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## THE EFFECT OF PROBLEM-BASED LEARNING MODEL INTEGRATED WITH THE PEARSON ENGLISH PORTAL ON STUDENTS GRAMMAR MASTERY

### Abstrak

Penelitian ini menyelidiki efektivitas integrasi Pembelajaran Berbasis Masalah (PBL) dengan Portal Bahasa Inggris Pearson (PEP) untuk meningkatkan kemahiran tata bahasa di antara pelajar bahasa. Penelitian ini bertujuan untuk mengisi kesenjangan dalam literatur dengan memeriksa dampak gabungan dari pendekatan pedagogis inovatif ini pada penguasaan keterampilan tata bahasa. Penelitian ini menentukan apakah pembelajar yang terlibat dalam aktivitas PBL dengan sumber daya PEP mencapai peningkatan kemahiran tata bahasa yang lebih signifikan daripada metode instruksi tradisional. Berdasarkan uji-t independen, nilai uji-posting sig (2-tailed) untuk kelas kontrol adalah 0,991 dan untuk kelas eksperimen adalah 0,991. Jadi, hasil uji-t independen untuk pengujian hipotesis terdapat pengaruh signifikan pada penguasaan tata bahasa siswa yang belajar menggunakan Pembelajaran Berbasis Masalah yang Terintegrasi dengan Pearson English Portal.

**Kata Kunci:** Problem-Based Learning, Portal Bahasa Inggris, Penguasaan Keterampilan Tata Bahasa

### Abstract

This study investigated the effectiveness of integrating Problem-Based Learning (PBL) with the Pearson English Portal (PEP) to improve grammar proficiency among language learners. This study aims to fill in the gaps in the literature by examining the combined impact of this innovative pedagogical approach on the mastery of grammar skills. This study determined whether learners who engaged in PBL activities with PEP resources achieved a more significant increase in grammar proficiency than traditional instruction methods. Based on the independent t-test, the test value of the sig post (2-tailed) for the control class was 0.991 and for the experimental class was 0.991. Thus, the results of the independent t-test for hypothesis testing had a significant effect on the grammar mastery of students who learned using Problem-Based Learning Integrated with Pearson English Portal.

**Keywords:** Problem-Based Learning, English Portal, Mastery of Grammar Skills

### INTRODUCTION

Grammar plays a vital role in learning English as an international language. Grammar is the foundation for learners to structure their sentences clearly and coherently. Grammar rules guide various aspects of sentence construction, including word order, sentence structure, punctuation, and syntax (Sedliarova et al., 2021). Consider a scenario where someone wants to express a complex idea. Without proper grammar, their sentences may lack coherence, confusing the reader or listener. However, with proficient grammar skills, learners can construct sentences logically, ensuring each component flows smoothly into the next. This logical arrangement eliminates ambiguity and ensures that the message is conveyed accurately.

However, students with solid grammar proficiency could organize their ideas into well-structured paragraphs, using appropriate punctuation and conjunctions to connect their thoughts seamlessly (Chouit, 2021). A firm grasp of grammar facilitates effective writing. It enables learners to compose coherent and organized essays, reports, emails, and other forms of written

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communication. Proper grammar enhances written work's readability and credibility, which is crucial in academic, professional, and personal contexts. Students who possess a solid understanding of grammar can articulate their arguments cogently, providing evidence and analysis in a structured manner.

Their writing is free from grammatical errors that could detract from the credibility of their work, allowing their ideas to shine through clearly. In professional contexts, communicating effectively through writing is highly valued. Whether drafting reports, proposals, or emails, individuals with solid grammar skills can convey professionalism and competence through their writing. Proper grammar usage lends credibility to their work, instilling trust and confidence in the reader. Conversely, grammar errors can undermine the credibility of a piece and detract from the overall quality of the communication (Chouit, 2021).

Avoiding miscommunication and misinterpretation is crucial in any communication, and proficient grammar plays a key role in achieving this clarity and accuracy. Poor grammar can introduce ambiguity and confusion into a message, potentially altering its intended meaning and leading to misunderstandings or conflicts (Tulkinovna, 2023). Similarly, incorrect grammar can distort the intended message in spoken communication and hinder adequate understanding. For instance, misplaced modifiers or faulty pronoun usage can cause listeners to interpret sentences unintendedly, leading to confusion or misinterpretation of the speaker's intentions (Janda et al., 2015).

Problem-Based Learning (PBL) represents a transformative approach to education, emphasizing active, student-centered learning and real-world problem-solving. Unlike traditional pedagogical methods that rely heavily on lectures and memorization, PBL places learners at the center of the learning process, challenging them to grapple with authentic, complex problems that mirror those encountered in professional settings. This innovative approach fosters critical thinking, collaboration, and self-directed learning skills, preparing students to navigate the challenges of the 21st century (Smith et al., 2022).

At its core, Problem-Based Learning (PBL) revolves around exploring and resolving open-ended, ill-structured problems. These problems are carefully crafted to engage students' curiosity and stimulate inquiry, prompting them to delve deeply into relevant concepts, theories, and practical applications. Through this process, students acquire knowledge and develop essential problem-solving skills, such as analytical thinking, creativity, and adaptability.

This instructional method has shown particular promise in enhancing language learning, as demonstrated in Nur Ambaria Jannah's thesis, "The Effect of Problem-Based Learning on Students' Grammar Mastery of Simple Past Tense at SMPN 3 Tangerang Selatan." Conducted in 2023, the study focused on how PBL influenced eighth-grade students' understanding and use of the simple past tense. The quasi-experimental research revealed that students taught using PBL techniques, where they engaged in solving real-world problems involving the past tense, showed significant improvement compared to those receiving traditional grammar instruction. The findings underscored not only improved grammatical mastery but also increased student engagement and motivation (Jannah, 2023).

The facilitator plays a crucial role in the Problem-Based Learning (PBL) process, serving as a coach and mentor rather than a lecturer or disseminator of information. This facilitator guides and supports students as they navigate the problem-solving journey, fostering a collaborative learning environment where students actively construct their understanding by drawing upon their prior knowledge and experiences to make sense of new information (Rashid et al., 2022).

The Pearson English Portal (PEP) is a comprehensive digital resource supporting language learners and educators in their learning of English. Developed by Pearson, a leading global education company, PEP offers a wide range of interactive tools, materials, and resources tailored to the needs of learners at various proficiency levels. PEP provides access to many digital learning materials, including interactive courses, practice exercises, and multimedia resources. These resources cover all aspects of language learning, including grammar, vocabulary, reading, writing, listening, and speaking skills. Learners can engage with the content at their own pace, allowing for personalized and self-directed learning experiences (Li, 2023). One of the critical features of PEP is its adaptive learning technology, which tailors the learning experience to each learner's needs and abilities.

Through ongoing assessment and feedback mechanisms, PEP adapts the difficulty level of exercises and activities to match the learner's proficiency level, ensuring that they are appropriately challenged and supported throughout their learning journey (Andersen et al., 2021). PEP also offers a variety of assessment tools and progress-tracking features, allowing learners to monitor their performance and track their progress over time. These assessment tools may include quizzes, tests, and diagnostic assessments, providing learners with valuable insights into their strengths and areas for improvement.

This research was conducted at SMA Dharma Bakti LubukPakam. This research used the Pearson English Portal as the learning media to investigate tenth-grade students' grammar mastery. There are several topics in grammar, but in this research, the researcher limits it to Present Tenses (Simple Present Tense and Present Continuous Tense).

By focusing on Present Tenses Structures, the research can delve into these specific challenges and assess students' ability to navigate and apply the rules effectively (Kumayas et al., 2023). Present Tenses are widely used across various contexts, including everyday conversation, academic writing, and professional communication. Proficiency in Present Tenses is therefore crucial for students' academic success and future career prospects. By examining students' mastery of Present Tenses, the research can provide insights into areas for improvement and inform targeted interventions to enhance students' grammar proficiency (Ahmed et al., 2020).

Pearson English Portal was specifically selected as it has been utilized in Grammar teaching over three years. It contains more detailed explanations which are unavailable in textbooks, particularly in the grammar section. Utilizing Pearson English Portal is beneficial because it has many tools to help teachers explain grammar more interactively and interestingly, so students who always feel grammar is tedious and complex can be motivated to learn English using this Pearson English Portal platform. However, some teachers still need to use the Pearson English Portal fully to explain some grammar topics that are considered problematic. Through this research, the researcher wants to discuss this platform more so teachers can consider using it in teaching English grammar at schools.

This research investigates the effectiveness of integrating Problem-Based Learning (PBL) with the Pearson English Portal (PEP) to enhance grammar proficiency among language learners. It aims to fill a gap in the literature by examining the combined impact of these innovative pedagogical approaches on grammar skills mastery. The study explores their synergistic effects on grammar learning outcomes by merging PBL's active, student-centered, real-world problem-solving focus with PEP's comprehensive digital language learning resources. It will determine if learners engaging in PBL activities with PEP resources achieve more significant grammar proficiency gains than traditional instruction methods. The findings aim to inform educators, curriculum developers, and policymakers about innovative teaching practices, offering practical guidance on effectively integrating PBL and PEP to create dynamic, engaging learning experiences that foster critical thinking, collaboration, and self-directed learning skills.

## **METHOD**

This study employed Quantitative methods as the variables were measured and subjected to statistical analysis. Sugiyono (2007) states that this approach enables researchers to study a significant proportion of individuals and test theories systematically. This research employed a quasi-experimental design to explore the effects of a Problem-Based Learning Model Integrated with the Pearson English Portal on students' Grammar Mastery. This design allowed for a comparison between two groups: the experimental group, which experiences the PBL Model Integrated with the Pearson English Portal intervention, and the control group, which receives conventional instruction.

The methodology unfolded through a series of well-defined steps. Initially, a pre-test was administered to both groups to establish their baseline grammar proficiency. Subsequently, the experimental group engaged in the PBL Model Integrated with the Pearson English Portal, characterized by interactive problem-solving activities related to the Present Tenses. In contrast, the control group adhered to traditional teaching methods. Following the intervention, a post-test was administered to measure the grammar mastery of both groups.

This data, encompassing pre-test and post-test scores, was meticulously collected and analyzed using appropriate statistical techniques, such as independent t-test, to discern any significant differences in grammar proficiency between the groups. The outcomes were discussed in light of the research question, investigating whether applying the PBL Model Integrated with the Pearson English Portal yields improved grammar mastery. The study acknowledged practical constraints while striving to draw insightful conclusions about the effectiveness of the PBL Model Integrated with the Pearson English Portal in enhancing students' grasp of the Present Tenses, potentially paving the way for future research directions.

Table 1 Research Design

Intact Group	Measurement	Application of Independent Variable	Measurement
Experimental Group	Pre-Test	Using Pearson English Portal	Post Test
Control Group	Pre-Test	Without using Pearson English Portal	Post Test

Sample refers to a subset of the target population selected for research purposes. The target population represents a larger group of individuals whose characteristics are of interest to the study (Singh, 2014). This study focused on the entire tenth-grade student body, encompassing 60 students, within SMA Dharma Bakti Lubuk Pakam. The total number of the population was 60 students which consist of two classes, namely 10-1 and 10-2. The selected sample included the initial class, 10-1, for the role of the experimental group, while the second class, 10-2, was designated as the control group.

Table 2. Population Data

No	Class	Number of Students	Type of Class
1	X-1	30	Experimental Group
2	X-2	30	Control Group

This deliberate approach to participant selection ensured a focused investigation into the study's variables' effects while acknowledging the chosen classes' unique characteristics. The decision to select these specific classes was driven by the English teacher's desire to enhance the grammar mastery of these students. The 10-1 sample consisted of 30 students, and the 10-2 sample also consists of 30 students.

This research employed a cluster random sampling technique to select the sample. Cluster random sampling involved dividing the population into separate groups, known as clusters, and then randomly selecting entire clusters for the study. This technique was beneficial when the population was naturally divided into groups, such as classes within a school, making it more practical and efficient for the researcher to manage (Sun et al., 2018).

By utilizing the multiple-choice format in the grammar assessment, this study aimed to evaluate students' ability to accurately identify and apply grammatical rules. The carefully crafted options provide insight into students' comprehension of grammar concepts, helping to assess the impact of the Problem-Based learning model integrated with the Pearson English Portal on their grammatical understanding.

The validity of the test refers to the extent to which the test accurately measures what it is intended to measure. In this study, the validity of the grammar test was established through both content and construct validity. Content validity was ensured by aligning the test items with the learning objectives and curriculum standards for Present Tenses. This alignment was achieved by consulting with subject matter experts and reviewing relevant educational materials to create test items that comprehensively cover the targeted grammar concepts.

Construct validity, on the other hand, was assessed by evaluating whether the test items accurately represent the theoretical constructs of grammar proficiency. This involved thoroughly analyzing the test items to ensure they appropriately measure students' understanding and application of Present Tenses. Pilot testing the instrument with a small group of students helped validate the test by identifying any ambiguities or discrepancies, allowing for

necessary revisions to enhance the accuracy and relevance of the test items. Pearson Product Moment was used to test to measure linear correlation between the data. The researcher used SPSS version 26 to measure the validity of the data.

Reliability refers to the consistency and stability of the test results over time. The researcher employed several strategies to ensure the reliability of the grammar test used in this study:

1. The test is pilot-tested with a sample similar to the study population to identify any issues that might affect the consistency of the results. The feedback from the pilot test is used to refine the test items and improve their clarity and precision.
2. The test's internal consistency is measured using statistical methods, such as Cronbach's alpha, to determine the extent to which the test items yield consistent results. A high Cronbach's alpha value (typically above 0.7) indicates good internal consistency, meaning the test items reliably measure the same underlying construct of grammar proficiency.

## RESULT AND DISCUSSION

### 1. Validity Test

The validity of the test items was determined by knowing factor analysis, namely by correlating the instrument item scores with the total score obtained by the student. After each item of the instrument was calculated, the coefficient with the total score was calculated. The criteria used to determine the validity of the item are by comparing the calculated  $r_{count}$  with the  $r_{table}$ . Decision rules:

If  $r_{count} \geq r_{table}$ , then the question item is valid.

If  $r_{count} < r_{table}$ , then the question item is invalid.

Below is the table that shows the validity of the test times that has been given to the participants in trial class.

Table 3. Validity of the Test Items

No. Question	$r_{count}$	$r_{table}$	Results
Q1	0.446	0.367	Valid
Q2	0.446	0.367	Valid
Q3	0.387	0.367	Valid
Q4	0.382	0.367	Valid
Q5	0.428	0.367	Valid
Q6	0.430	0.367	Valid
Q.....	....	....	....
Q20	0.489	0.367	Valid

From Table 3 it can be seen that testing the control class pre-test instrument shows that all values are  $r_{count} > r_{table}$  0.367. This shows that the research instrument is said to be valid and can then be used in research.

### 2. Reliability Test

The reliability of the test is the determination or accuracy of an evaluation tool, the extent to which the test or tool can be trusted to be correct. In this research, the technique used to measure the reliability of this research measuring instrument is the Cronbach's Alpha technique. Reliability in this research will be tested using SPSS Statistics 26 (Statistical Packages For Social Science). Decision rules:

If  $r_{count} \geq \text{Alpha Cronbach}$ , then the question items are reliable.

If  $r_{count} < \text{Alpha Cronbach}$ , then the question items are not reliable.

Tabel 4. Proportion Reliability Test

Variable	$r_{count}$	Alpha Cronbach
Pre-Tes Control Group	0.817	0.600
Post-Tes Control Group	0.814	0.600
Pre-Tes Experimental Group	0.827	0.600
Post-Tes Experimental Group	0.802	0.600

From the table above, it can be seen that the Cronbach's Alpha value of all variables is more than 0.600, so it could be concluded that all statement items used in the questions are reliable. For the control class pre-test data, the value is 0.817. Meanwhile, the post-test score for the control class was 0.814. The pre-test data for the experimental class has a value of 0.827. Meanwhile, the post-test score for the experimental class was 0.802.

### 3. Pre-Test and Post-Test Data

This research was carried out at SMA Dharma Bakti Lubuk Pakam on class X students consisting of classes X-1, X-2. Meanwhile, the sample in this research is class X. The test questions used in this research were in the form of multiple choice questions consisting of 20 items. The following is data on the pre-test and post-test scores for class X-1 students as the control class and class X-2 students as the experimental class.

In the pre-test data control class, the total score was obtained with an average of 45.75, a standard deviation of 22.74, and a variance of 517.11. the lowest value is 10.00 and the highest value is 70.00. Then the post-test data obtained a total of values with an average of 71.72, a standard deviation of 20.14, and a variance of 405.85. the lowest value is 15.00 and the highest value is 80.00.

In the Experimental class, the pre-test data obtained a total of scores with an average of 51.25, a standard deviation of 23.98, and a variance of 575.23. the lowest value is 15.00 and the highest value is 85.00. Then the post-test data obtained a total of values with an average of 71.78, a standard deviation of 19.25, and a variance of 370.76. the lowest value is 30.00 and the highest value is 90.00.

To see the effect of the Problem-Based Learning Integrated with the Pearson English Portal model on students in class X-1 and X-2 SMA Dharma Bakti Lubuk Pakam. Before testing the hypothesis, the data analysis requirements are first tested. The data analysis requirements test consists of a normality test and a homogeneity test.

### 4. Pre-Test and Post-Test Data Normality Test

The Normality Test is used to determine whether the data obtained is normally distributed or not. To test the normality of the pre-test results for the experimental class and control class, Kolmogorov-Smirnov was used. Summary of pre-test and post-test data normality tests using the SPSS application. 26 can be seen in the following table.

Table 5. SPSS Test of Normality: Shapiro-Wilk Output

Tests of Normality						
	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
New Pretes Kontrol	.163	28	.056	.907	28	.017
New Posttes Kontrol	.154	28	.087	.930	28	.061
New Pretes Eksperimen	.139	28	.178	.905	28	.015
New Posttes Eksperimen	.142	28	.153	.920	28	.034

The basis for decision making in the Kolmogorov-Smirnov normality test, namely:

- If the significance value (sig) > 0.05, then the data is normally distributed.
- If the significance value (sig) < 0.05, then the data is not normally distributed.

Based on table 4.10, the sig (2-tailed) in the control group pre-test normality test was 0.056, the control class post-test was 0.087, the experimental group pre-test was 0.178, and the experimental class post-test was 0.153. So it can be said that the data in this study is normally distributed.

### 5. Homogeneity Test

This test is carried out to find out whether the sample used in the research is homogeneous or not, so that if the homogeneity test is fulfilled, the researcher can carry out a hypothesis test using the t test. The data used in this homogeneity test is data on students' grammar mastery after being given treatment, namely the students' post-test scores.

Table 6. Test of Homogeneity of Variance

		Levene Statistic	df1	df2	Sig.
Student	Based on Mean	1.120	3	110	.344

Learning Outcome	Based on Median	.806	3	110	.493
	Based on Median and with adjusted df	.806	3	106.456	.493
	Based on trimmed mean	1.162	3	110	.328

The basis for decision making in the homogeneity test, namely:

- If the significance value (sig)  $> 0,05$ , then the data distribution is homogeneous.
- If the significance value (sig)  $< 0,05$ , then the data distribution is not homogeneous.

Based on table 4.9, from this data it could be concluded that the significance value based on mean is 0.344. From these data, the Based on mean value is  $> 0.05$ , it can be concluded that the data in this study are declared homogeneous.

## 6. Hypothesis Testing (T-Test)

Based on the results of the normality test, it was found that the pre-test and post-test data in the control and experimental classes were normally distributed, so to see whether the students' grammar skills were before and after applying the Problem-Based Learning integrated with the Pearson English Portal learning model to class students X SMA Dharma Bakti Lubuk Pakam. Meanwhile, testing the pre-test and post-test results in the control class and experimental class using the independent t test was used to determine whether there was a difference in the average of two unpaired samples. The main requirement in the independent test until the t test is that the data is normally distributed and homogeneous (not absolute). Determining Hypothesis:

- H1 : The Problem-Based Learning Model integrated with the Pearson English Portal significantly affects students' grammar mastery
- H0 : The Problem-Based Learning Model integrated with the Pearson English Portal does not significantly affect students' grammar mastery

The basis for decision making in the t test (independent samples test), namely:

- If the significance value (2-tailed)  $\leq$  ttable (0.005), The problem-based learning model integrated with the Pearson English Portal has a significant effect on improving students' grammar mastery.
- If the significance value (2-tailed)  $\geq$  ttable (0.005), The problem-based learning model integrated with the Pearson English Portal does not have a significant effect on increasing students' grammar mastery.

A summary of the results of the t test using SPSS 26 Independent sample t test, can be seen in this table:

Tabel 7. Output SPSS independent Samples T-Test

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Student Learning Outcome	Equal variances assumed	2,971	,090	-3,079	56	,003	-11,379	3,695	-18,782	-3,977
	Equal variances not assumed			-3,079	52,306	,003	-11,379	3,695	-18,793	-3,965

From Table 7 it can be seen that the sig (2-tailed) post-test value for the control class is  $0.003 < 0,005$  and for the experimental class it is  $0.003 < 0,005$ . The problem-based learning model integrated with the Pearson English Portal has an effect on improving students' grammar mastery.

The integration of the Pearson English Portal in learning provides various resources and exercises that support the student learning process. The platform provides varied and interactive material, allowing students to study independently and test their understanding in real-time. Students can access additional practice and instant feedback, which helps strengthen their mastery of grammar. The problem-based learning model integrated with the Pearson English Portal increases student motivation and engagement in learning. Students feel more challenged and motivated to solve the problems given, so they are more active in searching for and learning

relevant grammar rules. This is also in line with the theory of motivation in learning, where students who feel challenged will be more enthusiastic about learning.

Although the research results show positive improvements, there are several limitations that need to be considered. Variations in student abilities, time constraints, and unequal access to technology are several factors that can influence research results. In addition, the teacher's role in facilitating learning is also very important, and the success of this model is very dependent on the teacher's skills and involvement. The results of this research have practical implications for educators and educational institutions. The application of a problem-based learning model integrated with technology such as the Pearson English Portal can be an effective alternative for improving students' grammar mastery. Educational institutions need to consider training for teachers to effectively implement this model and ensure adequate technology access for all students.

Further research is needed to examine the long-term effects of this learning model and explore its application at various levels of education and other subjects. Research also needs to consider external factors that may influence outcomes, such as support from parents and learning environments outside of school. Additionally, comparative studies with other learning methods can provide greater insight into the effectiveness of these models. The problem-based learning model integrated with the Pearson English Portal has a positive impact on students' grammar mastery. Despite some limitations, the results of this study show that this approach can increase students' engagement and their understanding of grammar. Technology support and the active role of teachers are very important in the successful implementation of this model.

## CONCLUSION

Based on the results of data analysis and discussion, it can be concluded as follows :

In the pre-test data control class, the total score was obtained with an average of 45.75, a standard deviation of 22.74, and a variance of 517.11. the lowest value is 10.00 and the highest value is 70.00. Then the post-test data obtained a total of values with an average of 71.72, a standard deviation of 20.14, and a variance of 405.85. the lowest value is 15.00 and the highest value is 80.00. In the Experimental class, the pre-test data obtained a total of scores with an average of 51.25, a standard deviation of 23.98, and a variance of 575.23. the lowest value is 15.00 and the highest value is 85.00. Then the post-test data obtained a total of values with an average of 71.78, a standard deviation of 19.25, and a variance of 370.76. the lowest value is 30.00 and the highest value is 90.00. Based on the results of normality testing, the sig (2-tailed) in the control group pre-test normality test was 0.056, the control class post-test was 0.087, the experimental group pre-test was 0.178, and the experimental class post-test was 0.153. So it can be said that the data in this study is normally distributed. While the test results are homogeneous, from this data it can be concluded that the significance value based on mean is 0.344. From these data, the Based on mean value is  $0.344 > 0.05$ , it can be concluded that the data in this study are declared homogeneous. Based on the independent t-test, the sig (2-tailed) post-test value for the control class is 0.003 and for the experimental class it is 0.003. The problem-based learning model integrated with the Pearson English Portal has effect on improving students' grammar mastery.

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