



The Effects of Project-Based Learning Toward Students' Motivation and Learning on Early Childhood Education at Chatya Manis Palembang

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Abstract. Maintaining student interest and enthusiasm motivated is a common challenge faced by teachers across all grade levels and ability ranges. This study focuses on PBL impacted on the motivation and academic achievement of early childhood education students at Chatya Manis in Palembang. PBL is an instructional strategy that students actively create and work on their own projects, allowing for hands-on learning and real-world application of concepts. Main data collection techniques; (1) Reading test, (2) Questionnaire. The data analysis techniques used are the normality test, one-way ANOVA with homogeneity variances, independent samples t-test, and the simple linear regression test of coefficients and determination coefficient (R^2). A simple linear regression test results with Anova shows that if learning motivation increases, learning achievement also increases. Learning motivation decreases will be impacted to learning achievement. The other finding is that the use of PjBL develop three learning domains: cognitive, affective, and psychomotor. Thus, it can be suggested to students of early childhood education at Chatya Manis, that it is time to prepare and train its teachers to get used to applying PjBL in the teaching and learning processes

Keywords: Learning Domains, Motivation, Project-based Learning

1 Introduction

It is widely recognized that maintaining student engagement and motivation is a persistent challenge for educators worldwide. This issue is especially prominent in early childhood education, where students are still developing foundational skills. As a result, this global challenge has contributed to the evolution of a student-centered educational philosophy, which posits that students learn best when the focus of teaching is on their needs, interests, and active involvement in the learning process.

Motivation is essential in shaping outcomes in enhancing students' learning. It can drive students to achieve and accomplish tasks, stemming from their intrinsic desires and interests. Nevertheless, students' learning can also be influenced by external factors, such as rewards or incentives [1]. While motivation is important, it is not the sole determinant of students' learning outcomes, as various other elements can also contribute to their academic progress.[2].

Teachers play an essential role in enhancing students' learning by providing motivational support [3]. Teachers can boost students' learning motivation by fostering their autonomy, relevance of the content, social connections, competence, the teacher's passion for the subject, and the students' self-confidence. Though motivation can be intrinsic or extrinsic, the teacher needs to create an environment that motivates students' learning [5], [6].

Motivation is interpreted in different ways. It is commonly seen as an internal drive that pushes individuals to participate in an activity because of the fulfillment it provides[6]. Another perspective on motivation sees it as goal-oriented learning, which energizes and directs individuals toward a specific objective [7], [8]. When students are motivated, they are more likely to achieve the goals set for them, whether those goals are personally set or determined by the teacher [9], [10],[11]. Teachers are crucial in fostering an environment that enhances students' learning. They often achieve this by supporting and motivating students' autonomy [12]. Without motivation, the teaching activity in the classrooms will not achieve the goals. This means that motivation has to be kept well [13], [14], [15].

Based on the researchers' observation, when they were at the Early Childhood Education of Chatya Manis Palembang, some problems in the English learning process could be identified. The problems were concerned with students' attention in the English class, students' learning activity, students' boredom with the lesson and the exercise, and students' efforts. The situation of the class was very noisy. Most students talked with their mates and some of them opened a book unrelated to the material. Every time their teachers gave an exercise, several students disturbed other students who did the exercises. Observed, many students felt bored with the lesson and the exercise. When they did an exercise, some of them preferred to look at their friends' work to do it by themselves. All these occurrences indicated that the student's motivation in English learning at Early Education of Chatya Manis Palembang was still low. If such a condition keeps happening, it is guaranteed that the learning objectives of English cannot be achieved.

Motivation is a key element in successful language acquisition. It is viewed as goal-oriented, consisting of a mix of effort, the desire to reach the goal of learning the language, and a positive attitude toward the learning process. [16], [17]. Motivation also plays a crucial role in language achievement, particularly in terms of linguistic

outcomes. These outcomes traditionally include the knowledge of the language's structure, such as vocabulary, grammar, and pronunciation, as well as the development of the four core language skills [18], [19], [20].

To overcome the above problems, the researchers introduced the use of Project Based Learning (PjBL) in the classroom activities to improve students' motivation to learn English reading better. PBL is a teaching approach that allows students to plan their own learning activities, work together on projects, and create outcomes that can be shared with others. Some research found that PjBL can enhance students' motivation and engagement to learn. This kind of interaction is characterized by supportive attitudes, where both classmates and teachers motivate each other. This dynamic influences students' motivation and, in turn, has a positive effect on their academic performance [21], [22], [23], [24], [25]. Teachers play a facilitative role in student-centered learning through PjBL, helping to support students' need for autonomy, which in turn boosts their motivation. [26], [27]. Additionally, students engaged in PjBL are motivated when they observe their teachers' behavior and attitudes in class. If teachers show genuine interest and enthusiasm for a subject, it can inspire similar positive feelings in students, ultimately boosting their motivation to learn that subject [28], [29].

It is impossible to solve the problems related to all of the factors, so the researchers only focus on increasing students' motivation through PjBL. This limitation is based on the observation that researchers have done. The researchers, the teacher, and the headmistress shared the belief that in the process of learning English, the student's motivation had a big contribution to the improvement of the achievement in the teaching and learning activities.

The formulation of the problem in this research is whether there are differences in learning and motivation between the early childhood education students of Chatya Manis Palembang in the academic year of 2023/2024 who are given project-based and conventional learning. The purpose of this study was to determine whether there were differences in learning and motivation between the early childhood education students of Chatya Manis Palembang in the academic year of 2023/2024 given project-based and conventional learning.

2 Method

This study uses a quasi-experimental design with a quantitative approach, involving two sample groups: the experimental group (treatment group) and the control group (comparison group). The design follows a post-test only control group format, where the experimental group receives the Project-Based Learning model and the control group is taught using the conventional learning model. At the end of the learning period, both groups take a post-test to assess their learning outcomes. The samples consist of 25 students in the experimental group and 25 students in the control group. Data collection was carried out using a learning outcomes test comprising twenty items in the form of multiple choices and distributing learning motivation questionnaires consisting of 10 items of Likert scales. The analysis tests use normality tests, one-way ANOVA with homogeneity variances, independent samples t-test, and the simple linear regression test of Coefficients and determination coefficient (R^2) calculated with SPSS 25.

3 Results and Discussion

3.1 Findings

Shapiro-Wilk was used to test normality because the researchers used a small sample or sample of less than 50 samples. To test the research hypothesis, the data must be typically distributed and homogeneous. So that the normality test can be done first. The normality test was carried out from the Pre-Test using the Shapiro-Wilk test which was calculated using SPSS 25 with a significance of 0.05 to find out whether the data was normally distributed or not.

Table 1. Tests of Normality

Group	Kolmogorov-Smirnov ^a			Shapiro-Wilk			
	Statistic	df	Sig.	Statistic	df	Sig.	
Scores	Experimental Class	.164	25	.080	.927	25	.074
	Control Group	.167	25	.071	.943	25	.176

a. Lilliefors Significance Correction

1) Normality Test of Experimental Class

According to the results of the normality test using SPSS 25 in the experimental class and control class, it can be seen in the table above. The researchers obtained data on scores for the experimental class using Shapiro-Wilk. Researchers get $r_{count} 0.074$, $r_{count} > r_{table} (0.074 > 0.05)$. It means that the scores in the experimental class are normally distributed.

2) Normality Test of Control Class

The researcher obtained data of scores from the control class using Shapiro-Wilk with SPSS 25. Researchers get $r_{count} 0.176$, $r_{count} > r_{table} (0.176 > 0.05)$. That is, the scores in the control class are normally distributed.

After testing the normality test, the researchers continued to test the homogeneity. It would be calculated by using SPSS 25 to know whether the data variances of the experimental class and control class would be homogeneous. The researcher used the Levene statistic test to calculate the homogeneity test. The data would be homogenous if the result of the data calculation is higher than 0.05.

Table 2. Test of Homogeneity of Variances

Scores			
Levene Statistic	df1	df2	Sig.
.078	1	48	.781

The data reveals that the significance value for both the experimental and control classes is 0.781. Since this value is greater than 0.05, it suggests that both classes have similar variances and are homogeneous.

Additionally, to determine whether the difference is significant, we need to interpret the following output from the independent test:

Table 3. Independent Samples Test

		Scores	
		Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	.027	
	Sig.	.870	
t-test for Equality of Means	t	2.444	2.444
	df	48	47.909
	Sig. (2-tailed)	.018	.018
	Mean Difference	1.600	1.600
	Std. Error Difference	.655	.655
	95% Confidence Interval of the Difference	Lower Upper	.284 .284
		2.916	2.916

In the table above the researchers used an independent sample T-test. Because the samples used in this study were not the same or the two groups were not paired. This study tested two different classes, namely class A and class B. If the value of Sig. (2-tailed) $0.000 < 0.05$, which means that there is a significant influence between the learning outcomes of the experimental class and the control class. Conversely, if the value of Sig. (2-tailed) of $0.000 < 0.05$ means that there is no significant effect between learning outcomes in the experimental class and the control class. Thus it can be concluded that there is a significant difference between the average student learning outcomes in the experiment class and the control class.

Based on the above calculations in the experimental class and control class, it is known that $t_{\text{count}} = 2.444 > t_{\text{table}} = 1,677$ and Sig. (2-tailed) is $0.018 < 0.05$. To summarize, it can be illustrated that $t_{\text{count}} > T$ table and Sig. (2-tailed) < 0.05 . It means PjBL is effective in improving the early childhood education students' learning.

Table 4. Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients			
	B	Std. Error	Beta	t	Sig.	
1	(Constant)	8.052			3.000	.004
	Motivasi	.164	.064	.347	2.563	.014

a. Dependent Variable: Score

Based on the analysis of simple linear regression in the table the resulting model of coefficient regression is as follows:

$$Y = 8.052 + 0.164X$$

Model of coefficient simple linear regression it is means that:

- $a = 8.052$, which means that the independent variable has a positive effect to learning achievement. The value of the learning achievement constant is 8.052 meaning that if the school gives attention of PjBL to the students, so the motivation to learn is high.
- $b = 0.164$, it means that the value of the simple linear regression variable is 0.164. If there is an increase of 1% to that variable, learning achievement will increase by 0.164 or 16.4% with the assumption other variable is constant

Based on the value of simple linear regression known that motivation has an effect of about 0.164 on learning achievement in early childhood education students at Chatya Manis Palembang.

To determine the extent of influence that learning motivation (the independent variable) has on learning achievement (the dependent variable), the coefficient of determination (R^2) was used. This coefficient indicates the proportion of the variation in the dependent variable (Y) that can be explained by the independent variable (X). A higher R^2 value reflects a stronger ability of the independent variable to explain the dependent variable.

Table 5. Determination Coefficient (R^2)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.347 ^a	.120	.102	2.262

a. Predictors: (Constant), Motivation

Referring to Table 5 above, the results of the analysis show that the magnitude or R square is 0.102 or 10.2% is means that the independent variable can explain the dependent variable of 10.2%. While the rest ($100\% - 10.2\% = 89.8\%$) is explained by other variables not included in this research (not examined). The result of the coefficient of determination test means that there are still other independent variables that affect learning achievement.

3.2 Discussion

The purpose of the research is to examine the effects of PjBL on students' motivation and learning to read comprehension lessons to students of early childhood education at Chatya Manis Palembang. The sample in this research is about 50 students divided into two groups; experimental and control group. The researchers analyzed all statistical data with SPSS 25.

The result of the simple linear regression correlation test of the relationship between motivation and learning achievement shows the value of T-test 2.563 with a significant value is $0.01 < 0.05$ these results indicate that the null hypothesis is rejected and the alternative hypothesis is accepted, which means that there is a correlation between motivation and learning achievement. Simple linear regression analysis also shows the value of R is it 0.347. the value of R shows that there is a correlation between motivation and learning achievement. The result of coefficient regression is $Y = 8.052 + 0.164$ with the contribution of the independent variable to the dependent variable being 10.2% while the remaining 89.8% is contributed by another variable that is not examined. Other variables that can affect include academic ability, teacher quality, familial support, school environment, peer influence, and society.

The result of this study is in line with the research analysis of the views of the seven teachers regarding the provision of PjBL methods in their classrooms [30]. Most stated that PjBL had a positive impact on students' motivation. In addition, the use of PjBL increases student learning motivation, and motivation is an important driving force in the learning process [31]. Students who study using the PjBL method are more successful and have better learning achievement in English classes compared to classes whose teaching is only using textbooks [32], [33]. The implementation of PjBL offered EFL teachers, with similar teaching practices, practical ideas for improving their teaching.

PjBL helps students reach specific learning goals in the classroom while also fostering positive trends in teaching and learning that can continue to grow [34]. The primary reason why PjBL can enhance students' learning is that it fosters the development of three key learning domains—cognitive, affective, and psychomotor—throughout the teaching and learning process [35], [36], [37].

The cognitive domain pertains to mental abilities, encompassing skills such as remembering, understanding, applying, analyzing, synthesizing, and evaluating information.[38], [39]. The cognitive domain includes processes like knowledge, comprehension, application, analysis, synthesis, and evaluation. Bloom's Taxonomy later revised this domain to include remembering, understanding, applying, analyzing, evaluating, and creating. On the other hand, the affective domain pertains to attitudes and values, encompassing behaviors related to feelings, interests, attitudes, emotions, and personal values [40]. Attitude plays a crucial role in determining one's success in learning. Individuals who lack interest in certain subjects often struggle to achieve optimal learning outcomes. However, if a person has a strong cognitive foundation, changes in their attitude can be anticipated. The characteristics of effective learning manifest in students through various behaviors. In Bloom's Taxonomy, the affective domain is further broken down into five levels: receiving, responding, valuing, organizing, and characterization.

The psychomotor domain refers to the area of learning outcomes that are achieved through the development of skills[41]. The skill itself reflects an individual's proficiency in performing a specific task. The psychomotor domain is concerned with the ability to act or demonstrate skills after a person undergoes a particular learning experience. Similar to cognitive and affective learning outcomes, psychomotor outcomes are also organized in a hierarchical manner.

Implementing the PjBL model in the teaching and learning process can enhance students' motivation and academic performance in early childhood education at Chatya Manis Palembang. Students show greater interest and engagement when listening to the teacher's explanations of the subject matter. Beyond boosting motivation, the PjBL model also helps improve student outcomes in Reading subjects. The findings of this study offer valuable insights into the impact of Project-Based Learning on both motivation and learning outcomes in English reading. This research holds significant potential for educators in refining their teaching strategies.

A limitation of this study is its narrow focus, as it only involves a single early childhood education institution. The recommendations from this study emphasize the importance of using diverse teaching strategies, particularly the Project-Based Learning model, to enhance student performance and boost motivation, which in turn encourages students to engage more actively in completing learning tasks.

4 Conclusion

According to the data analyses that have been conducted, thus, it can be concluded that students who are taught using the PBL model in the experimental class show higher learning outcomes and motivation than those who are taught using conventional learning in the control class, and the effects of project-based learning toward students of early childhood education at Chatya Manis Palembang is classified good. Further research suggests conducting on a larger scale, not just at one school of early childhood

education, so that learning achievement and motivation can be compared across schools of childhood education that use the Project-Based Learning model.

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