

Journal of Economic Education



http://journal.unnes.ac.id/sju/index.php/jeec

Implementation of Project Based Learning Model to Improve the Learning Results of Economic Subjects of SMA Negeri 15 Semarang

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Article Info	Abstract
Article History : Received September 2020 Accepted October 2020 Published June 2021	Market material is an economic subject matter in the study of more using lectures and memorization. This leads to a lack of ability for students to develop their potential and make students tend to be passive. Therefore, it takes a learning model that able to make students more active in learning. One of the learning
Keywords: Beliefs, Attitudes, Subjective Norms, Behavioral Control, Perceptions, Entrepreneurial Intentions	models that can improve the quality and results of the economic learning of Model Project Based Learning (PjBL) with a Scientific approach. The purpose of this study is to know the Project Based Learning model is more effective in improving the results of the study of economic subjects of SMA Negeri 15 Semarang. This research used experimental research with nonequivalent control group design. The method of collecting data in this study used observation methods and tests. The population number in this study was 108 students. Based on the results of the analysis, an increase in the learning outcomes of economic subjects for the experimental group amounted to 27.31% with an average score of 89.36 and an increase in the learning outcomes of economic subjects for the Project Based Learning Model is more effective than conventional learning model or lecture in improving the results of the study of the study of economic subjects of SMA
	Negeri 15 Semarang.

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p-ISSN 2301-7341 e-ISSN 2502-4485

INTRODUCTION

Teacher Centered models must be balanced or combined with active and independent learning models based on modern cognitive principles to foster the active and creative role of students (Student Centered), thus improving student learning outcomes. It can be seen from the results of economic learning obtained by grade X students of IPS SMA Negeri 15 semarang is still not maximal even though in learning has used a learning model relevant to the prevailing curriculum.

Table 1. Student Re-Learning Results ofEconomic Subjects

	Class			Amount	description
	Х	Х	Х		
	IPS 1	IPS 2	IPS 3		
MIN	46	58	54	46	
MAX	90	96	94	96	
Average	68.56	71.5	72.78	70.94	
40-49	2	0	0	2	incomplete
50-59	8	1	3	12	incomplete
60-69	9	21	16	46	incomplete
70-79	10	3	5	18	complete
80-89	6	10	10	26	Complete
90-100	1	1	2	4	Complete
Amount	36	36	36	108	

Source: Processed Primary Data (2020)

Based on table 1.1 above it can be known that the number of students who have not completed learning as many as 60 students or by 55.55% which means greater than the completed students as many as 48 students or by 44.45%. This illustrates that the learning results obtained by students are not maximal. So with that reality it seems that teachers need to be more creative and innovative in the ongoing learning process, and not dominate their role in the learning process. One of the things that can be seen as improving students' learning outcomes in economic learning, is project-based learning. According to Chiang and Lee (2016) Project Based Learning's learning involves students in authentic situations where they can explore and implement them and submit to complex and relevant issues. Project Based Learning is a learning model that directly engages students in the learning process through research activities to work on and complete a specific learning project (Abidin, 2014). The Project Based Learning model is a learning model that involves students designing, creating, and displaying products to solve real-world problems (Endang and Lulu 2016). In addition, according to Blumenfeld et al. in Kuzkapan (2017) Project Based Learning can improve students' metacognitive abilities, they successfully make plans, and evaluate solutions.

Hosnan (2016) defines that "project learning is a method of learning that challenges problems as a first step in gathering and integrating new knowledge based on real activity experience". Meanwhile, Doppelt (Muh Rais, 2010) states that "the project approach is one of learning methods derived from the the constructivist approach that leads to problem solving efforts". Another opinion states that Project Based Learning is a process that begins by issuing a guiding question and guiding students in a collaborative project that integrates various subjects (materials) into the curriculum (Sabar Nurohman, 2007). The problem that is very listed in teaching is the results of learning. The results of learning are the result of the process of solving one problem in learning. Student learning outcomes are a change in behavior as a result of learning in a broader sense covering cognitive, affective, and psychomotor fields. According to Bloom, cognitive ability is related to educational goals related to thinking ability. In Rifa'i and Anni (2014) Bloom argues that cognitive abilities consist of six categories, namely: knowledge, comprehension, application (application), analysis (analysis) sisntesis (synthesis), evaluation (evaluation). Previously, relevant research has been conducted on the Project Based Learning model by Saidun (2010) The results show that learning using the Project Based Learning model can increase motivation and learning outcomes gradually. Then research by G.B.I. Baa (2011) The results of this study show that the Project Based Learning model is better than conventional learning that can improve students' ability to take risks and have achievement targets. Another study researched by Fadilah Ramadhani (2013) showed that the results of this study stated the activeness of students in cycle I showed 47.62% and increased in cycle II to 73.81%.

Research conducted by Farihatun, S., Rusdarti (2018) concluded that the results of analysis of the effectiveness of experimental learning with Project Based Learning (PjBL) method were better when compared to control classes with an average of 76.81 control class final test results and 79.94 experiment classes with dk=31. Furthermore, research conducted by Putriati, Marinda Ditya, (2013) The results of the study inform that the project based learning model is effective against the achievement of problem solving skills of students in grade X smk Negeri 9 Research conducted by Idhar, Semarang. Rusdarti, (2015) concluded that the results of learning on project learning with a scientific approach obtained a very active category of 48%. Furthermore, research conducted by Jati Rahayu, Suryani, (2016) concluded that project-based learning can improve the learning outcomes of grade XI MIA-3 students of SMA Negeri 8 Surakarta. The results of the study from Wulandari Ade Sintia, I Nyoman Suardana, (2019) concluded that students who were learned using pjbl models were better than students who learned using stad-type cooperative learning models. Research conducted by Marlinda, Ni Luh Putu Mery, (2012) stated that there are differences in creative thinking ability and scientific performance between groups of students studying with a score of F = 21.68 p < 0.05.

Furthermore, research conducted by Anita Titu, Maria (2015) concluded that the application of pjbl model can increase students' creativity in learning material concepts of economic problems. The results of research conducted by Sugiarsih Wiwit, (2013) concluded that there is an influence of learning use of PBL and TPS models on cognitive achievement. Research conducted by Wahyu Anita, Ika, (2017) found that the results of the data analysis showed an increase in learning outcomes by 27.8%. Research by Wati Linda (2013) concluded that the implementation of physics learning through project based learning can increase students' creativity. Another study by Jagantara, I Made Wirasana (2014), concluded that there were differences in biology learning outcomes between groups of students who were studied with project-based learning models with students who were learned by direct learning models. Based on these reasons, the authors are interested in conducting research with the title "Implementation of Model Project Based

Learning to Improve The Learning Results of Economic Subjects SMA Negeri 15 Semarang".

Based on the formulation of the problems raised, the objectives of this study are as follows:

- 1. Analyze the application of project-based learning model with scientific approach in grade X students of IPS SMA N 15 Semarang.
- Analyze the effectiveness of the application of project learning model to the economic learning results of students grade X IPS SMA N 15 Semarang,

While the benefits of this research are:

- 1. Provide input to teachers, especially economics teachers in choosing learning models and methods that suit the subject matter and characteristics of students, so that the purpose of learning is realized
- 2. Provide information to teachers about the application of project-based learning of economic subjects, especially market materials.
- 3. For economics teachers, improving the quality of the role and responsibility of teachers in the management of the learning process.
- 4. For students, the results of this study can be used as an additional learning experience that is more varied so that it is expected to affect the results of learning and more active learning participation.
- 5. For schools, this research can be used as information input material to support the increasing learning process that will affect the quality of learning.

METHOD

This research is an experimental research with a non equivalent control group design approach. The requirement in this experiment was the absence of a control group or comparison that was not treated the same as the experimental group given the treatment. In the design of this study saw differences in pre test and post test between the experimental class and the control class. The design of this study is described as follows:

Table 2. Method Design

Class	Pre test	treatment	Post tes
Experimental class	O ₁	X1	O ₂
Control class	O ₁		O ₂

Description:

O1 : Experimental class and control class given pre test

X1 : Economic Learning with Project Based Learning Model

O2 : Experimental class and control class given pre test

The implementation of this research consists of several stages, namely compiling learning devices that will be used during the learning process in the classroom, including the Lesson Plan (RPP), learning media, and test instruments. At the research implementation stage, class X IPS 3 applied learning using the Learning model with project based learning (PjBL) model, while in class X IPS 2 applied learning using conventional learning models. Data Analysis Techniques Normality tests are performed to determine what statistical tests are appropriately used in answering research hypotheses:Ho: normal distributed sampleH1: sample is not distributed normally Kolmogorov Sminorv test, with a degree of significance of 5%, if the sig value in the Kolmogorov Sminorv test > 5% then Ho is accepted and not sig < 5%

then Ho is rejected (Sukestyarno, 2013). Homogeneity test If distribution is normal, then the next step is to perform a variant homogeneity test (F test), namely:

Fhit = $\frac{S^2 highest}{S^2 lowest}$ while $S^2 = \frac{n\Sigma x^2 - (\Sigma x)}{n(n-1)}$

With homogeneous sample criteria when -Fhit < Ftab (F α (dk1, dk2) with α = 1% (Sugiyono, 2016). Hypothesis test for hypothetical tests used t-tests with the condition of significance a = 0.05 as well as correlation tests. The formulas used are as follows:

$$t = \frac{\overline{x_1 - x_2}}{S_g \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}, \text{ dengan } S_g = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}$$

Description :

x1 = average score of the experimental group

 x^2 = average score of the control group

Sg = combined variance (experiment and control group)

S1 = variance of experimental group

S2 = variance of control group

n1 = amount of sample members of the experimental group

n2 = amount of sample members of the control group

With testing criteria:

Ho is rejected if $t_{count} < t_{table}$ Test test t is done with a table at the significance stage of 5 % or 0.005, if the price t calculation is smaller than the price t on the table or $t_{count} < t_{table}$ then Ho is rejected, conversely if the price of the calculation result is greater than the price t on the table or $t_{count} > t_{table}$ then Ha is accepted.

RESULTS AND DISCUSSIONS

The data used to analyze research data is the results of learning IPS Economics grade X IPS at SMA Negeri 15 Semarang before and after being given project based learning with comic media in the Experimental group and student learning results before and after being given conventional learning in the Control group. An overview of the results of the Experimental and Control group research data is presented in the table below:

Table 3. Description of Research Data

Source	Eksperimental		Control	
Variation	Pretest	Pretest Posttest		Posttest
Ν	36	36	36	36
Mean	70.15	89.36	69.50	77.00
Std.	4.80	6.29	4.78	5.98
Deviation				
Minimum	60.00	74.00	57.00	67.00
Maximum	80.00	100.00	80.00	93.00
· -			(0000)	

Source: Processed Primary Data (2020)

Based on the table above obtained a description of the average results of studying economic subjects in the experimental group before being given learning with the Project Based Learning model is 70.19 with the standard deviation of 4.8 the lowest score 60 the highest score 80. The average results of studying economics subjects in the experimental group after being given a project-based learning model were 89.36 with a standard deviation of 6.29 the lowest score of 74 and the highest score of 100.5 Based on the table above obtained a description of the average results of studying economic subjects in the control group before being given conventional learning was 69.5 with a standard deviation of 4.78 the lowest score of 57 the highest score of 80.

The average results of studying economic subjects in the control group after being given conventional learning were 77 with a standard deviation of 5.98 the lowest score of 67 the highest score of 93. Normality Test, Normality tests are performed to determine what statistical tests are appropriately used in answering research hypotheses. The results of the normality test calculation are presented in the table below:

One-Sample Kolmogorov-Smirnov Test						
	Eksperimental	Eksperimental	Control group	Control group		
	group pretest	group Posttest	Pretest	Posttest		
Kolmogorov-Smirnov Z	1.233	0.783	1.250	1.167		
Asymp. Sig. (2-tailed)	0.095	0.571	0.088	0.131		
a. Test distribution is Normal.						

Table 4. Results of Calculation of Normality Test of Research Data

Source: Processed Primary Data (2020)

Based on the calculation obtained the value of sig data pretest experimental group is 0.095 >0.05 so it can be inferred the pretest data of the normal distributed experimental group. The sig value for the experimental group posttest data is 0.571 > 0.05 so it can be inferred the posttest data of the normal distributed experimental group. The sig value for the control group pretest data is 0.088 >0.05 so it can be inferred the normal distributed control group pretest data. The sig value for the control group posttest data is 0.131 > 0.05 so it can be inferred normal distributed Control Group posttest data. The results of this analysis were used as consideration in subsequent analysis using parametric statistics, based on the results of the normality test then the data analysis used to test the hypothesis was an independent test of the ttest sample and a paired test of the t-test sample. Homogeneity Test The homogeneity test was used to determine whether or not the variance of student study data between the Experimental group and the Control group was both pretest and posttest data. The results of the homogeneity test calculation of research data are presented in the table below.

 Table 5. Homogeneity Test

Data	Group	Variance	Levene Statistic	Sig.	criterion
Dretest	Pretest of Eksperimental group	23.018	0.264	0.609	Homogen
ricicsi	Pretest of control group	22.886	0.204		
Desttest	Posttest of Eksperimental group	39.609	0.251	0.618	Homogen
Positesi	Posttest of control group	35.771	0.231		

Source: Processed Primary Data (2020)

Based on the calculation of the above homogeneity test, for the pretest data obtained a value of sig = 0.609 > 0.05 so that it can be inferred pretest data between the Control group and the homogeneous experimental group. For posttest data obtained a value of sig = 0.618 >0.05 so it can be inferred posttest data between the Control group and homogeneous experiments. Test Differences of two average pretest data The two average difference tests of pretest data in this study were used to determine whether there was a difference in student learning outcomes between the Experimental group and the Control group before being given a different study. The results of the calculation of the two differences in the average of pre-test data can be presented in the table below:

Table 6. T-test of Pretest Data

Avarage		т	t	Sig	Critorion	
Pretest of Eksperimental group	Pretestof control group	⊥ hit	L _{table}	Sig	Cinterion	
70.194	69.5	0.62	2.030	0.541	There is no difference	
Source: Processed Primary Data (2020)						

Source: Processed Primary Data (2020)

Decision-making criteria: With confidence level = 95% or (\Box) = 0.05. The number of samples for the Experimental group = 36 and the number of samples for Control = 36 obtained t_{table} = 2,03. H₀ is accepted if - t_{table} \leq t_{count} \leq t_{table} atau sig \geq 0.05

 H_0 is rejected if $(t_{count} < -t_{table} \text{ atau } t_{count} > t_{table})$ atau sig < 0.05.

Based on the calculation results obtained the value thitung = 0.62 with sig $0.541 \ge 0.05$ so Ho was accepted, in other words can be concluded there was no difference in the results of studying economic subjects between the Control group and the Experimental group before being given different learning in Grade X Students of IPS SMA Negeri 15 Semarang. Improved student learning outcomes An improved analysis of students' learning outcomes was conducted to find out how much treatmen in the Experimental group and in the Control group were able to improve students' learning outcomes. The results of the study results can be seen in table 6 below:

Improvement (%) Average score improvement Group Pre test pretest - posttest pretest - posttest Post test Eksperimental group 70.19 89.36 19.17 27.31 Control group 69.50 77.00 7.50 10.79

Table 7. Improvement of Student Learning Outcomes

Source: Processed Primary Data (2020)

Based on the table above obtained a description of the improvement of the results of studying economic subjects for the Experimental group by 27.31% with an average score of 89.36 and an increase in the results of studying economic subjects for the Control group of 10.79% with an average score of 77.00. For more details the following is presented an improved figure of the results of studying economic subjects both in the experimental group and in the Control group.



Figure 1. Improvement of Learning Outcomes of Economic Subjects

Discussion This research was conducted on grade X students of IPS Ekonomi SMA Negeri 15 Semarang. The subject of the study was class X IPS 2 as the control class and class X IPS 3 as the experimental class. This research aims to find out the effectiveness of project-based learning models on the learning outcomes of grade X students of SMA Negeri 15 Semarang. Based on the background of the research, the study library and the results of the study data showed significant differences in learning outcomes between students who learned using project-based learning models and students who used conventional learning models where students who were given a defense model using a project-based model obtained higher learning outcomes compared to students who obtained learning under conventional models.

The results showed that learning with project based learning model with scientific approach is effective towards the results of learning economy class X market material SMA N 15 Semarang. After being given the project based learning model the average results of studying experimental class economics subjects were 89.36 where previously only 70.19 or increased by 27.31%. Meanwhile, students who learned under conventional models earned an average of 77.00 and previously 69.50 or increased by only 10.79%. In the implementation of the study, before the treatment of researchers first give a pretest with the aim to know the students' initial knowledge of the materials taught. From the pretest table data it can be known that after the calculation was performed suggest that the average value of the experimental class and control class is almost as large. After pretest was given followed by the provision of materials in both the experimental class and the control class. At the time of material delivery, the experimental class obtains the material by applying the Project Based Learning learning model while for the control class gets the material with a conventional model in the learning process. At the end of the meeting after the material learning is completed, the learning process is continued by providing posttest test in the experimental and in the control class.

CONCLUSSION

From the results of the study, data analysis and discussion can be concluded that Learning With Project Based Learning Model is more effective in improving the economic learning outcomes of students grade X IPS SMA N 15 Semarang, Learning With Project Based Learning model is better than conventional learning in improving the results of learning economic subjects in Grade X Students of IPS SMA Negeri 15 Semarang.

SUGGESTION

Based on the results of the research and conclusions, the authors will suggest that in order to improve the learning outcomes of economic subjects teachers apply learning with the Project Based Learning model in addition to improving the learning outcomes of economic subjects as well as being able to improve the sense of togetherness of students, teachers should provide a detailed explanation of learning measures using the Project Based Learning model so that students do not get confused in carrying out learning.

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