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## The Effects of Problem-based Learning in Students Reading Comprehension for Mastering the Content and Vocabulary Acquisition

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### ABSTRACTS

English reading comprehension is the most crucial language abilities in colleges where English is learned as a second language. A vigorous and powerful reading ability is certainly crucial in primary studies for students to accomplish in advanced education. However, the method in which they are instructed through lecture and paper pencil's method were less relevant and effective in 21st Century. Students become passive, demotivated, bored, and feeling shy by the conventional teaching and learning. The purpose of this study is to examine the effectiveness of problem-based learning (PBL) on student's English reading comprehension for mastering the contents and vocabulary acquisition. The study used a quantitative data where using an experimental pre-posttest design and the independent t-test and one-way ANOVA has been performed to test the hypothesis of the studies. The result indicated that there were statistically significant differences between the experimental and control groups for student's reading comprehension for mastering the content and vocabulary acquisition using PBL. The results showed that the students who received PBL learning approached achieved higher performance outcome than student who is not received the PBL approach.

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## 1. INTRODUCTION

Reading comprehension refers to a dynamic progression where the reader uses the information in the textual contents to develop the meaning (Utomo & Syamsi, 2018). English reading comprehension is the most crucial language abilities in colleges where English is learned as a second language (Hartshome, *et al.*, 2018). English is also important in the internalization program (Sari & Faiz, 2021).

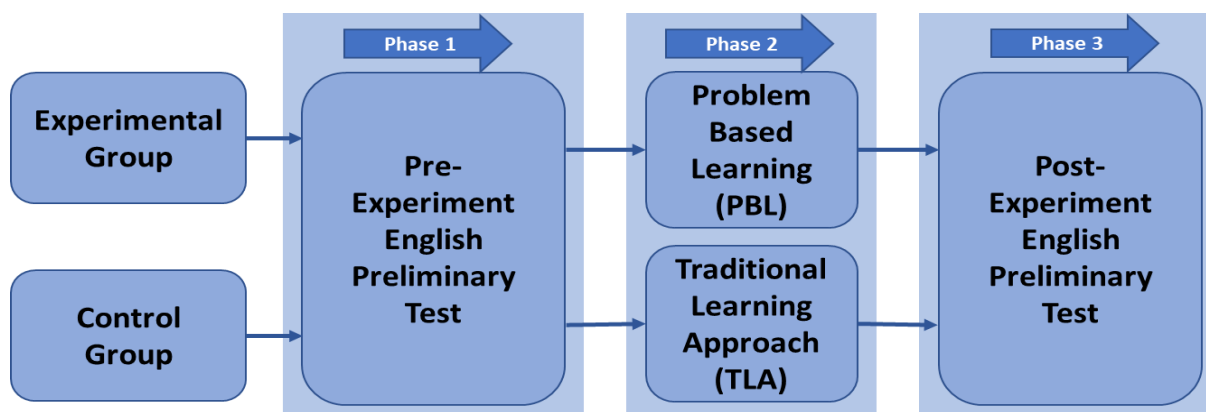
However, previous study revealed that the method of English learning in which they are instructed through lecture and paper pencil's method were less relevant and effective in 21st Century (Morehead. *et al.*, 2019). Students become passive, demotivated, bored and feeling shy by the conventional teaching and learning (Doman & Webb, 2017; Soruç & Griffiths, 2018). Students were affected when teachers have fewer effective methods and weaknesses in skills (Ghufron & Ermawati, 2018). These phenomena had been causing them less performance in their studies (Sari & Faiz, 2021).

Therefore, problem-based learning (PBL) approach has been implemented in this study since PBL an active learning. PBL is a learning model that utilizes certifiable issues as a setting for understudies to find out about basic reasoning, critical thinking abilities just as to acquire fundamental information and ideas from subjects. The purpose of this study is (1) to examine the impact of PBL on reading comprehension skill of students for mastering the content and (2) vocabulary acquisition.

## 2. METHODS

This research study used a quasi-experimental study with pretest-posttest design since this study concerned on investigating the effectiveness of PBL on student's reading comprehension. Twenty of them were selected as the subjects of the study and were assigned to each of groups (experimental group and control group). The two groups had same teacher as well as language-learning preferences, and same scheduled, except the teaching approaches were different. The PBL approach take about 10 weeks. The data obtained from pretest and posttest were analyzed using Independent Sample t-Test Analysis and One-way ANOVA to test the hypothesis of both groups. The research design is given in **Figure 1**.

As shown in **Figure 1**, the principle in the experiment used 3 phases. All phases were depending on the experimental and control group. In the phase 1, we used Pre- experiment English preliminary test. This is in line with reference (Riza et al., 2019). In the Phase2, we used two types of test, in which experimental group used PBL and control group used traditional learning approach (TLA). In the phase 3, we used Post-experiment English preliminary test. Then, we compared and analyzed the results.



**Figure 1.** Showing data gathering procedure of the study.

### 3. RESULTS AND DISCUSSION

#### 3.1. Evaluation of Learning Performance (Independent Sample t-Test Analysis)

Table 1 shows the results illustration of the overall learning performance of both groups, measured before and after the English teaching conducted by the teacher. We used experimental and control group. Each group has 20 students.

From the data in **Table 1**, the results of the pre-test for both experimental and control groups were slightly different. The post-test scores of the experimental group were higher than those of the control group.

#### 3.2. Evaluation of Learning Performance (Mastering Content)

In the previous part of the statistical analysis, the results were used as covariates. The post-test scores of both groups were used as the variables for the effectiveness of PBL. The independent sample single factor covariate analysis was performed.

Table 2 shows one-way ANOVA summary table on mastering contents for two groups of learning outcomes. We defined as post-test, difference, and between groups. This is important to understand the analysis results. The statistical analysis used a significance level setting of 0.05 (within a 95.1% confidence interval). As shown in **Table 2**, the results of the single factor covariate analysis revealed that the experimental and control groups had significant differences in the post-test outcome ( $F = 11.61, p < 0.001$ ).

**Table 1.** The results illustration of the overall learning performance of both groups, measured before and after the English teaching conducted by the teacher.

Test Item	Group	Number of People	Pre-Test Average	Pre-Test Standard Deviation	Post-Measurement Average	Post-Test Standard Deviation
English test	Experimental group	20	65.71	15.59	78.79	15.89
	Control group	20	54.54	16.61	55.23	27.65

**Table 2.** One-way ANOVA summary table on mastering contents for two groups of learning outcomes

Test Item	Source	SS	df	MS	F Value	Significance
Post-test	SS <sub>B</sub>	5939.21	1	25373.79	11.61	0.002**
Difference	SS <sub>W</sub>	19449.65	37	509.76		
Between groups	SS <sub>T</sub>	25373.79	38			

### 3.3. Evaluation of Performance (Vocabulary Acquisition)

**Table 3** shows one-way ANOVA on vocabulary acquisition for two groups of learning outcomes. We defined data as vocabulary, acquisition, and difference between groups.

The single factor variable analysis is done to examine the vocabulary acquisition for the students of the experimental group; the results are given in **Table 3**. The Levene standard deviation was used to draw the variable difference, where the result was  $F = 12.71, p < 0.01$ . The result shown above, the experimental group students were performed better than the control group students.

**Table 3.** One-way ANOVA on vocabulary acquisition for two groups of learning outcomes.

Test Item	Source	SS	df	MS	F Value	Significance
Vocabulary Acquisition Difference between groups	SS <sub>B</sub>	6.51	1	6.51	12.71	0.001**
	SS <sub>W</sub>	19.58	37	0.56		
	SS <sub>T</sub>	26.15	38			

## 4. CONCLUSION

In conclusion, there were statistically significant differences between the experimental and control groups for student’s reading comprehension for mastering the content and vocabulary acquisition by using PBL. The results indicated, the students who received PBL

learning approached achieved higher performance outcome than student who is not received the PBL learning. Several researchers mentioned that PBL activated cognitive processing and promoted student's higher order thinking (Şendağ & Odabaşı, 2009; Torp & Sage, 2002). Reading comprehension also can be defined as a cognitive process (Kintsch & Walter, 1998), and besides, higher order thinking ability can be count as an ideal output of performance outcomes eventually. In this way, PBL can be used to enhance English student's reading comprehension ability.

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## 6. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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