Problem Based Learning Model Assisted by Wordwalls: Learning Motivation at Elementary School Students'

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ABSTRACT

Due to a lack of student motivation, various learning approaches, and engaging learning media, classroom learning has not featured student interaction. Therefore, the purpose of this study is to determine whether the Problem-Based Learning (PBL) model assisted by Wordwall has a significant influence on elementary school students' learning motivation. This quantitative research employs a quasi-experimental that utilizes a pretest-posttest control group design. This research was conducted on grade V students of State Elementary Madrasah 1 Bandar Lampung. Data collection techniques include distributing a list of questions to respondents or survey questionnaires. Descriptive data analysis is used to measure and present initial (pre-test) and final (post-test) data using the paired t-test. The study found $t = -4.577$ for the experimental class paired samples t-test. In the experimental class, a significant value of $0.000 < 0.05$ was found. The Problem-Based Learning (PBL) model, supported by Wordwall, significantly impacts class V students' learning motivation, with a sig. value of $0.000 < 0.05$, rejecting H0 and accepting H1. The paired samples t-test showed a value of $t = 0.487$ with a significance of $0.630 > 0.05$, indicating that H0 is accepted and H1 is rejected. The Teams Games Tournament (TGT) model assisted by a PowerPoint presentation did not affect class V students' learning motivation. Therefore, the Problem-Based Learning (PBL) model supplemented by Wordwall affects class V students' learning motivation at State Elementary Madrasah 1 Bandar Lampung.

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1. INTRODUCTION

Education transforms students by influencing them to adapt to their surroundings (Mohamed & Nadia, 2024; Strielkowski et al., 2025). Education is a deliberate effort to create a learning environment and process that helps students develop their physical and spiritual potential, giving them spiritual strength, personality, intelligence, noble character, and the skills they need for themselves, society, nation, and state. Since education occurs everywhere and always, it is a human life activity. Education aims to civilize or honor humans. Teaching pupils humanist principles will make education

meaningful (Ifrianti & Ningrum, 2020; Kleindienst, 2024). Students will be driven to help others and be moral. School is a learning environment. Students and instructors are essential to teaching and learning. This procedure involves teachers assigning lessons and students receiving them (Hanewicz et al., 2017; Syofnidah, 2019). Teachers offer material, manage the learning environment, coach, and motivate students to maximize their potential and skills.

Learning occurs when students are motivated. Educators matter. Facilitators create a learning environment and encourage student participation (Bergmark & Westman, 2018). Managers design, implement, and evaluate learning to meet educational goals. Educators guide and motivate pupils to overcome learning challenges and develop an interest in learning (Jääskä et al., 2022; Nanda, 2024). Through these responsibilities, educators impart knowledge and shape students' character and talents. Teachers must teach kids and encourage good behavior. Professional educators must educate, instruct, motivate, guide, direct, train, assess, and evaluate students (Pereira et al., 2015; Ping et al., 2018; Muhammadiah et al., 2022).

Madrasah Ibtidaiyah provides quality human resource training. Madrasah Ibtidaiyah, Islamic primary schools, serve as the foundation for continued education (Al Aluf et al., 2024; Khairullah, 2025). Thus, it must be correctly implemented to lay the groundwork for future levels. Motivation is key to learning. Underachieving pupils sometimes lack enthusiasm to learn, stopping them from reaching their full potential (Chiang, 2019). Thus, low-achieving pupils may lack drive rather than competence.

Motivation affects student interest, readiness, persistence, independence, and success. Student learning motivation might come from within or without (Yilmaz, 2017; Chittum et al., 2017). Beginning with motivation, students become excited about learning, which might affect their success. Motivation influences pupils' excitement for studying, which helps them succeed academically. Motivation is key to learning. High learning motivation drives student discipline and focus, encouraging active participation and enjoyment in sessions (Akram & Li, 2024; Zajda, 2024). Motivated students study better. Learning motivation improves learning frequency and intensity, making pupils more active and persistent in meeting classroom obstacles. Motivation also drives pupils to develop and maintain a positive outlook. Increasing pupils' enthusiasm to learn is key to improving learning results. Addressing internal and external issues causes low student motivation.

Physical and mental conditions, abilities, and psychological aspects, such as self-confidence, interests, and aspirations, drive learning motivation (Öqvist & Malmström, 2018; Zajda, 2024). The absence of discipline, focus, and goals in learning also impacts motivation. Student motivation is also affected by school conditions, learning techniques, teachers, and peers. Unconducive learning environments, boring approaches, and a lack of diversified learning resources can also demotivate students (Tang & Hu, 2022; Feng & Xiao, 2024; Omari et al., 2025).

In a preliminary study conducted by the author, fifth-grade homeroom teachers at State Elementary Madrasah 1 Bandar Lampung were interviewed to identify field learning challenges. Due to a lack of student motivation, various learning approaches,

and compelling learning media, classroom learning lacks student interaction. We must overcome learning difficulties. Of the 90 students, 13 (14.4%) had very high learning motivation, 14 (15.5%) had high, 23 (25.5%) had moderate, and 40 (44.4%) had low. These findings indicate the need for improved learning methods, models, and media to motivate students.

Building upon this explanation, a learning strategy that actively engages students helps them understand and apply the subject. The researcher suggests using a learning paradigm that promotes student participation to motivate students. Problem-Based Learning (PBL) can motivate students. Problem-based learning is scientific. This learning model assigns students a topic or problem to solve independently (Muzaini et al., 2022; Anggraeni et al., 2023; Hasbi & Fitri, 2023). Successfully solving their challenges will drive kids to solve other problems in the future. Problem-based learning is also effective because it encourages students to tackle real-world challenges, making analytical learning more compelling (Simanjuntak et al., 2021; Boye & Agyei, 2023).

A previous study has indicated that problem-based learning increases student motivation (Simbolon & Koeswanti, 2020; Setyani & Susilowati, 2022; Safitri et al., 2023; Wijnia et al., 2024). PBL (Problem-Based Learning) is an innovative, student-focused teaching style that stresses real-world problem-solving. PBL encourages students to learn in context and solve problems together. This model improves academic comprehension, problem-solving, teamwork, motivation, and critical thinking. PBL requires kids to master important skills, problem-solve, study independently, and work together.

PBL makes learning entertaining and meaningful by introducing students to contemporary topics. This makes PBL an effective way to motivate students. Learning media, together with learning model, motivates learning (Al-Rahmi & Zeki, 2017). Technology can engage students in learning. Technology can make learning fun and intriguing for students. Word walls are tech-based learning tools. Wordwall's quizzes and games can be customized to improve the PBL learning approach and learning motivation (Kusuma et al., 2024; Ariyani et al., 2025).

Wordwall is a novel interactive learning tool that motivates pupils (Nisa et al., 2024; Febrianti & Baidullah, 2025). Wordwall provides quizzes, games, and personalized practice questions for interactive learning. Wordwall increases classroom engagement with configurable templates, appealing themes, and assignment sharing. Building upon the issue formulation, this study aims to assess if the issue-based learning (PBL) model helped by Wordwall affects class V students' learning motivation at State Elementary Madrasah.

2. METHOD

This quantitative study used a quasi-experimental design. A pretest-posttest control group approach was used in this quasi-experimental study. An experimental study investigates whether something put on people has an effect or a causal relationship. This study employed Wordwall to assess the impact of implementing the Problem-Based

Learning (PBL) paradigm on fifth-grade students' learning motivation at State Elementary Madrasah 1 Bandar Lampung. Quantitative research with a quasi-experimental methodology measured dependent variable changes after treatment or intervention. This study measured the same group pre-test and post-test to see if there were significant differences.

This design allows researchers to evaluate the effectiveness of an intervention by comparing conditions before and after treatment. In this study, there are two variables, namely variable x and variable Y. Variable X in this study is the influence of the Problem Based Learning (PBL) model assisted by word walls, while variable Y is the learning motivation of fifth grade students. Therefore, it can be concluded that this study focuses on changes that occur in the dependent variable, namely student learning motivation.

Table 1. Pretest-Posttest control group design

Group	Pre-test		Post-test
Experiment	0_1	x_1	0_2
Control	0_1	x_2	0_2

Description:

0^1 = Pre-test before treatment in the experimental and control classes

0^2 = Post-test after treatment in the experimental and control classes

x^1 = Learning using the Problem-Based Learning (PBL) model with the aid of a word wall

x^2 = Learning using the TGT (Team Games Tournament) model with the aid of PowerPoint

State Elementary Madrasah 1 Bandar Lampung was chosen for the research because it emphasizes Problem-Based Learning (PBL). The researcher recruited fifth graders at State Elementary Madrasah 1 Bandar Lampung because the homeroom teacher reported low learning motivation. Word walls and other interactive technology have never been used by the homeroom teacher.

A questionnaire involves distributing a list of questions to respondents to elicit responses. A questionnaire asks respondents to answer written questions or remarks. A pre-survey questionnaire collects preliminary data before the main survey. After utilizing the problem-based learning (PBL) approach with a word wall, students receive a learning motivation indicator survey. Measure learning motivation after using the Problem-Based Learning (PBL) approach with a word wall.

Researchers utilize research instruments to collect data to improve task efficiency and results. This study used a non-test Likert-scale questionnaire. A questionnaire asks respondents to answer written questions or statements based on the user's request for information. Research scales like Likert-scale questionnaires measure people's opinions. Distributing this questionnaire sought through student comments on learning motivation. This study included 25 statements on Sardiman's eight learning motivation indicators.

Data analysis is a systematic process of processing, examining, and organizing data obtained through various data collection methods, such as observation, interviews, surveys, or documentation. The goal of this process is to transform raw data into consistent, organized, and useful information that can be used to solve problems or answer research questions. Descriptive analysis is a statistical technique used to provide an overview or description of the characteristics of research data as they exist without making further generalizations or conclusions. Descriptive analysis is used to measure and present initial (pre-test) and final (post-test) data with the paired samples t-test, involving central measures such as the mean, median, and mode to understand patterns of student learning motivation before and after treatment.

The paired t-test is a statistical method used to compare two related samples, usually measurements conducted on the same individual before and after a specific treatment. This method is particularly useful for evaluating the effects of an intervention, such as in research measuring changes in student learning motivation after the implementation of a problem-based learning (PBL) model. A paired t-test calculates the difference between the scores of two observations for each individual and tests whether the average difference is statistically significant.

3. RESULTS AND DISCUSSION
Results
Descriptive Analysis

Descriptive statistical analysis demonstrated differences in student learning motivation between experimental and control classrooms. Student learning motivation was measured using a 16-item pre- and post-survey in experimental and control classrooms. Previous validity and reliability testing used SPSS 25. Five meetings were held in experimental Class VB. The first meeting was administering the pre-survey questionnaire or getting the PBL model with a word wall. In the experimental class, student learning motivation averaged 59.36, ranging from 69 to 44. The second, third, and fourth meetings used a word wall to administer Problem-Based Learning (PBL). The fifth and final meeting administered the post-survey questionnaire.

Table 2. Descriptive Analysis Test

N		Minimum	Maximum	Mean	Std. Deviation
Experimental Pre-Survey	28	44	69	59.36	5.286
Experimental Post-Survey	28	59	80	65.07	4.626
Control Pre-Survey	30	53	74	64.73	5.711
Control Post-Survey	30	55	74	64.20	4.838
Valid N (listwise)	28				

Learning motivation scores rose after therapy, averaging 65.07, ranging from 59 to 80. The post-survey scores showed that students in the experimental class using the

Problem-Based Learning (PBL) model with a word wall were more motivated to learn. Five meetings were held in control class V C. A PowerPoint presentation was used to conduct a pre-survey questionnaire utilizing the Teams Games Tournament (TGT) model before treatment. The control class averaged 64.73 learning motivation scores, ranging from 74 to 53. The second, third, and fourth meetings used the Teams Games Tournament (TGT) paradigm with PowerPoint. A post-survey questionnaire followed the fifth and final meeting. Learning motivation scores dropped after treatment, averaging 64.20, ranging from 55 to 74. The descriptive analysis indicated that the experimental class had more motivation to learn than the control class.

Normality Test

This study used SPSS 25's Kolmogorov-Smirnov normalcy test. The Kolmogorov-Smirnov table was used to determine normality by comparing two-tailed sig. values with a significant level of 0.05 (5%). If the K-S coefficient P value is > 0.05, the distribution is normal; hence, decision-making is based on it. Conversely, data with a P value and K-S coefficient < 0.05 are not regularly distributed.

Table 3. Normality Test

Statistic		df	Sig.
Experimental Pre-Survey	.120	28	.200*
Experimental Post-Survey	.082	28	.200*
Control Pre-Survey	.101	28	.200*
Control Post-Survey	.129	28	.200*

The results of the normality test, conducted using the Kolmogorov-Smirnov test, indicated that the significance value for all data was greater than 0.05. In the pre-survey of the experimental class, the significance value was 0.200, and in the post-survey of the experimental class, it was 0.200. This data indicates that the data in the experimental class, both before and after treatment, were normally distributed. In the control class, the significance value for the pre-survey was 0.200 and the post-survey was 0.200, both of which were greater than 0.05, thus concluding a normal distribution.

Homogeneity Test

The homogeneity test is used to determine the level of similarity in variance between two groups, the experimental group and the control group. In this study, the homogeneity test uses the variance test in SPSS 25. The basis for data analysis is to compare the significance value of the significance of the sig. (2-tailed) with an alpha of 0.05 (5%). If the sign. (2-tailed) value is less than alpha of 0.05, the HO is rejected. Conversely, if the sign. (2-tailed) value is greater than alpha of 0.05, the H0 is rejected. (2-tailed) > Alpha 0.05, 0.05, then HO is accepted. The results of the homogeneity test are displayed in Table 4.

Tabel 4. Test of Homogeneity of Variance

	Levene Statistic		df1	df2	Sig.
Motivation	Based on Mean	.209	1	56	.650

to learn	Levene Statistic		df1	df2	Sig.
	Based on Median	.375	1	56	.543
	Based on Median and with adjusted df	.375	1	54.971	.543
	Based on trimmed mean	.287	1	56	.594

The results of the homogeneity test for the research variables, the significance value (Sig) Based on Mean was 0.650 > 0.05, thus concluding that the variance of the post-survey data from the experimental class and the post-survey data from the control class were equal or homogeneous.

Hypothesis Testing

After conducting normality and homogeneity tests on student learning motivation, data analysis was conducted to test the proposed hypothesis. This hypothesis test was conducted to determine the significant effect of the Problem-Based Learning (PBL) model assisted by wordwalls on the learning motivation of fifth-grade students at State Elementary Madrasah 1 Bandar Lampung.

Ho: There is no effect of the Problem-Based Learning (PBL) model assisted by wordwalls on the learning motivation of fifth-grade students at State Elementary Madrasah 1 Bandar Lampung.

H_1: There is an effect of the Problem-Based Learning (PBL) model assisted by word walls on the learning motivation of fifth-grade students at State Elementary Madrasah 1 Bandar Lampung.

The results of the Paired Sample t-test hypothesis test were conducted using SPSS 25. The results of the paired sample t-test are presented in the following table.

Table 5. Paired Sample t-test Results for Experimental and Control Class

Group	Sign.	t value	Criteria sign. 2 tailed table <0.05	Interpretation
Experiment	0,000	-4,577	0,05	Accepted
Control	0,630	0,487	0,05	Rejected

The experimental class paired sample t-test yielded -4.577. The experimental class has a significance value of 0.000 < 0.05. The Problem-Based Learning (PBL) paradigm, supported by Wordwall, influences fifth-grade students' learning motivation at State Elementary Madrasah 1 Bandar Lampung, with a sig. < 0.05, rejecting H0 and accepting H1. No increase was seen in the control class treated with the Teams Games Tournament (TGT) model and PowerPoint. The Paired Samples t-Test revealed no significant impact of the Teams Games Tournament (TGT) model and PowerPoint Presentation (PPT) on fifth-grade students' learning motivation (sig. 0.000 < 0.05). 0.630 > 0.05 accepts H0 and rejects H1. Based on this explanation, the Problem-Based Learning (PBL) model

with a Wordwall increases student learning motivation more than the Teams Games Tournament (TGT) model with a PowerPoint presentation.

Discussion

This study examines whether Wordwall's Problem-Based Learning (PBL) model motivates elementary school students. The Problem-Based Learning (PBL) model with Wordwall motivates State Elementary Madrasah 1 Bandar Lampung class V pupils. Several criteria from earlier analysis show this. Experimental and control classrooms have different student learning motivations, according to descriptive statistics. Experimental and control classes used a 16-item pre- and post-survey to measure student learning motivation. Experimental Class VB held five meetings. Pre-survey questionnaires or PBL models with word walls were given at the first meeting. Student learning motivation averaged 59.36 in the experimental class, ranging from 69 to 44. Problem-based learning was employed on a word wall in meetings two, three, and four. The fifth and final meeting administered the post-survey questionnaire.

Therapy increased learning motivation scores to 65.07, ranging from 59 to 80. Post-survey results showed that experimental students using the Problem-Based Learning (PBL) model with a word wall were more motivated to learn. The control class VC had five meetings. We utilized PowerPoint to perform a pre-survey questionnaire using the Teams Games Tournament (TGT) model before treatment. Learning motivation averaged 64.73 in the control class, ranging from 74 to 53. The second, third, and fourth meetings used PowerPoint and Teams Games Tournament (TGT). A post-survey questionnaire followed the fifth and final meeting. Learning motivation scores declined following therapy, averaging 64.20 (55–74). This descriptive analysis indicated that the experimental class was more motivated to learn than the control class.

The experimental class paired sample t-test was -4.577. The experimental class has a significance value of $0.000 < 0.05$. The Wordwall-supported Problem-Based Learning model affects fifth-grade students' learning motivation at State Elementary Madrasah 1 Bandar Lampung, with a sig. < 0.05 rejecting H0 and accepting H1. The Teams Games Tournament (TGT) model and PowerPoint did not raise the control class. The paired sample T-test showed no significant impact of the Teams Games Tournament (TGT) model or PowerPoint Presentation (PPT) on fifth-grade students' learning motivation (sig. $0.000 < 0.05$). $0.630 > 0.05$ rejects H1 and accepts H0. According to this explanation, the Problem-Based Learning (PBL) model with a Wordwall motivates students more than the Teams Games Tournament (TGT) model with PowerPoint.

This study's findings demonstrate that the problem-based learning model with Wordwall media enhances student motivation and academic performance. Octaviana et al. (2023) asserted that the use of the Problem-Based Learning (PBL) model, facilitated by the Wordwall medium, enhances scientific learning results for fifth-grade elementary pupils. The Problem-Based Learning (PBL) model, augmented by Wordwall, is an educational approach that integrates the PBL model with interactive Wordwall media (Gusman, 2024; Latifah & Fauzi, 2025; Nurhalisa et al., 2025; Barzi et al., 2025). In this framework, students collaboratively address problems, while Wordwall serves to

present challenges, information, or interactive quizzes that facilitate the learning experience. This concept effectively enhances multiple facets of student learning outcomes, such as academic performance, motivation, and critical thinking skills, as Wordwall renders the learning experience more engaging and dynamic (Nisa et al., 2024; Rahman et al., 2025).

4.   CONCLUSION

Wordwall-facilitated Problem-Based Learning (PBL) improves fifth-graders' learning motivation at State Elementary Madrasah 1 Bandar Lampung research. The experimental class paired samples t-test results were -4.577. The experimental class significance was 0.000, less than 0.05. The Problem-Based Learning (PBL) model, supported by Wordwall, significantly impacts fifth-grade students' learning motivation, as shown by a significance value of 0.000, which is less than 0.05, rejecting H0 and accepting H1. The PowerPoint-based Teams Games Tournament (TGT) control class did not improve. The paired samples t-test showed that the Teams Games Tournament (TGT) model, supported by PowerPoint Presentation (PPT), did not affect fifth-graders' learning motivation. This score shows a significance of 0.630, more than 0.05, accepting H0 and rejecting H1.

As suggestion, the findings of this study should help stakeholders make future improvements. Parties include: Problem-Based Learning (PBL) using word walls is expected to motivate students in schools. The article is expected to help instructors deploy Problem-Based Learning (PBL) models with word walls in low-motivation classes. These models can motivate students to learn. This study may help other researchers develop their research by providing a reference.

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