
PROBLEM-BASED LEARNING, CHARACTER EDUCATION APPROACH, AND THE IMPACTS ON THE STUDENTS' ENTREPRENEURIAL ATTITUDES AND CRITICAL THINKING SKILLS

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Abstract

This study aimed to determine the effect of implementing learning as well as producing a more effective, efficient, and meaningful economic learning through the application of problem-based learning in the Economic subject with a character education approach and its impact on the student's entrepreneurial attitudes and critical thinking skills. The research subjects were 80 students of the twelfth (XII) grade of Social Sciences in one madrasah in Jambi City. This research was a quasi-experiment with a control group design pretest-posttest design. The data collection used tests. The data analysis technique used a quantitative analysis. The results of the study indicated that there was an increase in student's character in the experimental class, entrepreneurial attitudes, and critical thinking skills compared to the control class group. Also the findings showed that students had a very good character in the experimental class, were able to think critically, and showed a truly entrepreneurial attitude compared to the control group.

Keywords: character education, entrepreneurial attitude, critical thinking skill, problem-based learning

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Introduction

The economic learning based on the education projections in the 21st century and the 4.0 industrial revolution with the demands of the 2013 curriculum needs the ability of professional teachers to manage the learning (Habibi et al., 2021). Additionally, the depletion of character values (Lickona, 1996) of the Indonesian culture gives a sense of concern for the educators in creating a quality educational output, character, entrepreneurial spirit and having the skill to think critically and able to answer various socio-economic problems in society (Menteri Pendidikan dan Kebudayaan, 2018) and plays an active and competitive role in various fields of life (Herlambang et al., 2021). When it is related to the demands of the 2013 curriculum and the objectives of economic learning in Government Regulation Number 22 of 2006 stating that economic learning forms a wise, rational, and responsible attitude by having knowledge and skills in economics that is beneficial to oneself itself, household, community, and country. This objective can show that economic learning does not

only refer to curricular goals so that teachers and educational institutions that apply it should make innovative improvements, especially in creating output or graduates who can face economic challenges in lives.

The use of *problem based learning* (PBL) model aims to prepare students to think critically and analytically and also able to get and use learning resources appropriately. So it can be interpreted that PBL is a learning process which is the starting point of learning based on problems in real life and from these problems the students are *stimulated* to learn problems based on the knowledge and experiences they have encountered in their previous life (*prior knowledge*) so that from this *prior knowledge* the new knowledge and experiences will be formed.

The diversity of human characters that interact in schools, various cultures, activities, and student habits are all components that must be managed by teachers as educators without distinguishing gender, ethnicity, race, culture, social strata, religion, also preparing students to be knowledgeable, independent, and entrepreneurial (Menteri Pendidikan dan Kebudayaan, 2018; Jeynes, 2019; Mukminin et al., 2019; Prasojo et al., 2020). The diversity of these factors when they are combined with problem-based learning and character education, especially in fostering entrepreneurial attitudes and training student's critical thinking skills is expected to be an alternative learning for teachers in realizing meaningful and quality learning. This study aimed to determine the effect of implementing learning as well as producing a more effective, efficient, and meaningful economic learning through the application of problem-based learning in the Economic subject with a character education approach and its impact on the student's entrepreneurial attitudes and critical thinking skills.

Methodology

Research design, site, and respondents

This was a *quasi-experimental* study analysis. In this design, two groups were selected randomly to determine which group was the experimental class and which was the control class. Furthermore, the two groups were given a pre-test to determine the initial state of the difference between the experimental group and the control group. The results of the initial test (pre-test) were good if the scores in the experimental class were not significantly different. Furthermore, the experimental class group was given a treatment in the form of problem based learning in economics learning with a character approach while the control class group did not use problem based learning in economics learning, but used expository learning methods, namely student-centered learning and mostly used lectures, questions and answers, and discussion. After being treated, a final test (post-test) was conducted to see the final results of students' entrepreneurial attitudes and critical thinking skills in implementing economic learning for their lives.

The population in this study was all students of class XII Social Studies in one Madrasah in Jambi City, namely classes of *XII IPS-1*, *XII IPS-2*, and class *XII IPS-3* with the number of students in each class was 40 students with a total of students from 3 classes, namely 120 students. The determination of the sample was done by giving a pre-test of the number of population classes. Based on the results of the highest pre-test, the 1st and 2nd classes were used as the basis for selecting the experimental class and the control class. Based on the results of the sampling in this study, the class *XII IPS-1* was the experimental class and the class *XII-2* was the control class with a total of 80 students from both classes.

Data collection and analysis

In this study, tests were conducted on experimental class and control class students in the form of a written test with a closed questionnaire in a certain number with details of 40 questions measuring character education, 15 questions measuring entrepreneurial attitudes, and 25 questions measuring students' critical thinking skills as measured by Likert scale. Pre-test was conducted to determine the students' initial ability in learning economics, especially the basic accounting equations and other materials before being given a treatment by using character-based economic learning and learning with an expository approach. Post-test was conducted to determine the final ability of students in learning economics, especially the basic accounting equations and other materials after being given a treatment by using character-based economic learning with economic learning by using an expository approach. The initial test data (pre-test) should reflect similar mean values and the same variance (homogeneous). Therefore, the data from the initial test results were tested for the homogeneity first while the One-Way ANOVA test with SPSS 25 to determine the homogeneity of the data. This analysis was used to determine two or more groups that were significantly different. In this analysis, two methods were used. First, to look at the average difference by comparing alpha with the probability number (Sig.) in the ANOVA table. Second, to look at the data variance by comparing alpha with the probability number (Sig.) in the Test of Homogeneity of Variances table.

Findings

The use of the Mancova test in this study was based on the number of the experimental class group and the control class group samples in the following data:

Table 1. *General linear model between-subjects factors*

Treatment Factors	Value Label	N
Treatment	1.00 Experiment Class	40
	2.00 Control class	40

Based on the table above, there were 40 respondents that were analyzed for each group.

Table 2. *Descriptive statistics*

Variables	Treatment	Mean	Std. Deviation	N
Enhancement of Entrepreneurial Attitude	Experimental	11.2250	4.59926	40
	Control	3.4250	2.62031	40
	Total	7.3250	5.40692	80
Enhancement of Critical Thinking Skills	Experiment	13.4250	6.40868	40
	Control	6.1000	3.65710	40
	Total	9.7625	6.36096	80
N Gain on Learning Outcomes	Experimental	.4407	.13728	40
	Control	.1752	.18514	40
	Total	.3080	.20994	80

The table above shows the results of descriptive tests of the increasing \ value of entrepreneurial attitudes and critical thinking skills also N Gain on learning outcomes as the dependent variable of each group in experimental class (treatment). The test results indicated that the highest mean or average enhancement of entrepreneurial attitudes was 11.2250 in the experiment class group while the lowest was 3.4250 in the control class group. Furthermore, the mean value in the experiment class and control class group was 7.3250. The table also explains that the results of the mean value or average increase in the highest critical thinking skills was 13.4250 in the experiment class group (treatment) while the lowest mean result was 6.100 shown in the control class group. The result of the mean value between the experimental class group and the control class group was 9.7625. Furthermore, the result of the mean value or the mean of N Gain of the highest learning outcomes was 0.4407 in the experiment class group (treatment), while the lowest mean result was 0.1752 in the control class group. For the result of the mean value between the experimental class group and the control class group was 0.3080. The difference in the mean value of the increase in the value of entrepreneurial attitudes, critical thinking skills, and N Gain between the two groups of the experiment class (treatment) and the control class group would be tested whether significant or not using the Mancova and ANCOVA test.

Furthermore, below were the results of the covariance homogeneity test using Box's M with the Box's M test p-value of $0.000 < 0.05$, so that it accepted H1 where it meant not homogeneous, then the Mancova test was not valid to use. However, many opinions stated that if the normality and homogeneity assumption were not met, the Pillai Trace test can be used as a Mancova calculation, where Pillai Trace is robust to violations of the normality and homogeneity assumption. For more details, the results of a calculation using Box's Matrices can be seen in the table below.

Table 3. *Box's test of equality of covariance matrices*

Box's M	31 365
F	5009
df1	6
df2	44080,302
Sig.	.000

Tests the null hypothesis that the observed covariance matrices of the dependent variables are equal across groups.

a. Design: Intercept + character enhancement with PBL + treatment

Below is the analysis test by using Mancova. For the use of Mancova itself, there were several types of tests including; Pillai's Trace, Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root. Based on the assumptions of normality and homogeneity by using the Mancova test from Pillai Trace, the test results can be used to answer the multivariate hypothesis. For more details, the Mancova calculations of various types can be seen in the following table.

Table 4. *Mancova multivariate tests^a*

Effect		Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Intercept	Pillai's Trace	.429	18 747 ^b	3,000	75,000	.000	.429
	Wilks' Lambda	.571	18 747 ^b	3,000	75,000	.000	.429
	Hotelling's Trace	.750	18 747 ^b	3,000	75,000	.000	.429
	Roy's Largest Root	.750	18 747 ^b	3,000	75,000	.000	.429
Character enhancement with PBL	Pillai's Trace	.260	8,791 ^b	3,000	75,000	.000	.260
	Wilks' Lambda	.740	8,791 ^b	3,000	75,000	.000	.260
	Hotelling's Trace	.352	8,791 ^b	3,000	75,000	.000	.260
	Roy's Largest Root	.352	8791 ^b	3.000	75.000	.000	.260
Treatment	Pillai's Trace	.226	7,280 ^b	3,000	75,000	.000	.226
	Wilks' Lambda	.774	7,280 ^b	3,000	75,000	.000	.226
	Hotelling's Trace	.291	7,280 ^b	3,000	75,000	.000	.226
	Roy's Largest Root	.291	7,280 ^b	3,000	75,000	.000	.226

a. design: intercept + character enhancement with pbl + treatment

b. exact statistics

Based on the Mancova test with the Pillai Trace calculation as described above, it can be explained that an enhancement character with PBL significantly influenced the enhancement of entrepreneurial attitudes, critical thinking skills, and N Gain on learning outcomes at once and for the F count value of 8,791 with a p-value of 0.000 < 0.05. Thus, H1 was accepted with the effect was 26,0 % significant. Also, there was a given treatment that significantly influenced the enhancement of entrepreneurial attitudes, critical thinking skill, and N Gain on learning outcomes also for F count value was 7.280 with a p-value 0,000 < 0,05. Thus, H1 was accepted with the effect was 22,6%, which was significant. Furthermore, below was the variance homogeneity test as the second condition of the ANCOVA test. The result was the sig or p-value of increasing entrepreneurial attitudes and critical thinking skills < 0.05, so H1 was accepted and this means that the variable of enhancement of entrepreneurial attitudes and critical thinking skills were not homogeneous invariance. This happened because the homogeneity of the variants was not met, so the second ANCOVA test on enhancement of entrepreneurial attitudes and critical thinking skills must be corrected with Brown Forsythe or Welch's F. However, although it was not corrected, the experts stated that ANCOVA was still robust against homogeneity violations. Meanwhile, N Gain on learning result got a p-value of 0.347 > 0.05, so that H0 was accepted where it means the variance of N Gain on learning outcomes between treatments was not significantly different or met the homogeneity assumption. For more details, it can be seen in the following table.

Table 5. *Levine’s test of equality of error variances^d*

	F	df1	df2	Sig.
Attitude Improvement	9.151	1	78	.003
Increased Critical Thinking	8.927	1	78	.004
N Gain on Learning Outcomes	.897	1	78	.347

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
Design: Intercept + Enhancement of PBL + Treatment

Furthermore, the results of the 3 types of ANCOVA test can be seen as follows.

Table 6. *Tests of between-subjects effects*

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	Enhancement of Entrepreneurial Attitude	1373.850 ^A	2	686.925	56.528	.000	.595
	Enhancement of Critical Thinking Skills	1191,626 ^b	2	595.813	22.883	.000	.373
	Enhancement of N Gain on Learning Outcomes	1,603 ^c	2	.802	32.849	.000	.460
Intercept	Enhancement of Entrepreneurial Attitudes	185.672	1	185.672	15,279	.000	.166
	Enhancement of Critical Thinking Skills	553,613 21,262.216	1			.000	553,613
	Enhancement of N Gain Learning Outcomes	.428 17,524.185	1			.000	.428
Character Enhancement with PBL	Enhancement of Entrepreneurial Attitude	157,050 12,924.144	1			.001	157,050
	Enhancement of Critical Thinking Skills	118,514.036 .056	1		4,552		118,514
	Enhancement of N Gain Learning Outcomes	.193 7,903 .006 .093	1				.193
Treatment	Enhancement of Entrepreneurial Attitude	127,377 10,482	1		127,377	.002	.120
	Enhancement of Critical Thinking Skills	127,667.060	1		4,903	.030	127,667
	Enhancement of N Gain on Learning Outcomes	.140.019 .069	1		5,742		.140
Error	Enhancement of Entrepreneurial Attitude	935.700	77	12,152			
	Enhancement of Critical Thinking Skills	2004.861	77	26.037			
	Enhancement of N Gain on Learning Outcomes	1,879	77	.024			

Total	Enhancement of Entrepreneurial Attitude	6602.000	80
	Enhancement of Critical Thinking Skills	10821.000	80
	Enhancement of N Gain on Learning Outcomes	11.070	80
Corrected Total	Enhancement of Entrepreneurial Attitude	2309.550	79
	Enhancement of Critical Thinking Skills	3196.488	79
	Enhancement of N Gain on Learning Outcomes	3.482	79
a. R Squared = .595 (Adjusted R Squared = .584)			
b. R Squared = .373 (Adjusted R Squared = .357)			
a. R Squared = .460 (Adjusted R Squared = .446)			

From the ANCOVA test results on the enhancement of entrepreneurial attitudes, the F count value was 12,924, and a p-value of 0.001 <0.05 so that it means that the effect was significant with the amount of 14.4%. Furthermore, if it was seen from the experimental treatment with an F count value of 10,482 and with a p-value of 0.002 <0.05, it meant that the experimental treatment had a significant effect, with the amount of 12%. Meanwhile, simultaneously the character enhancement with PBL and experimental treatment had an F count value was 56.528 with a p-value of 0.000 <0.05, it means that the effect was significant with the amount of 59.5%. Furthermore, if it was corrected with standard error, the amount of the effect was 58.4% (Adjusted R Square). Furthermore, from the ANCOVA test results on the enhancement of character values through PBL with critical thinking skills, it was obtained 4.552 of F count with a p-value was 0.036 <0.05. This meant that there was a 5,6% of significant effect between enhancement of character values through PBL with the critical thinking skill. The experimental treatment of critical thinking skills had an F value of 4.903 and a p-value of 0.030 < 0.05 so that it means that the effect was significant with the amount of 6%. Whereas simultaneously, the enhancement of character with PBL and treatment had an F count value of 22,883 with a p-value of 0,000 <0.05, so it means that the effect was significant with the amount of 37.3%. If it was corrected with a standard error, the amount of the effect was 35.7% (Adjusted R Square).

Furthermore, to analyze the ANCOVA test results on the enhancement of N Gain on learning outcomes with character enhancement through PBL has an F count value of 7,903 with a p-value of 0.006 <0.05, so it meant that the effect was significant with the amount of 9.3. %. For the experimental treatment of N Gain on learning outcomes, the F count value was 5.742 with a p-value of 0.019 <0.05, so it meant that the effect was significant, with the amount of 6.9%. Meanwhile, simultaneously the enhancement of character with PBL and treatment had an F count value of 32,849 with a p-value of 0.000 <0.05. Thus, it meant that the effect was significant with the amount of 46%. If it was corrected with standard error, the amount of the effect was 44.6% (Adjusted R Square).

Discussion

Each value obtained from the pretest and posttest results for all research variables was compared and tested using statistics to determine whether the changes that occurred were appropriate with the research hypothesis or vice versa. Furthermore, the results of the presented pretest and posttest showed that there was an increased value for the experimental class group on all research variables whereas in the control class group, the pretest score was on the PBL variable with a higher character than the score of the experimental class group. For statistical tests, it was conducted with Mancova (*multivariate analysis of covariance*). The test with Mancova was also known as a *multivariate test* because there was more than 1 or > 1 dependent variable that was an enhancement of entrepreneurial attitudes, student's critical thinking, and N Gain on student's learning outcomes. To conduct the Mancova test, first, there was the ANCOVA test whose numbers were adjusted for the number of dependent variables while the assumptions of the ANCOVA test had been met and seen from the ANCOVA test which was corrected by the Brown Forsythe or Welch's F test that robust to homogeneity violations. However, the ANCOVA test was still robust enough to homogeneity violations. Meanwhile, the test results between the pretest and posttest scores for all variables in the treatment group using the Pearson and Kolmogorov Smirnov formula with the Lilifors correction approach showed that the test results between the pretest and posttest score had a positive result of *Skewness* the degree of asymmetry of the frequency curve was normally distributed / almost normal. This was from the value of the skewness obtained a negative (minus) less than 0 (zero). Furthermore, the size of the degree of curvature of the frequency distribution curve or *kurtosis* showed a normal distribution. This can be seen from the kurtosis value closed to 0 (zero). Meanwhile, for the results of the normality test of the enhancement of character values with PBL, entrepreneurial attitudes, critical thinking, and N Gain on learning outcomes of each variable in all treatment groups (experiments) using the Liliefors Test (correction of Kolmogorov Smirnov, that in SPSS version 23 or newest, all Kolmogorov Smirnov tests were corrected by Liliefors) showed that all variables had a sig or p-value <0.05, so it means that all normality tests were accepted by H1 or had an abnormal distribution.

Furthermore, based on the results of the variable normality test using the Kolmogorov – Smirnov formula with the Liliefors formula with a p-value <0.00 explained that in line with the result, it can be concluded that the graph showed nothing was distributed normally, so this means H1 was accepted. Based on the results of the correlation test between the dependent variables, it can be explained that the value obtained for p-value (sig) <0.05 so that it means that all the dependent variables were significantly correlated. Likewise, the correlation between the covariate variable and the dependent variable showed that the p-value was <0.05, so it means that the covariate variable had a significant correlation with all the dependent variables, so the requirements for testing using Mancova had been met, so to explore the relationship between several categories of independent variables with two or more dependent variables, testing techniques using the Mancova test can be used. Based on the descriptive test results, the pretest and posttest score for all research variables in the experimental class group and the control class group can be seen for the variable of character value enhancement with PBL, entrepreneurial attitudes, critical thinking skills, and the final number of N gain on learning outcomes showed that the number of means, standard deviation, variance, minimum value, maximum value, and range value for the experimental class group had a significant

increase compared to the number of means, standard deviation, variance, minimum value, maximum value, and range value obtained by the class group control.

Conclusion

The implementation of this learning was included in the teacher's lesson plan when compiling learning tools by giving special project assignments to students within a predetermined time. In the implementation of this learning, the students were asked to be more active in finding the problems that they encountered in life, especially in the economic field, and also to find the right solutions for these problems. Besides, through this learning, the students can compare and prove between the learning theories received from the teacher or the textbooks they read with the real conditions (*reality*) of everyday life. In the experimental class of this research shows a significantly estimated average of character enhancement that using *problem-based learning* for all treatment groups was 21.8875, with an enhancement entrepreneurial attitude of the experimental class was 9.398, and the control class was 5.252. Furthermore, the critical thinking skill in the experimental class was 11,838, and the control class was 7,687. Whereas for N Gain on learning outcomes of the experimental class group was 0.377 and the control class was 0.239, so it significantly proved that the experimental class was better in enhancing the N Gain on learning outcomes than the control class group, whereas the descriptive results showed that the experimental class students had very good character, able to think critically, and a truly entrepreneurial attitude compared to the control class students.

References

- Habibi, A., Yaakob, M.F.M., Mukminin, A., Muhaimin, M., Prasajo, L.D., Yusop, F.D. and Muzakkir, M. (2021), "Teachers' digital technology access to motivation, skills and use: a structural equation modeling study", *Aslib Journal of Information Management*,
- Herlambang H, Fitri AD, Mukminin A, Muhaimin M, Hidayat M, Elfiani E, Shafira NNA, Puspasari A, Tarawifa S, Salam AA, Yaakob MFM, Habibi A. (2021). Quality Assurance for Sustainable Higher Education: Structural Equation Modeling. *Sustainability*, 13(9):4954.
- Jeynes, W. H. (2019). A meta-analysis on the relationship between character education and student achievement and behavioral outcomes. *Education and Urban Society*, 51(1), 33-71.
- Lickona, T. (1996). Eleven principles of effective character education. *Journal of Moral Education*, 25(1), 93–100.
- Menteri Pendidikan dan Kebudayaan. (2018). *Peraturan menteri pendidikan dan kebudayaan nomor 18 Tahun 2018 tentang penguatan pendidikan karakter pada satuan pendidikan formal*. Jakarta: Indonesia.
- Mukminin, A., Habibi, A., Prasajo, L. D., Idi, A., & Hamidah, A. (2019). Curriculum reform in indonesia: Moving from an exclusive to inclusive curriculum. [Kurikularna prenova v Indoneziji: Prehod od izključujočega k vključujočemu kurikulum] *Center for Educational Policy Studies Journal*, 9(2), 53-72. doi:10.26529/cepsj.543
- Prasajo, D. L., Habibi, A., Mukminin, A., Sofyan, Indrayana, B., & Anwar, K. (2020). Factors Influencing Intention to Use Web 2.0 in Indonesian Vocational High Schools. *International Journal of Emerging Technologies in Learning (IJET)*, 15(5), 100-118.