

Contents lists available at ojs.aeducia.org

Jurnal Indonesia Pendidikan Profesi Guru

Volume 2, Issue 3 (2025), DOI: 10.64420/jippg.v2i3

Journal homepage: https://ojs.aeducia.org/index.php/jippg

JIPPG

E- ISSN 3063-0797

P- ISSN 3063-0827

Research Article **Read Online:** https://doi.org/10.64420/jippg.v2i3.318 **Open Access**

Improving Elementary School Students' Learning Outcomes using the Problem Based Learning Model

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ABSTRACT

Background: Education plays a critical role in shaping students' intellectual and personal growth, and the effectiveness of teaching methods is essential for improving student outcomes. **Objective:** This study aimed to investigate the use of the Problem-Based Learning (PBL) model to enhance the learning outcomes of elementary school students in Islamic Religious Education (Pendidikan Agama Islam) at SD Negeri 01 V Koto, Kab. Mukomuko. **Method:** The research employed a Classroom Action Research (CAR) design, which included cycles of planning, action, observation, and reflection. Data were collected through pre-cycle assessments, followed by evaluations after the first and second cycles. **Result:** The results demonstrated a significant improvement in student learning outcomes, with the percentage of students meeting the Minimum Completion Criteria (KKM) increasing from 30% in the pre-cycle to 95% in the second cycle. The findings highlight that the implementation of PBL effectively encouraged active student participation, promoted critical thinking, and enhanced problem-solving skills. **Conclusion:** The study concluded that the Problem-Based Learning model significantly improved the learning outcomes of elementary school students in Islamic Religious Education, promoting both cognitive and affective development. **Originality/Value:** This study contributes practical and pedagogical novelty to primary Islamic religious education by demonstrating the efficacy of the Problem-Based Learning (PBL) model in fostering critical thinking, active participation, and problem-solving capacities regarding Islamic education within regional elementary school settings, an area that remains under-explored empirically. These findings enrich the literature and offer strategic guidance for educators and policymakers in developing student-centered, problem-driven instructional practices that simultaneously enhance cognitive achievement and affective student development.

ARTICLE HISTORY

Received: August 26, 2025

Revised: November 14, 2025

Accepted: November 22, 2025

Published: November 26, 2025

KEYWORDS

Elementary school students; Learning outcomes; Problem based learning model

1. INTRODUCTION

Education can be defined as a process of changing students' behavior so that they become independent adults (Arfani, 2018). Education does not only encompass intellectual aspects but also emphasizes the process of developing students' personality as a whole, helping them mature (Sholihah & Maulida, 2020). Education is one of the most important factors in equipping students to face the future (Hadiapurwa et al., 2021). In the teaching and learning process, there is interaction between various components: teachers, students, objectives, materials, tools, methods, and others (Utomo, 2018). Each component influences the others in achieving learning objectives (Dolong, 2016). Students are the most important component in teaching and learning activities because it is the students who must achieve the key learning objectives (Sanjani, 2020). Therefore, understanding students is crucial for teachers to create

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How to Cite this Article:

Komarudin, D. (2025). Improving Elementary School Students' Learning Outcomes using the Problem Based Learning Model. *Jurnal Indonesia Pendidikan Profesi Guru, 2*(3), 115-123. https://doi.org/10.64420/jippg.v2i3.318

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the right conditions and have an optimal influence on students so that they can learn and achieve maximum learning outcomes (Nugraha et al., 2020). Learning outcomes are essentially the abilities in the form of new skills and behaviors resulting from practice or experience (Fajri et al., 2016). Learning outcomes in a person are often not immediately apparent without the person taking action to demonstrate the abilities acquired through learning (Wahyuni & Fitriana, 2021). Learning models can be used as a pattern of choice, meaning that teachers can select learning models that are appropriate and efficient for achieving their educational goals.

To achieve success in learning activities, there are several supporting components, including the goal component, material component, learning strategy component, and evaluation component (Jumriani et al., 2021). Problem-Based Learning (PBL) is a series of learning activities that emphasizes students in the process or stages of solving problems they face scientifically (Surya, 2017). Islamic Religious Education (PAI) learning in elementary schools is dominated by methods that still tend to rely on lectures, causing students to feel bored and making learning less enjoyable. As a result, learning becomes less memorable, and students tend to be passive participants in the learning process.

Based on the evaluation test results for 20 fourth-grade students, with a minimum passing grade (KKM) of 70 and a learning completion rate of 80%, only 6 students were able to achieve the KKM (about 30%), while 14 students (60%) did not meet the KKM. This data indicates that the problem in Islamic Religious Education learning is the low learning outcomes of fourth-grade students. Islamic Religious Education activities at school tend to be unengaging, with students only becoming passive listeners when the teacher explains the material, leading to low student interest in learning, which in turn results in low learning outcomes. Therefore, the researcher felt the need to find a suitable solution to overcome this issue, namely by using an innovative learning model that is expected to enhance creative thinking skills and make students more active in learning. One alternative that aligns with this goal is the use of the Problem-Based Learning model.

Primary education plays a very important role in shaping students' knowledge and skills, which will impact their future academic development (Ali et al., 2024). However, in many primary schools, especially in larger classes, conventional learning methods often fail to actively engage students in the learning process. This can be observed in Islamic Religious Education (PAI) lessons, where many students are uninterested and inactive during lessons, resulting in low learning outcomes. Based on initial observations at SD Negeri 01 V Koto, Kab. Mukomuko, student learning outcomes in Islamic Religious Education are still far from adequate, with many students failing to meet the Minimum Completion Criteria (KKM). Therefore, an innovative teaching method is needed to improve student learning outcomes.

Problem-Based Learning (PBL) has emerged as a teaching method that can offer a solution to this problem. PBL focuses on solving real-world problems that are relevant to students' lives, making them more engaged and helping them perceive the material as more meaningful (Tanna et al., 2022). This approach places students at the center of learning, where they actively seek solutions, collaborate, and develop critical thinking skills. The application of PBL at various levels of education, including elementary schools, has been proven to enhance students' understanding, increase their involvement, and stimulate creative and analytical thinking skills. This study aims to apply the PBL model in the context of Islamic Religious Education at SD Negeri 01 V Koto, Kab. Mukomuko, to assess whether this method can improve student learning outcomes.

This research is important because, although PBL has been widely applied in various other subjects such as mathematics or natural sciences, there is still limited research examining the application of PBL in Islamic Religious Education at the elementary school level. Therefore, this study not only fills this gap but also provides insights into how PBL can be used to improve learning outcomes in normative subjects that are more closely related to moral and religious values. This study is expected to contribute to the development of more active and enjoyable learning methods for students and provide practical references for teachers to improve the quality of learning in elementary schools.

Although various active learning models have been implemented to improve student learning outcomes, the use of Problem-Based Learning (PBL) models in the context of Islamic Religious Education in elementary schools remains limited. Most previous studies have focused more on the application of PBL in other subjects such as mathematics or natural sciences (Luneeva & Zakirova, 2017; Kossybayeva et al., 2022; Rézio et al., 2022), while its implementation in Islamic Religious Education has often been overlooked. Furthermore, although there have been several studies examining the effectiveness of PBL, the gap in this research lies in the lack of exploration of how PBL can be adapted to increase student engagement in subjects that are more normative and theoretical in nature, such as Islamic Religious Education. This study fills this gap by exploring the application of PBL to improve learning outcomes in a more specific context, namely Islamic Religious Education at SD Negeri 01 V Koto, with results showing a significant increase in student engagement and learning outcomes.

The purpose of this study is to examine the application of the Problem-Based Learning (PBL) model in improving student learning outcomes in Islamic Religious Education at SD Negeri 01 V Koto, Kab. Mukomuko. This study aims to determine the extent to which the PBL model can increase student active engagement, improve critical thinking skills, and enhance student learning outcomes in Islamic Religious Education, especially for fourth-grade students. In addition, this study also aims to evaluate the effectiveness of the planning, implementation, and reflection cycles in the application of PBL, as well as to provide practical recommendations for teachers in using this model to improve the quality of learning in elementary schools.

2. METHOD

2.1 Research Design

This study was conducted to improve student learning outcomes after implementing classroom action research using the Problem-Based Learning (PBL) model in Islamic Religious Education, specifically in the fourth grade at SD Negeri 01 V Koto, Mukomuko Regency. This study is classified as classroom action research, which involves a spiral process through the stages of planning, action, observation, evaluation, and reflection (Utomo et al., 2024). Classroom action research does not stop at identifying problems but also plays a role in overcoming these problems by making changes and improvements (Prihantoro & Hidayat, 2019). It is a form of reflective study by the actors (Azizah, 2021), aimed at improving the rationality of their actions, deepening their understanding of the actions taken, and enhancing the conditions of the learning practice (Pandiangan, 2019). Classroom Action Research is carried out in four stages: planning, action implementation, observation, and reflection (Fitria et al., 2019).

2.2 Research Object

This research was conducted at SD Negeri 01 V Koto in 2024. The subjects of this study were fourth-grade students at SD Negeri 01 V Koto, comprising 20 students: 13 male and 7 female. The researcher selected fourth-grade students as the subjects because learning issues were identified in this grade, particularly in the subject of Islamic Religious Education.

2.3 Data Collection

Data collection was carried out using lectures and question-and-answer sessions. The pre-cycle observation was conducted by the researcher using a question sheet given to students in the form of a written test. The pre-cycle results showed that the test scores did not meet the minimum passing grade. Afterward, Cycle I and Cycle II were implemented.

2.4 Data Analysis

Data analysis is the process of analyzing the collected data to assess the success of the research action in improving student learning. The data obtained in Classroom Action Research (CAR) are generally analyzed through qualitative descriptive analysis. Data analysis is conducted on each piece of collected data, both quantitative and qualitative. Quantitative data, in the form of student learning outcomes, are analyzed descriptively using descriptive statistical analysis. The formula for calculating the classical mastery percentage is as follows:

$NR = \Sigma x / N$

Explanation:

NR = Average score

Σx = Total score

N = Number of students

Percentage of classical learning mastery:

$KB = N^1 / N \times 100\ \%$

Explanation:

KB = Classical learning mastery

N^1 = Number of students who meet mastery criteria

N = Total number of students

The average score per cycle is calculated. Qualitative data are narrative descriptions that provide an overview of teacher skills and student empathy in learning.

2.5 Research Procedure

This research was carried out in two cycles. Cycle I consisted of planning activities, such as developing learning tools, followed by implementation activities, where learning activities were conducted according to the developed tools. This was followed by observation activities to monitor the learning process and reflection activities to guide the activities in Cycle II. The activities in Cycle II also began with planning activities to develop learning tools, followed by implementation activities in accordance with the developed tools, and were concluded with observation and reflection activities.

3. RESULTS AND DISCUSSION

3.1 Results

The implementation of the research by applying the Problem-Based Learning model generally followed the learning plan that had been developed. The following table presents a summary of the improvement in students' Islamic Education learning outcomes from before the research (pre-cycle) to after the research (Cycle I and Cycle II):

Table 1. Student Learning Outcomes in Pre-Cycle, Cycle I, and Cycle II

No	Subject	Pre-Cycle	Cycle I	Cycle II
1	AFP	50	60	80
2	AIS	60	70	90
3	APH	80	90	100
4	ATW	50	60	80
5	BSP	80	90	100
6	DA	50	55	80
7	FK	60	70	80
8	FA	80	90	100
9	FAA	80	90	100
10	FAC	60	70	90
11	KZK	55	60	80
12	MRHH	60	70	80
13	ML	40	50	60
14	RAN	80	90	100
15	RZA	70	80	90
16	SN	60	70	90
17	SHT	60	70	100
18	SWK	55	60	80
19	VC	60	60	80
20	ZW	55	60	70
Total		1245	1415	1730
Average		62.25	70.75	86.5
Completion Rate		30%	60%	95%

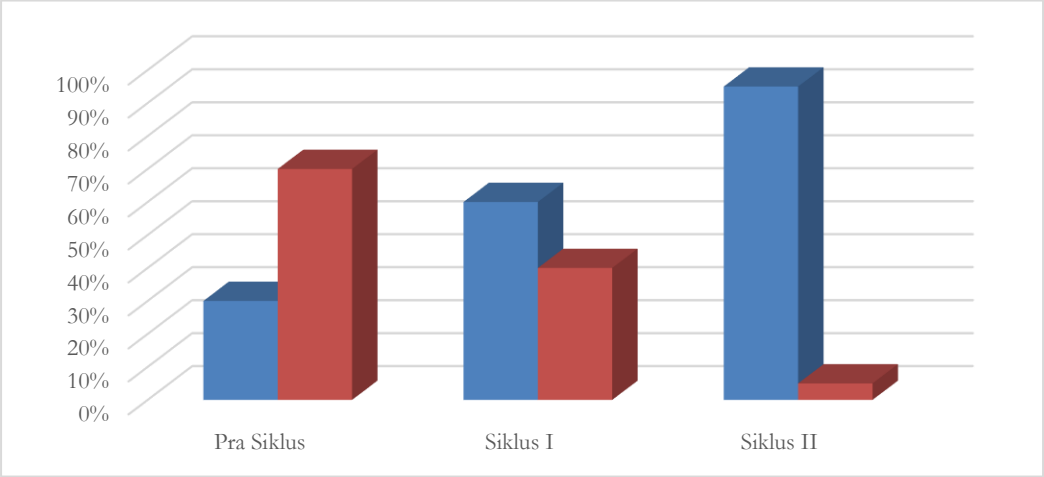
Based on the table above, it can be seen that the application of the problem-based learning model in Islamic Religious Education subjects can improve learning outcomes. This can be seen from the learning completeness of each cycle. The following is a comparison of learning outcomes per cycle:

Table 2. Comparison of Student Learning Outcomes in Pre-Cycle, Cycle I, and Cycle II

No	Learning Outcome Aspect	Number of Students	Pre-Cycle	Cycle I	Cycle II
1	Completed	6	30%	12	19
2	Not Completed	14	70%	8	1
3	Average Result	62.25		70.75	86.5
4	Completion Percentage	30%		60%	95%

Based on the above comparison, it can be concluded that the application of the problem-based learning model in Islamic Religious Education can improve the learning outcomes of fourth-grade students at SD Negeri 01 V Koto Mukomuko.

The comparison table of learning outcomes above can be seen more clearly in the following diagram:



Graph 1. Comparison of Student Learning Completion Rates in Pre-Cycle, Cycle I, and Cycle II

The findings of this study reveal that the use of the Problem-Based Learning (PBL) model has been proven to improve Islamic Education learning outcomes. This is evidenced by the achievement of learning outcomes, which, on average, met the minimum completion criteria (KKM) after Cycle II, with an average score of 86.5.

3.2. Discussion

The results of this study align with previous research, such as that by Salim & Lambertus (2020), which shows that the use of the Problem-Based Learning (PBL) model can improve student learning outcomes. In practice, Problem-Based Learning is carried out in the following phases: Phase 1 - student orientation to the problem; Phase 2 – organi-zing students; Phase 3 - guiding the investigation; Phase 4 - presenting results; and Phase 5 - analyzing and evaluating the problem-solving process (Tiyasrini, 2021). Students who have been taught using conventional learning models often feel bored with the material, as stated above. The Problem-Based Learning model, however, is based on solving real problems that require authentic investigation problems that demand real solutions. This model has the advantage of enabling students to learn with inspiration, using various information related to problem-solving. Additionally, students are trained to synthesize knowledge and skills before applying them to problems, making the material easier for them to remember.

Problem-Based Learning encourages students to learn more diligently and actively because they are directly involved in developing their understanding and completing assignments related to solving a problem (Sakir & Kim, 2020). PBL is an educational approach where problems are the starting point of the learning process. Through PBL, students gain experience in dealing with realistic problems, formulate ideas, and develop reasoning skills (Nurkhin & Pramusinto, 2020). Teachers can provide engaging worksheets, especially in Islamic Religious Education, enabling students to observe and extract important information from the text (Parlindungan & Rodgers, 2022). Problem-Based Learning encourages students to study harder and be more active because they are directly involved in developing their understanding and assignments related to solving a problem.

Problem-Based Learning (PBL) is an approach that places problems at the center of the learning process (Yew & Goh, 2016). Rather than passively receiving information from traditional teaching, students are invited to actively participate in solving complex, real-world problems. In PBL, students are presented with problems that require solutions, and they are given the opportunity to explore various ways to solve them (Kim et al., 20218). This allows students to engage deeply in the learning process, fostering critical thinking and problem-solving skills that are valuable in everyday life.

PBL encourages students to become active thinkers by integrating their knowledge and applying it in practical situations (Aksela & Haatainen, 2019). For example, in the context of elementary school learning, students can be invited to solve problems related to their daily lives, such as resolving social issues at school or understanding moral values in a religious context. In this way, students not only understand theoretical concepts but are also able to relate and apply that knowledge in a real and relevant context, enhancing their understanding.

The PBL model also facilitates the development of important social skills, such as collaboration and communication (Crespí et al., 2022). In Problem-Based Learning, students work in groups to find solutions together, share ideas, and help each other. This process not only improves students' understanding of the subject matter but also

teaches them the importance of cooperation in problem-solving. Students learn to listen to others' views, discuss ideas constructively, and reach consensus within the group (Johnson & Johnson, 2015). These social skills are especially valuable in 21st-century education, which emphasizes interpersonal and collaborative skills.

The implementation of PBL in elementary schools can help improve student learning outcomes in a more enjoyable and real-world-based way. In traditional learning, students often feel less engaged or connected to the material being taught (Deslauriers et al., 2019). However, with PBL, students are presented with situations that challenge them to think critically and take action. This model shifts the teacher's role to that of a facilitator, guiding students through the problem-solving process rather than simply delivering material. As a result, students' motivation to learn increases, their understanding of the concepts taught strengthens, and they are encouraged to learn in a more independent and effective manner.

Based on the results of this study and a thorough review of the literature and previous research, the advantage of this study lies in its application of the Problem-Based Learning (PBL) model in Islamic Religious Education in elementary schools, a topic that has been rarely addressed in previous research. The application of PBL in this subject shows that the method not only improves student learning outcomes but also fosters active student involvement in the learning process. The PBL model creates a more interactive, enjoyable, and relevant learning environment, thereby increasing students' motivation to learn. Additionally, this study utilizes a reflective Classroom Action Research (CAR) design, allowing for continuous improvement in each cycle. Thus, this study contributes not only theoretically to the development of learning models but also provides practical solutions for teachers in improving student learning outcomes, particularly in Islamic Religious Education at the elementary school level.

4. IMPLICATIONS ANA CONTRIBUTIONS

4.1 Research Implications

This research has implications for the application of the Problem-Based Learning (PBL) model, in which students play an active role in solving real (authentic) problems, thereby creating a student-centered learning environment and a pleasant atmosphere. The results of this study can serve as a reference and source of scientific information, both theoretically and practically, regarding the use of the Problem-Based Learning model as a medium for improving student learning outcomes.

4.2 Research Contributions

This research makes an important contribution to understanding the strategies employed by single mothers in meeting their children's educational needs in Pasanggrahan Village, Tangerang Regency. The findings enrich the literature on the role of women in managing household resources, particularly in the context of single-parent families, and provide insight into how women prioritize household finances, especially for their children's education. Additionally, this study highlights the need for further support from the government and community through policies or programs that can strengthen these strategies, such as educational assistance or skills training, to help single mothers be more effective in meeting their families' and children's educational needs

5. LIMITATIONS AND FUTURE RESEARCH DIRECTION

5.1 Research Limitations

The limitation of this study lies in its scope, which is confined to one class at SD Negeri 01 V Koto, Mukomuko Regency, meaning the results may not be fully generalizable to other schools with different characteristics. This study also used only the Classroom Action Research (CAR) method, which focuses on the cycle of learning improvement within a limited time, providing no insight into the sustainability of the PBL model in the long term. Additionally, data collection was limited to learning outcome evaluations and direct observation, which did not fully account for other factors that could affect learning outcomes, such as students' socio-economic conditions or parental involvement in supporting learning. Further research with a broader sample and more varied approaches is expected to provide a more comprehensive picture of the effectiveness of PBL in various educational contexts.

5.2 Recommendation for Future Research

Further research is recommended to involve a broader sample, including more elementary schools across different regions and socio-economic conditions, in order to obtain a more comprehensive understanding of the effectiveness of the Problem-Based Learning (PBL) model in improving student learning outcomes. Additionally, future studies could extend the duration of the PBL cycle to assess its long-term impact on student understanding and skills.

Research could also explore other factors influencing the success of PBL, such as the role of parents, the learning environment at home, and social support. Moreover, it would be valuable to investigate how the PBL model can be applied more broadly to subjects other than Islamic Religious Education.

6. CONCLUSION

This study demonstrates that the implementation of the Problem-Based Learning (PBL) model significantly enhances the learning outcomes of elementary school students in the subject of Islamic Religious Education (Pendidikan Agama Islam) at SD Negeri 01 V Koto, Kab. Mukomuko. The results indicate that, after the application of PBL, the percentage of students meeting the Minimum Completion Criteria (KKM) increased dramatically from 30% in the pre-cycle to 95% in the second cycle. This improvement highlights the effectiveness of PBL in fostering student engagement, enhancing their understanding of the material, and motivating them to take an active role in their learning process.

The PBL model encourages students to be more engaged and participatory by addressing real-world problems that are relevant to their experiences. By placing students at the center of the learning process, PBL fosters the development of critical thinking and problem-solving skills. This active learning approach not only improves academic performance but also helps students apply their learning in practical situations. The results from this study support the idea that PBL can significantly transform the learning environment, making it more interactive, enjoyable, and effective, especially in subjects such as Islamic Religious Education, which are often perceived as more theoretical and normative.

In conclusion, the study affirms the potential of the Problem-Based Learning model to improve student learning outcomes in elementary education, particularly in Islamic Religious Education. The findings suggest that PBL is a valuable teaching method that can be applied in various contexts to enhance student achievement. Given the success observed in this study, it is recommended that educators consider incorporating PBL into their teaching strategies to create a more dynamic and student-centered learning environment. Further research is encouraged to explore the long-term effects of PBL and its application across different subjects and educational levels.

Acknowledgments

The Author would like to thank the supervising lecturer for the valuable guidance provided during the research process and the writing of this article. The researcher would also like to thank their colleagues for their support.

Author Contribution Statement

The author declares that the entire research and writing process for this article was conducted independently. The author assumes full responsibility for all data associated with this research. No other individual contributed as a co-author or made any significant contribution to the content of this work.

Declaration of GenAI in Scientific Writing

The authors declare that QuillBot was used in a limited capacity during the drafting and revision of this manuscript to assist with spelling and grammar checks, identification of typographical and grammatical errors, paraphrasing suggestions, reduction of passive voice, and elimination of repetitive words, sentences, and unnecessary adverbs. All suggestions provided by QuillBot were critically evaluated, selectively applied, and appropriately modified by the authors to ensure that the final manuscript remains representative of their original work. All instances of Generative AI usage in this article were conducted by the authors in accordance with the JIPPG Generative AI (GenAI) Policy, with the authors assuming full responsibility for the originality, accuracy, and integrity of the work.

Conflict of Interest Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding Statement

The authors declares that no specific grant or funding was received to support the conduct of this study or the preparation of this manuscript.

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Article Information

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First Publication Right:
Jurnal Indonesia Pendidikan Profesi Guru

Article info:
DOI: https://doi.org/10.64420/jippg.v2i3.318

Word Count: 5187

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