



The Influence of the Problem-Based Learning Model with Wordwall Media and Learning Motivation on Islamic Religious Education Learning Outcomes

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Abstract: This study aims to analyze the effect of the Problem-Based Learning (PBL) instructional model assisted by Wordwall media and learning motivation on students' learning outcomes in Islamic Religious Education (PAI) at SMP Negeri 1 Namorambe. This research employed a quasi-experimental method with a 2×2 factorial design. The research population consisted of 160 seventh-grade students distributed across several classes, while the sample comprised 60 students, including 30 students in the experimental group and 30 students in the control group. The research instruments included a learning outcomes test and a learning motivation questionnaire. Data were analyzed using a two-way Analysis of Variance (ANOVA). The results indicated that (1) there was a significant difference in learning outcomes between students taught using the PBL model assisted by Wordwall media and those taught using the Direct Instruction model, (2) there was a difference in learning outcomes between students with high and low learning motivation, and (3) there was an interaction between the instructional model and learning motivation on students' PAI learning outcomes. These findings demonstrate that the implementation of the Wordwall-assisted PBL model is effective in improving students' learning outcomes and motivation in Islamic Religious Education.

Keyword : Problem-Based Learning, Wordwall, Learning Motivation, Learning Outcomes.

Abstrak: Penelitian ini bertujuan untuk menganalisis pengaruh model pembelajaran Problem Based Learning (PBL) dengan media Wordwall serta motivasi belajar terhadap hasil belajar Pendidikan Agama Islam (PAI) siswa SMP Negeri 1 Namorambe. Jenis penelitian ini adalah eksperimen semu dengan desain faktorial 2x2. Populasi penelitian berjumlah 160 siswa kelas VII yang terbagi menjadi beberapa kelas, dan sampel yang diambil adalah 60 siswa, terdiri dari 30 siswa kelas eksperimen dan 30 siswa kelas kontrol. Instrumen penelitian meliputi tes hasil belajar dan angket motivasi belajar. Analisis data menggunakan uji ANOVA dua arah. Hasil penelitian menunjukkan bahwa (1) terdapat perbedaan signifikan hasil belajar antara siswa yang diajar dengan model PBL menggunakan media Wordwall dibandingkan dengan model Direct Instruction, (2) terdapat perbedaan hasil belajar antara siswa yang memiliki motivasi belajar tinggi dan rendah, dan (3) terdapat interaksi antara model pembelajaran dan motivasi belajar terhadap hasil belajar PAI. Hasil ini menunjukkan bahwa penerapan model PBL berbantuan Wordwall efektif dalam meningkatkan hasil belajar dan motivasi siswa dalam pembelajaran PAI.

Kata kunci : Problem Based Learning, Wordwall, Motivasi Belajar, Hasil Belajar.

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Introduction

Islamic Religious Education (PAI) plays a strategic role in shaping the character, religious attitudes, and morals of students (Hasan et al., 2025; Hasan & Azizah, 2022; Maarif et al., 2023; Umam & Hasan, 2025). However, the effectiveness of PAI learning is largely determined by a learning process that actively and meaningfully engages students. Field observations indicate that PAI learning often focuses on verbal delivery of material, thus under-motivating student participation and in-depth understanding.

Initial observations at SMP Negeri 1 Namorambe indicate that students' PAI learning outcomes remain relatively low. Of all students surveyed, only 38.13% achieved scores above the Minimum Completion Criteria (KKM) of 75, while 61.88% failed to complete the course. The learning process is still dominated by lecture and question-and-answer methods, with the teacher as the center of learning, resulting in students being passive and less engaged in learning activities.

In addition to learning methods, student motivation is also a significant issue. Many students demonstrate low interest and enthusiasm for PAI subjects, resulting in low engagement and poor learning outcomes. Motivation is a crucial factor influencing student success, particularly in subjects that require understanding values and practicing attitudes such as PAI.

Several studies have shown that Problem-Based Learning (PBL) is effective in improving students' learning outcomes and critical thinking skills. Fadhila & Nurhasanah (2023) found that PBL has a positive effect on Islamic Religious Education (PAI) learning outcomes, particularly in students with high learning motivation. Sari (2022) reported that the use of Wordwall media in problem-based learning can improve conceptual understanding and student enthusiasm. Meanwhile, Wahyu Pratama (2023) concluded that the implementation of PBL assisted by digital media is more effective than conventional learning in improving students' analytical skills.

However, these studies still have limitations. First, most studies examine PBL or Wordwalls separately, without integrating both simultaneously in Islamic Religious Education (PAI) learning (Masrufa et al., 2023; Nahdliyah & Naelasari, 2024). Second, studies explicitly analyzing the interaction between learning models and learning motivation on Islamic Religious Education (PAI) learning outcomes are still relatively limited, particularly at the junior high school level. Third, there is limited research examining the combination of PBL and Wordwalls in the context of Islamic Religious Education (PAI) learning in public schools with diverse student characteristics, such as SMP Negeri 1 Namorambe.

Thus, there remains a research gap regarding the impact of the implementation of Problem-Based Learning (PBL) with the aid of Wordwall media on Islamic Religious Education (PAI) learning outcomes, in terms of student motivation.

Based on these issues and research gaps, this study aims to analyze the influence of the Problem-Based Learning (PBL) model with the aid of Wordwall media and learning motivation on Islamic Religious Education (IS) learning outcomes for students at SMP Negeri 1 Namorambe. The novelty of this research lies in: 1. The systematic integration of the PBL model with Wordwall media in Islamic Religious Education (PAI) learning. 2. Testing the interaction between the learning model and learning motivation on Islamic Religious Education (PAI) learning outcomes. 3. Application to the empirical context of Islamic Religious Education (PAI) learning at SMP Negeri 1 Namorambe, which has not been widely studied before.

The results of this study are expected to provide theoretical contributions in the development of innovative PAI learning models as well as practical contributions for teachers in selecting effective learning strategies and media to improve student learning outcomes and motivation.

Methods

This study employed a quasi-experimental design with a 2×2 factorial design (Jaya, 2020). The aim was to examine the main and interaction effects of learning models and learning motivation on Islamic Religious Education (PAI) learning outcomes. This design was chosen because the researchers used pre-formed classes (intact groups) without individual randomization, yet still allowed for variable control through initial measurements and inferential statistical analysis.

Research Location and Subjects: The study was conducted at SMP Negeri 1 Namorambe, Deli Serdang Regency, North Sumatra, during the odd semester of the 2025/2026 academic year. The subjects were 60 seventh-grade students spread across four parallel classes (VII.1–VII.4), with a relatively balanced number of students in each class (± 15 students).

Sampling Technique and Group Determination: The sample was drawn using purposive sampling, considering equivalence in initial academic ability based on PAI report card scores from the previous semester, and similar allocation of learning time (Bambang Sudaryana et al., 2022). Two classes were designated as experimental groups that implemented the Problem-Based Learning (PBL) model assisted by Wordwall, while the other two classes were designated as control groups that implemented the Direct Instruction (DI) model assisted by Wordwall.

Research Variables: This research involves:

1. Independent variable: learning model (PBL and DI).
2. Moderator variable: student learning motivation (high and low).
3. Dependent variable: Islamic Religious Education learning outcomes.

Factorial Design, Grouping of learning motivation was carried out before treatment based on motivation questionnaire scores using the median split technique, so that four treatment groups were obtained statistically, as shown in Table 1.

Table 1.

Learning model	High Motivation	Low Motivation
PBL with Wordwall	A ₁ B ₁	A ₁ B ₂
DI with Wordwall	A ₂ B ₁	A ₂ B ₂

The study was conducted over a period of four weeks consisting of eight meetings, with each meeting allocated a duration of 2 × 40 minutes. The research procedure began with the administration of a pretest and the measurement of students' learning motivation at the initial meeting. This was followed by the implementation of the learning treatment from the second to the seventh meetings. At the final meeting, a posttest was administered to measure students' learning outcomes after the treatment. The learning material used in this study focused on Commendable Morals in Everyday Life, which is aligned with the Grade 7 Islamic Religious Education curriculum.

In the experimental group, the learning process was carried out using the Problem-Based Learning (PBL) model through several stages, including problem orientation, group discussion, investigation, presentation of results, and reflection (Sugiyono, 2021). Meanwhile, the control group applied the Direct Instruction (DI) model, which involved the stages of apperception, presentation of material, guided practice, and evaluation. Wordwall media was utilized in both groups as a tool for concept reinforcement and formative assessment through similar activities such as quizzes, matching exercises, and true-false questions. Thus, the distinction between the two groups lay in the pedagogical approach employed rather than in the learning media used.

To ensure consistency and accuracy in the implementation of the treatment, several control measures were applied. The researcher used standardized lesson implementation plans (RPP) for each learning model, conducted classroom observations using observation sheets to monitor the learning process, and provided initial guidance to the teacher responsible for implementing the learning procedures. These steps were taken to maintain fidelity of implementation throughout the research process.

The research instruments consisted of two main tools. The first instrument was an Islamic Religious Education (PAI) learning outcomes test comprising 25 multiple-choice items, of which 22 items were declared valid. The reliability analysis of this test yielded a coefficient of $r_{11} = 0.87$, indicating a very high level of reliability. The second instrument was a learning motivation questionnaire developed based on Hamzah B.

Uno's learning motivation theory, using a four-level Likert scale. The reliability test of the questionnaire resulted in a Cronbach's Alpha value of 0.811, which indicates good reliability.

Data analysis was conducted using a two-way Analysis of Variance (ANOVA) to examine the effect of the learning model on learning outcomes, the effect of learning motivation on learning outcomes, and the interaction between the learning model and learning motivation. Before conducting the ANOVA, prerequisite tests were carried out, including the Kolmogorov-Smirnov test for normality and the Levene test for homogeneity of variance. When significant differences were identified, further analysis was performed using the Tukey Honestly Significant Difference (HSD) test as a post hoc analysis to determine the mean differences among specific groups. All statistical tests were conducted at a significance level of $\alpha = 0.05$.

Results And Discussion

Results

The results of the data analysis showed that there was a significant difference between students taught using the PBL model assisted by Wordwall and the Direct Instruction model in terms of Islamic Religious Education (PAI) learning outcomes. The average learning outcome score of the PBL group was higher than that of the Direct Instruction group. In addition, students with high learning motivation showed better learning outcomes than students with low motivation. A two-way ANOVA analysis also showed an interaction between the learning model and learning motivation on Islamic Religious Education (PAI) learning outcomes ($p < 0.05$).

Descriptive Results of Islamic Education Learning Outcomes

Student learning outcomes data show significant improvement after implementing the Problem-Based Learning model with Wordwall media. The average student learning outcomes scores in each group can be seen in the following table.

Learning model	Motivation to learn	Number of Students	Average Learning Outcomes	Information
PBL + Wordwall	Tall	30 students	88	Very good
PBL + Wordwall	Low	30 students	73,23	Good
Direct Instruction + Wordwall	Tall	30 students	80,30	Good
Direct Instruction + Wordwall	Low	30 students	73,2	Good

From the table above, it can be seen that the group of students taught using the PBL model assisted by Wordwall obtained the highest average learning outcome (88) in the high motivation category, while the group of students who learned with the Direct Instruction model and low motivation had the lowest average (73.2). This indicates that the application of the PBL model with Wordwall is more effective in improving conceptual understanding and student engagement.

Results of Two-Way ANOVA Analysis

To determine the main effects and interactions between variables, a two-way analysis of variance (ANOVA) was conducted. The ANOVA test results showed the following findings:

Variant Source	JK	db	RJK	F _{count}	F table ($\alpha = 0,05$)
Learning Model with Media <i>Wodrwall</i> (A)	546,017	1	546,017	4,19	4,01
Motivation to learn (B)	2115,661	1	2115,661	16,22	4,01
Interaction (AB)	172,702	1	-172,702	1,32	4,01
In Groups (D)	7305,608	56	130,457		
Total	9794,583				

Based on these results, it can be concluded that:

1. There is a significant difference in Islamic Religious Education learning outcomes between students taught using the Problem-Based Learning (PBL) model with Wordwall and those taught using the Direct Instruction model with Wordwall (F-count = 4.19 > F-table = 4.01; $\alpha = 0.05$). Students learning using the PBL model demonstrate higher learning outcomes because this model encourages critical thinking, problem-solving, and independent learning.
2. There is a significant difference in Islamic Religious Education learning outcomes between students with high learning motivation and those with low learning motivation (F-count = 16.22 > F-table = 4.01; $\alpha = 0.05$). Students with high learning motivation achieve better learning outcomes than students with low learning motivation.
3. There is no interaction between the Problem-Based Learning model with Wordwall and learning motivation in influencing Islamic Religious Education learning outcomes (F-count = 1.32 < F-table = 4.01; $\alpha = 0.05$). This shows that the influence of the PBL model on learning outcomes is independent and does not depend on the level of student learning motivation.

Overall, the results of this study confirm that the implementation of the Problem-Based Learning model with the aid of a Wordwall and the level of learning motivation both play a significant role in improving learning outcomes in Islamic Religious Education. Therefore, teachers are advised to optimize the use of student-centered

learning models while simultaneously fostering learning motivation to maximize learning outcomes.

Discussion

The research results show that the Problem-Based Learning (PBL) model, supported by Wordwall media, significantly influenced the learning outcomes of seventh-grade students at SMP Negeri 1 Namorambe in Islamic Religious Education (PAI). This finding indicates that learning that positions students as active subjects, coupled with the use of interactive digital media, can improve students' conceptual understanding of PAI material.

Pedagogically, the effectiveness of PBL in the context of PAI can be explained by the contextual and normative characteristics of the material, such as moral values and their application to everyday life. PBL enables students not only to memorize concepts but also to analyze moral and religious issues relevant to their experiences, thus making learning more meaningful. This aligns with the constructivist view that states that knowledge is built through reflection on learning experiences, as proposed by Sanjaya (2010).

In addition to the learning model, the research results also show that learning motivation has a significant primary influence on Islamic Religious Education (PAI) learning outcomes (Mirrota, 2024; Mirrota et al., 2024). Students with high levels of motivation consistently achieve better learning outcomes than those with low levels of motivation, regardless of the learning model used. This finding confirms the role of motivation as a crucial internal factor in determining learning success, as stated by Hamzah B. Uno (2011), who argued that motivation serves as a driving force, guide, and support for the continuity of student learning activities.

However, the results of a two-way ANOVA test showed no significant interaction between the learning model and learning motivation on Islamic Religious Education (PAI) learning outcomes ($F_{\text{count}} < F_{\text{table}}$). This means that the superiority of the PBL model over Direct Instruction applies relatively equally to both high- and low-motivated students. In other words, the effectiveness of PBL does not depend statistically on students' levels of learning motivation, but rather acts as a learning approach that is generally superior to Direct Instruction in the context of this study.

These findings have important implications, as they demonstrate that Wordwall-assisted PBL can still improve learning outcomes even for students with low motivation, although their achievement is still below that of highly motivated students. This is likely due to Wordwall's characteristics as a game-based medium that can create a more engaging learning environment and reduce boredom, thus encouraging students with low motivation to engage minimally in the learning process. These results support the findings of Cahyono et al. (2023), who stated that Wordwall increases student learning participation in general, not just in specific groups.

In contrast to the findings of Fadhila and Nurhasanah (2023) who reported a tendency for interaction between PBL and learning motivation, this study found no statistical evidence supporting such an interaction. This difference in results is likely influenced by the subject context, student characteristics, treatment duration, and the

motivation grouping technique used. Thus, the results of this study enrich the empirical literature by demonstrating that in the context of Islamic Religious Education (PAI) at the junior high school level, the learning model and learning motivation act as independent factors, rather than reinforcing each other interactively.

Conclusion

Based on the results of this study, it can be concluded that the Problem-Based Learning (PBL) model assisted by Wordwall media has a positive and significant effect on students' learning outcomes in Islamic Religious Education (PAI) at SMP Negeri 1 Namorambe. Students who were taught using the PBL model achieved higher learning outcomes than those who were taught using the Direct Instruction model. This finding indicates that PBL, which emphasizes problem-solving activities, critical thinking, and student engagement, is more effective in facilitating meaningful learning in PAI, particularly when supported by interactive digital media such as Wordwall. The use of Wordwall helped reinforce concepts and created a more engaging learning atmosphere, thereby enhancing students' understanding of the learning material.

In addition, learning motivation was found to have a significant influence on students' PAI learning outcomes. Students with high learning motivation consistently demonstrated better learning outcomes than students with low motivation, regardless of the learning model applied. This confirms that motivation is a crucial internal factor that supports students' persistence, engagement, and achievement in learning, especially in subjects such as Islamic Religious Education that require not only cognitive understanding but also internalization of values and attitudes.

However, the results of the two-way ANOVA analysis showed no significant interaction between the learning model and learning motivation on students' PAI learning outcomes. This indicates that the effectiveness of the PBL model assisted by Wordwall media does not statistically depend on students' levels of learning motivation. In other words, the PBL model demonstrates a consistent advantage over Direct Instruction for both highly motivated and less motivated students. Overall, these findings confirm that the PBL model supported by Wordwall media and students' learning motivation independently contribute to improving Islamic Religious Education learning outcomes, making this learning approach a viable and effective alternative for enhancing the quality of PAI instruction at the junior high school level.

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Elida Saragih, et.al.

The Influence of the Problem-Based Learning Model with Wordwall Media and Learning Motivation on Islamic Religious...

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