

Project-Based Learning Model to Improve Students 'Ability

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Abstract---The research was conducted to develop economic teaching materials to improve the ability and confidence of high school students in economic learning. Research is also focused on providing experience to teachers specifically in developing teaching materials using project based learning and applying in learning. The method in the research to be carried out is the development (research and development) and continued with quasi-experimental (quasi experiment) collaborating with class teachers. Stages of research to be carried out, namely: (1) the preparation phase, (2) the development stage, (3) the experimental stage, (4) evaluation. At the development stage of teaching materials using the Plomp model (2010) which includes (1) preliminary research, (2) prototyping phase, and (3) assessment phase. Furthermore, at the application stage a collaborative experiment is carried out where the implementation of learning collaborates with the teacher. In the experimental stage carried out by taking each of the two classes from each school as an experimental class and a control class. The results of this study are the creation of teaching materials that meet valid and practical criteria and there is an influence of teaching materials based on project learning on students' abilities and confidence

Keywords---Project Base Learning, Ability, Confidence

I. INTRODUCTION

Efforts to improve student mastery of economics at the school level really need to be improved. This can provide sufficient provisions in life and the world of work so as to solve problems relating to the economy. One of the efforts is the implementation of the 2013 curriculum which emphasizes students to think with the aim of giving birth to Indonesian individuals who are productive, creative, innovative, affective through strengthening attitudes.

Economic lessons are very important in equipping students in real life. This is in accordance with the Ministry of National Education which states that the function of economic subjects is developing knowledge, skills, rational attitude, thorough, honest, and responsible through the procedures of recording, grouping, summarizing financial transactions, preparing financial statements and interpreting companies based on Financial Economic Standards (SAK). The importance of economic lessons requires all parties to make improvements and improvements, especially those directly related to learning activities.

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In addition, economic subjects listed in economics are used as a benchmark for graduation in high school. Furthermore, in the selection of an economic college one of the subjects that determine the graduation prerequisites for the SOSHUM choice. This shows important economic subjects mastered by students. However, the reality shows that one of the student learning outcomes in economic subjects needs to be improved. Data from the Ministry of Education and Culture (2019) shows that the average score of the Computer-Based National Examination (UNBK) at the Social Sciences Department level in the 2018/2019 school year is 46.86 on a scale of 0-100. This shows that the subjects tested were economics that were classified as low. The results of the initial survey in one of the high schools in the city of Bengkulu through an interview with one of the high school teachers obtained several findings. These findings include: (1) students are not accustomed to finding their own concepts, (2) students are still having difficulty in conveying the results of group discussions, (3) students are not accustomed to using real cases in learning, (4) there are not many economic learning materials found which can encourage students' thinking abilities and student skills. Furthermore, the results of the initial survey of researchers conducted in July 2019 in one of the XI classes in Bengkulu City High School were obtained by examining student data as in the following table:

Table 1. Students' Daily Economic Results

Value Criteria	Value
Average	64,50
Minimum completeness criteria (KKM)	36,20%

The student learning outcomes data above shows that there is still a need to emphasize economic learning in improving student abilities. In learning economics many aspects affect the achievement of learning outcomes. One of them is the aspect of students' confidence in learning. According to Eggen & Kauchak (2010) self-confidence is a statement that describes a belief, a cognitive idea is accepted if true without the need to consider other things that support it.

One effort that can be done to improve the quality of learning by designing learning so as to facilitate students in developing students' ability to learn. These efforts can use learning media in the form of teaching materials specifically designed to develop students' abilities in understanding the concept of the material. However, the reality in schools shows that learning tools are rarely found that can be used by teachers directly for learning, especially in developing students' abilities. In designing learning model selection or learning approach is the main key to the implementation of learning. One learning model that can be used is learning can be done by involving students directly to develop abilities, one of which is the project based learning (PjBL) model. The PjBL model facilitates students to make products in order to solve real life problems. Projects for making products can be done individually or in groups.

The PjBL model requires students to be able to produce products that can be used to solve real-life problems. In implementing the project students are required to be able to understand the concept well while producing products related to the concept. This is suitable with economic learning where students can directly practice in the field in finding material concepts. In addition, the results of empirical studies that mention the effectiveness of the project based learning model of learning outcomes are the results of the Philosophy, Bosch,

Pederson, & Haugen (2012) studies that show that the learning model is effective in terms of the conceptual knowledge aspects. Based on this study, it is necessary to conduct research by developing teaching materials using project based learning that can foster student ability in learning Economics. The focus of research is the discovery of concepts in high school social science class XI material in Bengkulu City.

II. METHODOLOGY

2.1. Types of research

The method of conducting research carried out is research and development and quasi-experimental research. This research was conducted in two stages, namely the stage of developing teaching material and continued by the pseudo-collaborative experimental stage. At the development stage, the development of economic teaching materials based on project based learning models is carried out. Furthermore, quasi-experimental experiments were conducted to test the effectiveness of the teaching materials developed. The steps in this research are as follows:

1. Preparation Stage

At this stage, coordination is carried out with the research target schools and analysis of learning curricula in schools. At this stage also observed the use of teaching materials by teachers in schools.

2. Development Stage

The development procedure in the study was carried out with the steps described as follows.

a. Preliminary research

This stage is the stage of carefully observing the conditions of learning in schools. Activities carried out, namely: (1) front end analysis, (2) Student Analysis, (3) Material analysis, (4) Task analysis, and (5) Competency specifications.

b. Development Stage

The development phase consists of: (1) Preparation of learning plans, (2) media selection, (3) learning device format selection, (4) initial design

c. Assessment Stage

At this stage two main activities were carried out: (1) Validation, (2) practicality, (3) Field Trial Activities

3. Eksperimen Kolaboratif stage

At this stage, the quasi experiment was carried out. In conducting experimental research in each school the research targets were chosen from each of two classes by random sampling to be selected as classes given learning using project-based learning (experimental classes) and with conventional learning (control classes).

2.2. Research Locations

The population in this study were teachers and students of Class XI IPS high schools in Bengkulu City. In simplifying the research objectives, sampling was represented from 3 high schools in Bengkulu City respectively. Sampling is done by purposive sampling which determines the sample with certain considerations. Consideration of sample selection is the representation of one of the SMA / MA in Bengkulu City.

At the development stage of the research subject is the teacher of the field of study and several students who represent the academic level as the subject of practical testing of the developed teaching material. At the experimental stage, the research subjects were students of Class XI SMA / MA in Bengkulu City who were taken

each of two classes from each school. The first class is used as an experimental class and the second class as a control class.

2.3 Research Variabel

The variables in this study consisted of independent variables and dependent variables. The independent variable is the project based learning model while the dependent variable is the ability of students and student confidence in economic learning.

2.4 Development style

The teaching material development model used in this study was adopted from the development of Plomp (2010) which included (1) preliminary research, (2) prototyping phase, and (3) assessment phase.

2.5 Research design

The research carried out was designed with two stages of the type of research, namely (1) research and development (research and development), and (2) quasi-experimental research. Development research is carried out to produce mathematical teaching material products based on project based learning. Furthermore, experimental research is conducted to determine the effectiveness of the learning model that has been designed in teaching materials to students' abilities and confidence. The design in this experimental study uses posstest-only control design (Sugiyono, 2012). The design procedures for carrying out this research are as follows:

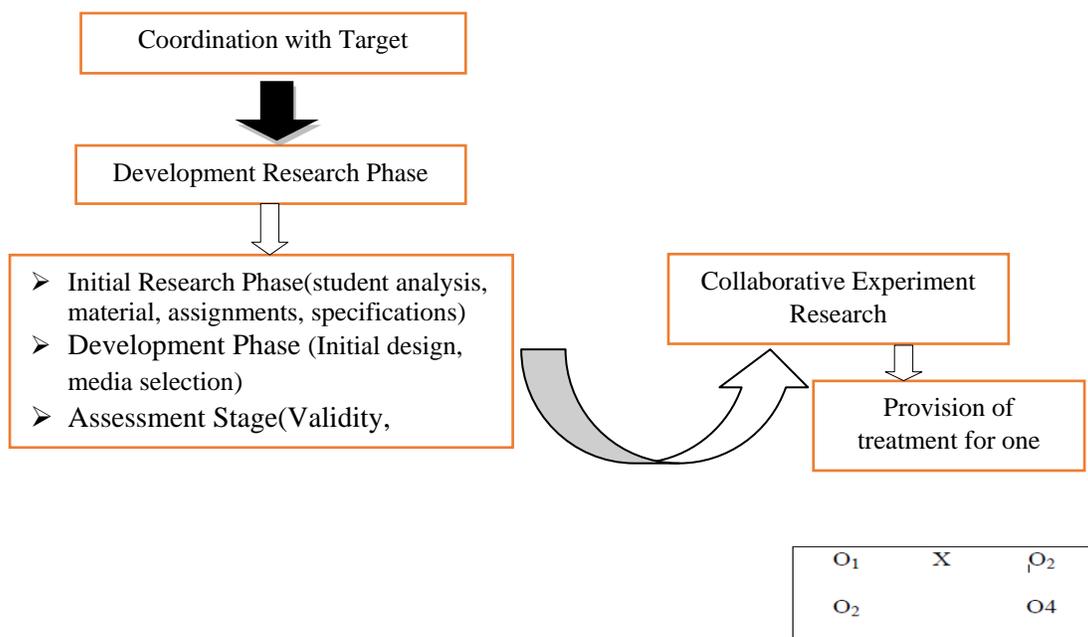


Figure 1.Research Procedure Design

2.6 Collection Techniques

Data collection techniques were divided into two stages, namely development research carried out by observation and distributing validity and practicality evaluation sheets. In the experimental stage the data collection

is done by giving tests to students after the treatment is given. In addition, observations were made to observe the implementation of the learning stages in accordance with the project based learning model.

2.7 Data Analysis

1. Research Development

Validity Analysis

The content validity estimation used in this study uses the item validity index proposed by Aiken with the following formula:

$$V = \frac{\sum s}{n(c-1)}, \quad \text{with } \dots s = r - I_0$$

Information:

V = item validity index

s = the score set for each rater minus the lowest score

r = rater choice category score

I_0 = lowest score in the scoring category

c = the number of categories rater can choose from

n = the number of rater (Retnawati, 2014: 3)

2. Practical Analysis

The trial data that has been obtained is converted into qualitative data on a five scale. The conversion on a scale of five was adapted from Widoyoko (2009) as in the following table:

Tabel 2. Kriteria Kepraktisan Perangkat Pembelajaran

Interval Skor	Category
$X > \bar{X}_i + 1,8sb_i$	Very practical
$\bar{X}_i + 0,6sb_i < X \leq \bar{X}_i + 1,8sb_i$	Practical
$\bar{X}_i - 0,6sb_i < X \leq \bar{X}_i + 0,6sb_i$	Enough
$\bar{X}_i - 1,8sb_i < X \leq \bar{X}_i - 0,6sb_i$	Not Practical
$X \leq \bar{X}_i - 1,8sb_i$	Not practical

Collaborative Experiment Research

Average Learning Outcomes

$$\bar{X} = \frac{\sum X}{N}$$

Information: : \bar{X} = Student's grade point average

$\sum X$ = Total student grades

N = Number of students

Hypothesis testing

In the collaborative experiment stage, data analysis is performed to test the following hypotheses.

$$H_0 : \mu_1 = \mu_2$$

$$H_1 : \mu_1 \neq \mu_2$$

μ_1 = average learning outcomes with teaching using teaching materials

μ_2 = average learning outcomes without teaching materials

The statistical hypothesis is tested using the t-test with the formula:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{s^2_{gab} \left\{ \left(\frac{1}{n_1} \right) + \left(\frac{1}{n_2} \right) \right\}}}$$

$$s^2_{gab} = \frac{(n_1 - 1)s^2_1 + (n_2 - 1)s^2_2}{n_1 + n_2 - 2}$$

III. RESULTS AND DISCUSSION

3.1 Development Research Results

a. Test Result Data

Project based learning based learning materials that have been prepared are assessed by experts who aim to see the quality of the product in terms of content. The trial results show that teaching materials in the form of Student Activity Sheets (LKPD) meet valid criteria. The validity test results of teaching materials are as follows.

Table 3. Teaching Material Validation Results

No	Rated aspect	Aiken Index	Criteria
1	Formulation and Purpose	0,56	Valid
2	Conformity of Content and Material	0,68	Valid
3	Learning Activities	0,73	Valid
4	Language accuracy	0,64	Valid
5	Learning Resources	0,74	Valid
6	Implementation of the PjBL	0,72	Valid

The results of the validator's assessment of the teaching material above show a valid category. This shows that theoretically the economic teaching materials based on the project based learning model meet valid criteria. Furthermore, teaching materials are analyzed for practicality or ease of use in terms of teacher and student. The results of practicality tests show that teaching materials meet practical criteria. This shows that the use of economic teaching materials based on project based learning models is easy to use in developing the abilities of high school students.

3.2 Results of Collaborative Experiments

a. Description of student learning outcomes

Teaching materials that meet the valid and practical criteria are then tested for effectiveness in improving student learning outcomes. The use of teaching materials is carried out with collaborative experimental research applied by teachers in selected schools. The schools selected in the implementation of collaborative experiments consisted of three schools, namely: (1) Bengkulu 3 Public High Schools, (2) Bengkulu 8 High Schools, and (3) Bengkulu 10 High Schools. At each school one class was chosen as the experimental class, namely class XI majoring in social studies. Description of student learning outcomes after being given learning by using project based learning based teaching materials as in the following table:

Table 4. Student Learning Outcomes Data

School	Amount Students	Avarage value	Persentase (%)
SMAN 3 Kota Bengkulu	27	80,00	80,00
SMAN 10 Kota Bengkulu	25	85,23	82,61
SMAN 8 Kota Bengkulu	26	83,24	80,03

Based on the table above, it can be seen that the percentage of students completeness in classical learning that reaches KKM is more than 75%. In addition, the average value of the two trial classes has reached the KKM value. This shows that the learning tools developed have met the effective criteria.

b. Statistical Testing Results

The analysis shows that there are differences in average student learning outcomes in economic material before and after the use of teaching materials. To analyze these differences statistically, the t test analysis was used. The hypothesis is tested as follows.

H0: There is a significant difference between student learning outcomes and KKM

H1: There is no significant difference between student learning outcomes and KKM

With the test criteria: If $t > t_{table}$ and significant level $< \alpha = 0.05$, H0 is accepted. if $-t_{table} < t_{count} < t_{table}$ and significant level $> \alpha = 0.05$ then H0 is rejected. The results of the student's ability t test after being given teaching material are shown in the following table:

Tabel 5. Data Hasil Uji T

School	Test Value = 75, 76, 75					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
SMAN 3	4.50	26	.015	2.63452	-1.0767	6.3457
SMAN 10	9.704	24	.000	17.63452	13.9233	21.3457
SMAN 8	6.953	25	.000	12.63452	8.9233	16.3457

The t test table shows the knowledge of students of SMAN 3, SMAN 10 and SMAN 8 Bengkulu City after the use of teaching materials with a $t_{count} > t_{table}$ and significant < 0.005 . From these results indicate a significant difference between the ability of students and KKM in Bengkulu City High School before using project based learning and after using the project based learning model.

IV. CONCLUSIONS AND SUGGESTIONS

Research by developing teaching materials using project based learning that can develop students' abilities in learning Economics is done because students are not accustomed to finding their own concepts, students are still having difficulty in delivering the results of group discussions, students are not accustomed to using real cases in learning, there are not many material found economic learning that can encourage students' thinking abilities and student skills. One effort that can be done to improve the quality of learning by designing learning so as to facilitate students in developing students' abilities and confidence in learning. These efforts can use learning media in the form of teaching materials specifically designed to develop students' abilities in understanding the concept of material (LKS).

The use of teaching materials is carried out with collaborative experimental research applied by teachers in selected schools. The schools selected in the implementation of collaborative experiments consisted of three schools, namely: (1) Bengkulu 3 Public High Schools, (2) Bengkulu 8 High Schools, and (3) Bengkulu 10 High Schools. The analysis shows that there are differences in average student learning outcomes in economic material before and after the use of teaching materials.

After applying the modeling in learning with this project based learning approach the result is the ability to learn and the confidence of students of SMAN 3, SMAN 10 and SMAN 8 Bengkulu City can be increased. This can be seen in the results of the T test, where t_{count} results are greater than t_{table} . The t test table shows the students' knowledge after the use of teaching materials with $t_{count} > t_{table}$ and significant < 0.005 .

So the results of this study are accepting H_0 and rejecting H_a , meaning that after the project based learning model has been applied there has been an increase in knowledge and confidence in students of SMAN 3, SMAN 10 and SMAN 8 Bengkulu City, this study is in line with the research of Philosophy, Bosch, Pederson, & Haugen (2012) which shows that learning models with project based learning models are effective in terms of aspects of conceptual knowledge.

This research has a weakness that is the lack of tools used in the development of teaching materials such as student worksheets (LKS), internet networks in schools are still very minimal, along with props used in developing project-based learning models to improve the abilities of Bengkulu City High School students .

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