically evaluates changes in learning outcomes across instructional cycles. The findings are expected to provide evidence-based insights into how project-based methodologies can be adapted to religious education contexts.

Moreover, this research addresses a broader discourse concerning the integration of faith-based education and contemporary pedagogical innovation. While some educators perceive religious instruction as inherently traditional, recent scholarship emphasizes the compatibility of Islamic pedagogical principles with constructivist and inquiry-based approaches (Halstead, 2004). By bridging these perspectives, the study demonstrates that innovative instructional models can reinforce rather than undermine religious learning objectives.

In addition, the study responds to calls for evidence-based practice in educational reform. Policymakers and school leaders increasingly demand empirical justification for instructional innovations. Rigorous action research provides context-sensitive data that inform decision-making and professional development initiatives. Consequently, the present research not only advances theoretical understanding but also offers practical implications for Islamic Education teachers seeking to enhance conceptual learning outcomes.

Conceptual understanding remains a cornerstone of meaningful education, particularly within disciplines that shape moral and spiritual development. By situating PjBL within the theoretical frameworks of constructivism, situated learning, and engagement theory, this study establishes a robust conceptual foundation for investigating its effectiveness. The integration of empirical analysis and reflective practice ensures that the findings contribute both to academic scholarship and classroom improvement.

Improving students' conceptual understanding in Islamic Education is essential for nurturing reflective, ethical, and socially responsible individuals. Through the implementation of Project Based Learning within a structured Classroom Action Research framework, this study endeavors to demonstrate how innovative pedagogy can transform learning experiences and outcomes at SD Negeri 13 Kuala Batee.

Methods

This study employed a Classroom Action Research design to examine the effectiveness of Project Based Learning in improving students' conceptual understanding in Islamic Education at SD Negeri 13 Kuala Batee. Classroom Action Research was selected because it enables systematic intervention in authentic classroom settings while simultaneously facilitating reflective practice and instructional refinement. The research design followed the cyclical model proposed by Kemmis and McTaggart (1988), consisting of planning, action, observation, and reflection stages implemented in iterative cycles. This design allows for continuous improvement of instructional strategies based on empirical evidence gathered during the learning process.

The study was conducted during the first semester of the 2025/2026 academic year in a fifth-grade classroom. The participants consisted of 28 students, comprising 15 male and 13 female students aged between 10 and 11 years. The selection of participants was based on purposive sampling, as the class demonstrated relatively low levels of conceptual understanding in Islamic Education during preliminary observations. Prior to the intervention, baseline data indicated that many students experienced difficulty in explaining key religious concepts, applying them in contextual scenarios, and connecting abstract principles with daily practices.

The research procedure was implemented in two cycles, with each cycle consisting of two instructional meetings and one evaluation session. In the planning stage, the researcher collaboratively designed lesson plans integrating Project Based Learning principles into Islamic Education topics. The selected topics included moral values in social interactions and the application of Islamic teachings in community life. Learning activities were structured to encourage inquiry, collaborative problem-solving, and the production of tangible project outputs such as posters, reflective reports, and group presentations. Assessment instruments and observation sheets were also prepared during this phase.

During the action stage, the Project Based Learning model was implemented according to established procedural characteristics, including problem orientation, project design, investigation, product development, and presentation. Students were organized into small heterogeneous groups to promote peer interaction and scaffolding, consistent with social constructivist principles (Vygotsky, 1978). The teacher acted as a

facilitator, guiding inquiry processes, providing feedback, and ensuring alignment between project activities and conceptual learning objectives.

The observation stage involved systematic data collection using multiple instruments to ensure methodological rigor and triangulation. Quantitative data were obtained through conceptual understanding tests administered at the end of each cycle. The test items were designed to measure higher-order cognitive processes, including explanation, interpretation, application, and analysis, in alignment with the revised Bloom's taxonomy (Anderson & Krathwohl, 2001). Qualitative data were gathered through structured observation sheets documenting student engagement, collaboration, and participation, as well as field notes capturing classroom dynamics and reflective insights.

The reflection stage involved analyzing the collected data to evaluate the effectiveness of the implemented strategies. Quantitative results from each cycle were compared to baseline data to determine the degree of improvement in students' conceptual understanding. Qualitative findings were reviewed to identify strengths, challenges, and areas requiring modification in subsequent cycles. Based on reflective analysis, instructional adjustments were made to optimize student engagement and conceptual clarity in the following cycle.

The primary dependent variable in this study was students' conceptual understanding in Islamic Education, operationally defined as the ability to explain concepts in their own words, provide relevant examples, interpret contextual scenarios, and apply principles to real-life situations. The independent variable was the implementation of the Project Based Learning model. To ensure construct validity, the test instruments were reviewed by two experts in Islamic Education and educational evaluation. Revisions were made based on expert feedback to improve clarity, relevance, and alignment with learning objectives.

Reliability analysis of the conceptual understanding test was conducted using Cronbach's alpha coefficient. The reliability index of 0.82 indicated high internal consistency, exceeding the acceptable threshold of 0.70 as recommended in educational research (Creswell, 2014). Item discrimination and difficulty indices were also analyzed to ensure that the test adequately differentiated between varying levels of student understanding.

Quantitative data were analyzed using descriptive and inferential statistical techniques. Descriptive statistics included mean scores, standard deviations, and percentages of students achieving the minimum mastery criterion. To determine the magnitude of improvement between cycles, normalized gain (N-gain) scores were calculated following Hake's (1998) formula. Additionally, paired-sample t-tests were conducted to examine the statistical significance of differences between pre-

intervention and post-intervention scores. Statistical analysis was performed using a significance level of 0.05.

Qualitative data analysis followed an interactive model involving data reduction, data display, and conclusion drawing (Miles, Huberman, & Saldaña, 2014). Observational records were coded to identify recurring patterns related to engagement, collaboration, and conceptual discourse. These qualitative findings were used to complement and contextualize quantitative results, thereby enhancing the credibility of interpretations through methodological triangulation.

To ensure trustworthiness, several validation strategies were implemented. Data triangulation was achieved by combining test results, observation data, and field notes. Peer debriefing was conducted with fellow educators to review interpretations and minimize researcher bias. Furthermore, reflective journaling was maintained throughout the research process to document pedagogical decisions and analytic considerations.

Ethical considerations were carefully addressed in this study. Permission to conduct the research was obtained from the school principal and relevant educational authorities. Students and their parents were informed about the purpose of the research, and participation was conducted with voluntary consent. Confidentiality of participants' identities was maintained by anonymizing all data during analysis and reporting. The research adhered to principles of educational ethics, ensuring that the intervention did not disrupt regular learning processes or disadvantage any student.

Through the systematic application of Classroom Action Research methodology, this study sought to generate contextually grounded evidence regarding the effectiveness of Project Based Learning in enhancing conceptual understanding in Islamic Education. The integration of quantitative and qualitative approaches provided comprehensive insight into both learning outcomes and instructional processes, thereby strengthening the methodological rigor and scholarly contribution of the research.

Result

The results of this study are presented in two main sections: quantitative findings related to students' conceptual understanding scores and qualitative findings derived from classroom observations. The quantitative analysis focuses on descriptive and inferential statistics across the pre-cycle, Cycle I, and Cycle II, while qualitative findings provide contextual support for interpreting changes in learning processes.

Quantitative Results

Baseline data collected prior to the implementation of Project Based Learning indicated that students' conceptual understanding in Islamic Education was relatively low. The pre-cycle test results showed that only 11 out of 28 students achieved the

Minimum Mastery Criterion (MMC), which was set at 75. The overall mean score was 62.14, indicating that most students demonstrated limited ability to explain and apply key concepts.

The implementation of Project Based Learning in Cycle I resulted in a noticeable improvement in students' performance. The mean score increased to 74.86, and 19 students achieved the MMC. Although this represented a substantial improvement compared to the pre-cycle condition, several students still struggled with higher-order application and analysis tasks.

In Cycle II, after reflective refinement of instructional strategies and enhanced scaffolding during project activities, the mean score increased further to 84.21. A total of 25 students achieved the MMC, representing 89.29% of the class. This result exceeded the predetermined success indicator of 85% mastery learning at the classroom level. The descriptive statistical results are presented in Table 1.

Table 1. Descriptive Statistics of Students' Conceptual Understanding Scores

Phase	Mean Score	Standard Deviation	Students Achieving MMC	Percentage (%)
Pre-Cycle	62.14	8.72	11	39.29
Cycle I	74.86	7.95	19	67.86
Cycle II	84.21	6.48	25	89.29

The reduction in standard deviation from 8.72 in the pre-cycle to 6.48 in Cycle II indicates a decrease in score variability, suggesting that learning improvement was more evenly distributed among students.

To measure the magnitude of improvement, the normalized gain (N-gain) was calculated between the pre-cycle and Cycle II scores. The average N-gain score was 0.61, which falls within the moderate-to-high improvement category. This value demonstrates that the implementation of Project Based Learning produced a substantial enhancement in conceptual understanding.

Inferential statistical analysis was conducted using paired-sample t-tests to compare mean differences between phases. The comparison between pre-cycle and Cycle I scores yielded a statistically significant result, $t(27) = 9.84$, $p < 0.001$. Similarly, the comparison between pre-cycle and Cycle II scores showed a highly significant difference, $t(27) = 15.27$, $p < 0.001$. These findings confirm that the observed improvements were not due to chance but resulted from the instructional intervention. The inferential statistical results are summarized in Table 2.

Table 2. Paired-Sample t-Test Results

Comparison	Mean Difference	t-value	Sig. (p)
Pre-Cycle vs. Cycle I	12.72	9.84	<0.001
Pre-Cycle vs. Cycle II	22.07	15.27	<0.001

These quantitative findings demonstrate a consistent upward trend in students' conceptual understanding across instructional cycles.

Qualitative Results

Observational data further revealed notable changes in students' learning behavior. During the pre-cycle phase, classroom interaction was predominantly teacher-centered, with limited student questioning and minimal peer discussion. In Cycle I, students began to engage more actively in group discussions, although some groups required additional guidance in distributing tasks effectively.

By Cycle II, classroom dynamics showed substantial improvement. Students demonstrated increased confidence in presenting project outcomes, articulating conceptual explanations, and responding to peers' questions. The frequency of higher-order questioning increased, and students were more capable of linking Islamic concepts to real-life social contexts. Collaborative interactions became more balanced, with clearer role distribution within groups.

Field notes also indicated improvements in students' intrinsic motivation. Many students expressed enthusiasm during project activities and demonstrated persistence in refining their products. These qualitative changes provide contextual support for the quantitative gains observed in test scores.

Discussion

The findings of this study provide strong empirical evidence that the implementation of Project Based Learning significantly improves students' conceptual understanding in Islamic Education. The consistent increase in mean scores and mastery percentages across cycles indicates that the intervention effectively addressed the conceptual gaps identified during the baseline phase.

From a constructivist perspective, these findings align with the theoretical assumption that knowledge is actively constructed through meaningful engagement and social interaction (Piaget, 1972; Vygotsky, 1978). The project-based activities provided opportunities for students to explore religious concepts in authentic contexts, thereby

facilitating deeper cognitive processing. The significant N-gain score of 0.61 reflects a meaningful conceptual shift rather than superficial memorization.

The statistically significant t-test results further reinforce the effectiveness of the intervention. The large mean difference between the pre-cycle and Cycle II scores suggests that sustained exposure to inquiry-driven and collaborative learning environments enhances students' capacity to explain, interpret, and apply Islamic concepts. This finding is consistent with research indicating that student-centered pedagogies yield higher effect sizes compared to traditional lecture-based instruction (Hattie, 2009).

The reduction in standard deviation across cycles suggests that Project Based Learning not only improved overall performance but also reduced achievement disparities among students. This outcome may be attributed to collaborative learning mechanisms, where peer scaffolding supports lower-achieving students (Slavin, 2014). Such collaborative processes align with social constructivist principles and contribute to equitable learning improvement.

The qualitative findings provide additional insight into the mechanisms underlying quantitative gains. Increased engagement, collaborative dialogue, and contextual reasoning observed during Cycle II indicate that students were not merely completing tasks but actively constructing understanding. According to Blumenfeld et al. (1991), sustained inquiry and authentic problem-solving are central features of Project Based Learning that promote intrinsic motivation and cognitive elaboration.

Moreover, the integration of Islamic concepts within real-life projects resonates with the theory of situated learning, which posits that knowledge acquisition is most effective when embedded in meaningful contexts (Lave & Wenger, 1991). Students' ability to connect moral principles with community-related scenarios demonstrates that conceptual understanding was internalized beyond textbook definitions.

The findings also support the argument that religious education can benefit from innovative pedagogical approaches without compromising doctrinal integrity. As Halstead (2004) suggests, Islamic pedagogy is compatible with interactive and inquiry-based methodologies when grounded in ethical and spiritual objectives. In this study, Project Based Learning enhanced not only cognitive comprehension but also reflective engagement with Islamic values.

Furthermore, the improvement in higher-order questioning observed during Cycle II aligns with Anderson and Krathwohl's (2001) revised taxonomy, which emphasizes analysis, evaluation, and application as indicators of deep understanding. The project presentations required students to articulate reasoning, defend interpretations, and respond to peer critique, thereby strengthening metacognitive awareness.

In addition, the CAR framework proved effective in refining instructional strategies through iterative reflection. The adjustments made after Cycle I, including clearer scaffolding and structured role distribution, contributed to more optimal outcomes in Cycle II. This finding underscores the importance of reflective practice in sustaining pedagogical innovation (Kemmis & McTaggart, 1988).

Overall, the integration of quantitative and qualitative evidence demonstrates that Project Based Learning significantly enhances conceptual understanding in Islamic Education at the elementary level. The upward trajectory of learning outcomes, supported by statistical significance and observable behavioral changes, indicates that the intervention achieved both academic and pedagogical objectives. These results contribute to the growing body of literature advocating for constructivist and student-centered approaches in diverse educational contexts and provide empirical support for their application in Islamic Education classrooms.

Conclusion

This study conclusively demonstrates that the implementation of Project Based Learning within a Classroom Action Research framework significantly enhances students' conceptual understanding in Islamic Education at the elementary level. The consistent increase in mean scores from the pre-cycle to Cycle II, the substantial rise in mastery learning percentages exceeding the predetermined success indicator, the moderate-to-high N-gain value, and the statistically significant results of paired-sample t-tests collectively confirm the effectiveness of the intervention. Beyond quantitative improvement, qualitative findings revealed meaningful transformations in classroom dynamics, including increased engagement, collaborative inquiry, contextual reasoning, and higher-order questioning. These outcomes affirm that Project Based Learning fosters deeper cognitive processing, equitable participation, and authentic integration of Islamic concepts into students' lived experiences. The study therefore provides robust empirical evidence that constructivist, student-centered pedagogical models are not only compatible with Islamic Education but also highly effective in strengthening conceptual mastery, offering practical and theoretical contributions to the advancement of innovative religious education practices in elementary schools.

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