

The Effect of Project-Based Learning Strategy (PJBL) and Learning Environment on Students' Learning Interests at SMKN 1 Boalemo n The Course of Creative Products and Entrepreneurship (PKK)

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Abstract

This study aims to examine the influence of project-based learning (PjBL) strategies and the learning environment on students' learning interest in the Creative Products and Entrepreneurship (PKK) subject at SMK Negeri 1 Boalemo. The research was motivated by low levels of student learning interest, as indicated by high absenteeism rates, low enthusiasm, and academic performance that fails to meet the Minimum Completion Criteria (KKM), particularly in the Computer and Network Engineering and Telecommunications departments. Employing a quantitative approach with a survey method, data collection was conducted through observation, questionnaires, and documentation. The population included all grade XI and XII students, with a random sample of 77 students. Data analysis was carried out using multiple linear regression to assess both the simultaneous and partial effects of the independent variables—PjBL strategies (X_1) and learning environment (X_2)—on the dependent variable, students' learning interest (Y). The findings indicate that both variables have a significant simultaneous effect on students' learning interest, with an Adjusted R^2 value of 0.984, meaning that 98.4% of the variation in learning interest can be explained by the PjBL strategy and learning environment. Partially, the learning environment exerts a stronger influence, contributing 81% ($\beta = 0.810$), while the PjBL strategy contributes 18.57% ($\beta = 0.185$). The derived regression equation is $\hat{Y} = -94.361 + 0.365X_1 + 1.265X_2$. These results highlight the importance of both PjBL strategies and conducive learning environments in enhancing student learning interest, with the learning environment having the greater impact.

Keywords: Project Based Learning (PjBL) Strategy, Learning Environment, Learning Interest, Creative Products and Entrepreneurship, Vocational High School

Introduction

Education plays an important role in forming quality human resources who are ready to face the demands of the times (Mukti et al., 2023). At the Vocational High School (SMK) level, learning is directed not only at mastering theory, but also at developing entrepreneurial skills and attitudes. One of the strategic subjects in this context is Creative Products and Entrepreneurship (PKK), because it aims to instill an independent, innovative, and business and industrial-oriented spirit. However, various studies and findings in the field show that students' interest in learning PKK subjects is still low, especially in the Computer and Network Engineering and Telecommunications (TKJT and TKL) departments.

Interest in learning is an internal tendency that encourages students to be actively involved in the learning process (Ryan & Deci, 2009). Indicators include interest in the lesson, feelings of pleasure while learning, attention to the material, independent learning efforts, and good

learning outcomes (Pamungkas & Halimah, 2021). This interest in learning is not only influenced by factors from within the student, but also by external factors, such as learning strategies used by teachers and the conditions of the learning environment (Hanrahan, 1998).

Relevant and contextual learning strategies are the key to generating students' interest in learning. According to Nayak et al. (2024), One strategy that has proven effective is Project-Based Learning (PjBL), which provides space for students to learn actively through real projects related to everyday life or the world of work. This strategy emphasizes the development of critical thinking skills, problem solving, collaboration, and reflection, all of which contribute to increased engagement and motivation to learn. In addition to learning strategies, the learning environment also plays a crucial role in shaping students' learning interests (Cayubit, 2022).

According to Soran (2025), a comfortable, interactive, and supportive environment both in terms of physical (facilities, classrooms) and psychosocial (student-teacher relationships, discipline, peer support) can create a positive learning atmosphere. When students feel valued, safe, and supported, they will be more motivated to learn actively. Based on this background, this study was conducted to analyze the effect of project-based learning strategies and learning environments on students' learning interests in Creative Products and Entrepreneurship subjects at SMK Negeri 1 Boalemo. This study is important to provide an empirical basis for developing a more effective and relevant learning approach to the needs of vocational high school students in facing the world of work.

Methods

This study uses a quantitative approach with an associative research type, which aims to determine the effect of two independent variables, namely project-based learning strategies (PjBL) and learning environment, on one dependent variable, namely student learning interest. The population in this study were all students in grades XI and XII at SMK Negeri 1 Boalemo in the 2024/2025 academic year, who took the Creative Products and Entrepreneurship (PKK) subject. Sampling was carried out using a random sampling technique, with a total of 77 students as respondents. This technique was chosen to provide an equal opportunity for each member of the population to become a sample. The data collection techniques used were observation, questionnaires (closed questionnaires), documentation, and interviews. The instrument used was a Likert scale questionnaire with five answer choices, from strongly disagree to strongly agree. The validity of the instrument was tested using the item validity test with Pearson Product Moment correlation, and the reliability was tested using Alpha Cronbach, with the results showing that all instruments had a high level of reliability. The data were analyzed using multiple linear regression analysis to determine the simultaneous and partial effects between the independent variables and the dependent variables. Before the regression analysis was carried out, the data were tested through the classical assumption test which includes: Normality test, Multicollinearity test, Heteroscedasticity test. The results of the analysis showed an Adjusted R^2 value of 0.984, which indicates that 98.4% of the variation in students' learning interest can be explained by the two independent variables. The significance test was carried out through the F test (simultaneous) and t test (partial), with the results showing that both variables have a significant effect on students' learning interest, with the learning environment as the most dominant factor ($\beta = 0.810$). Based on the results of the analysis, the following regression equation was obtained: $\hat{Y} = -94,361 + 0,365X_1 + 1,265X_2$

where: $\hat{Y}$ = Student learning interest

X1 = Project-based learning strategy (PjBL)

X2 = Learning environment

Results and Discussion

Table 1. Results of Simultaneous Regression Tests of Learning Environment Variables and Project-Based Learning Strategies

ANOVAa						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.397.769	2	1.698.885	2.320.429	.000b
	Residual	54.179	74	.732		
	Total	3.451.948	76			
a Dependent Variable: Y						
b Predictors: (Constant), X2, X1						

The results of the simultaneous regression test shown in Table. 1 using analysis of variance (ANOVA) provide information on the effect of project-based learning strategies (X1) and learning environment variables (X2) on the dependent variable Y. Based on the table, the resulting F value is 2,320,429, which indicates that the overall regression model can explain the variation in the data well. The Sig. value = 0.000 indicates that the significance value is less than 0.05, which means that this regression model is significant. Thus, it can be concluded that the project-based learning strategy and learning environment variables simultaneously have a significant effect on variable Y. This indicates that both independent variables have a real contribution in influencing the results measured by the dependent variable in this study. Thus, the results of this simultaneous regression test indicate that the regression model involving both variables can explain a significant effect on students' learning interest, allowing researchers to continue further analysis.

Table 2. Results of Determination Coefficient Analysis (R2)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.992a	.984	.984	.85565
a Predictors: (Constant), X2, X1				

The results of the Determination Coefficient (R2) analysis show that the R value is 0.992, which means that there is a very strong relationship between the independent variables (project-based learning strategies and learning environment) and the dependent variable (learning interest). The R Square (R²) value of 0.984 indicates that 98.4% of the variation in students' learning interest can be explained by the project-based learning strategy (X1) and learning environment (X2) variables together. The remaining 1.6% is explained by other factors outside this research model. Meanwhile, the Adjusted R Square value of 0.984 also indicates that this model remains strong even though it has been adjusted for the number of predictor variables and samples. The Standard Error of the Estimate value of 0.85565 indicates a relatively small level of prediction error, so this regression model can be said to be very good at predicting learning interest based on the two independent variables. Thus, this regression model has a high level of accuracy and reliability for use in further analysis.

Discussion

The results of this study indicate that project-based learning strategies (PjBL) and learning environments have a significant influence on students' learning interest in Creative Products and Entrepreneurship (PKK) subjects at SMK Negeri 1 Boalemo. Simultaneously, the two variables explain 98.4% of the variation in students' learning interest. This finding strengthens the theory that learning strategies and learning environment conditions are external factors that greatly determine students' motivation and involvement in the learning process (Ilahude et al., 2023). Partially, the learning environment has a more dominant influence than project-based learning strategies, with a beta coefficient value of 0.810, while PjBL has a contribution of 0.185. This shows that the physical comfort of the learning space, interpersonal relationships, availability of facilities, and a supportive learning climate greatly determine students' readiness and interest in participating in learning.

This finding is in line with research by Dzulfahmi & Aimmah (2023), which shows that a conducive learning atmosphere can increase students' focus, interest, and enthusiasm for learning. Although the influence of the PjBL strategy is smaller than the learning environment, its contribution is still significant. This strategy is considered capable of creating fun and meaningful learning because it provides students with the opportunity to complete real projects collaboratively. PjBL not only stimulates cognitive aspects, but also develops social skills, independence, and responsibility. This is consistent with the opinion of Almulla (2020), who stated that project-based learning strategies are effective in increasing student engagement and interest because they emphasize direct and reflective learning experiences.

This finding also confirms that the challenge of low student interest in learning does not only come from monotonous teaching methods, but also from the quality of the school environment that does not support optimally (Chaeroh & Nur, 2025). At SMK Negeri 1 Boalemo, it was found that uncomfortable classrooms, limited practice tools, and minimal positive interaction between students and teachers also worsened students' interest in learning, especially in the TKJT and TKL majors. The implication of these results is the importance of synergy between innovative learning approaches and the creation of a supportive learning environment. Schools need to strengthen teacher capacity in implementing PjBL consistently, while improving the quality of the learning environment as a whole, both physically, psychologically, and socially. Thus, students will be more motivated and have a high interest in learning skills subjects such as PKK.

Conclusion

The results of this study indicate that project-based learning (PjBL) strategies and learning environments have a significant influence on students' learning interest at SMKN 1 Boalemo. The results of the analysis show that the effective implementation of PjBL can increase students' learning interest by 18.57%, because this method encourages students to be directly involved in the learning process through real projects that are relevant to their lives. In addition, a conducive learning environment—which includes a positive relationship between teachers and students, adequate learning facilities, and a comfortable classroom atmosphere—provides the largest contribution, namely 81%, to students' learning interest. Thus, this study shows that these two variables complement each other in shaping students' learning interest, where understanding and enjoyable learning experiences can increase student engagement. Overall, these two factors explain 98.4% of the variation in students' learning interest, emphasizing the importance of integration between innovative teaching strategies and the creation of a supportive learning environment. These findings recommend that schools and educators continue to develop interesting teaching methods and create a

motivating learning atmosphere, in order to increase students' learning interest sustainably and optimally.

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