Project Based Learning on Students' Activities and Learning Outcomes in Geography Class XI IPS

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Abstract. The purpose of this study was to examine the impact of a project-based learning model on students' learning activities and outcomes in the geography subject of class XI IPS at SMA Negeri 1 Kedondong. This was a pre-experimental study using a one-group pre-test-post-test design. Subjects were her 27 students in class XI IPS 1. Data were collected through observation, testing, documentation, and questionnaires. Data were analyzed using linear regression with a t-test to identify differences in student learning activity and significant differences in student learning outcomes before and after treatment. As a result, significant differences were found in student activity and learning outcomes after applying project-based learning in geography subjects. Student learning activities and learning outcomes improved.

Keywords: project-based learning · learning activity and result

1 Introduction

Teacher-centered learning does not increase student learning activity. This is demonstrated by the methods teachers use in the classroom during the learning process. This is not constructivist and does not encourage students to build on previous knowledge. Students do not actively participate directly in the teaching and learning process. It also causes students to become less active in the learning process. The project-based learning model is a process-centric, relatively time-driven, problem-oriented and meaningful unit of learning by combining concepts from various components such as skills, disciplines, and domains. In project-based learning, learning activities are done together in heterogeneous groups. Project-based learning has the potential to enhance student learning activities. A project-based learning model emphasizes activities to solve different problems. Abidin [1] states that project-based learning is a learning that emphasizes student activity and the application of student knowledge in solving a variety of open-ended problems when working on projects to produce specific authentic products. said to be a model. This learning model continues to be regarded as a very good learning model used to develop confidence, improve problem-solving skills and develop advanced thinking skills in students.

Furthermore, MacDonell stated in Abidin [1] that a project-based learning model should be able to improve students' competence in learning activities. Ask questions, seek information, and interpret information (visual and textual) that you see, hear, and read. Create research plans, record results, discuss, argue, and make decisions. The act of independently representing and constructing information. Share knowledge with others, work together to achieve common goals, and recognize that everyone has specific skills that can help with the project at hand. And it demonstrates all the important intellectual and social qualities needed to solve real problems.

From this description, we can conclude that project-based learning encourages students to engage in more learning activities. Only as a facilitator does the teacher evaluate student work that is reflected in the outcomes of the projects they are working on in order to stimulate their creativity and produce real work that they can think critically when analyzing. increase. can cause problems.

One of the reasons why curriculum changes are important is the development of knowledge and pedagogies related to neurology, psychology, observational (discovery) learning, and collaborative learning. Of course, this also affects the learning models used for teaching in schools. One of the recommended learning models is the project-based learning model. This is because the excellent properties of this learning model can accommodate the above reasons. Through this learning model, students become active in investigation (learning) by presenting them with the real world (not abstract). In this learning model, students work in teams (groups) to transform mere fact-based thinking into more critical and analytical thinking. In activities and projects, students explore, evaluate, interpret, and synthesize information to achieve different learning outcomes (knowledge, skills, and attitudes). Hosnan [2] explains that the advantages of using a project-based learning model are: Acquire new knowledge and skills while studying. Improve students' problem-solving skills. To make students more willing to solve complex problems using real products in the form of goods or services. Develop and improve students' skills in completing tasks using resources, materials, and tools. Improve student collaboration, especially in project-based and group-based learning models.

Based on these advantages, project-based learning focuses on creative thinking, problem-solving, interaction with students and peers, creating new knowledge acquired in the learning process, and using it as a sole learning outcome. We can conclude that it is an effective approach. influential student.

The teacher centered learning method in geography subject has been used so far in geography subject learning in Class XI IPS in SMA Negeri 1 Kedondong. This research was to implement the project based learning in geography subject in the Class XI IPS and to find out the learning activity and result differences before and after the project based learning implementation.

2 Research Method

The study design used in this study is a pre-experimental design with a qualitative approach. The design format used in the pre-experimental design is a one-group pretest-posttest design. A group of subjects is used in this design. First measure, then treat

for a certain period of time, then measure a second time (Suryabrata) [3] According to Sugishirono [4], currently there is a pre-test before treatment. Because you can compare, you can know the treatment result more accurately. The learning model used is a project-based learning model. Indicators of this model are that students are able to design tasks, solve problems, make decisions, conduct research activities on tasks given by teachers, and work independently in groups. In this study, students are given a project in the form of a project, presented and performed by groups of 5 students, followed by a week of work and collection, and presented at the next meeting. The project-based learning model is considered influential when students successfully perform the phases of project-based learning, which positively impacts students' geography activity achievement and learning outcomes. This study was conducted in a class before using the project-based learning model, i.e., normal learning after using the project-based learning model applied to students in a given class. Twenty-seven students of class XI IPS 1 were intended as subjects, of which 12 were male and 15 were female.

3   Result

A. *Description of Student Learning Activity Data*

In class XI IPS 1 which has been designated as an experimental class with a total of 27 students, observations have been made about student learning activities in two meetings and the results are shown in Table 1

It was then further processed in experiment 2 using a project-based learning model. The purpose of Experiment 2 was to determine whether there was a significant difference between the mean data on student learning activity from Experiment 1 before being processed by the experiment. After processing with the project-based learning model, it became 2. The data results for Run 2 are shown in Table 2.

In conclusion, the result of the experimental class average learning activity table data of the first session before processing with the project-based learning model is the experimental class average learning activity table data of the second session after processing with the project-based learning model. That's it. There are differences in

Table 1. Average Learning Activity Experiment Class Meeting 1

No.	Category	Frequency	%
1.	Very active	2	7.41
2.	Active	11	40.74
3.	Active Enough	14	51.85
4.	Less Active	0	0
Amount		27	100.00

Source: Data Processing Results

Table 2. Average Learning Activity Experiment Class Meeting 2

No.	Category	Frequency	%
1.	Very active	9	33.33
2.	Active	12	44.44
3.	Active Enough	6	22.22
4.	Less Active	0	0
Amount		27	100.00

Source: Data Processing Results

models, learning activities. Students treated with a project-based learning model are much more active than before treatment.

B. *Description of Student Learning Activity Data*

In this study, the questions consisted of 25 multiple-choice questions given in a pretest and a posttest. To assess a student's initial ability, students are asked pre-test questions before they start studying. Post-tests were administered at the end of the conference after being processed in the project-based learning model to obtain student learning outcomes results.

1) Pretest

The results of the tests that were carried out at the beginning or pretest in class XI IPS 1 with student learning outcomes obtained an average score of 54.67 with the highest score being 68 and the lowest score obtained was 36. Based on the calculations that have been carried out using the Struges formula, it is known that the class range is 32, the number of classes is 6 and the length of the interval class is 5, so the frequency table for the pretest data is obtained in Table 3.

Based on the pretest, the student learning outcomes achieved show that students with pretest scores are still very poor. This is because not all students were able to achieve

Table 3. Distribution of Values of Experimental Class Pretest Learning Outcomes

No.	Interval Class	Frequency	%
1.	36–40	1	4
2.	41–45	4	15
3.	46–50	3	11
4.	51–55	2	7
5.	56–60	13	48
6.	>61	4	15
Amount		27	100.00
Average		54.67	
Standard Deviation		7.84	

Source: Results of Research Data Processing in 2021

the values corresponding to the minimum completion criteria (KKM) specified in SMA Negeri 1 Kedondong im. subject geography.

2) Posttest

The results of the tests carried out at the end of the meeting or posttest in the experimental class with student learning outcomes had an average of 81.48 with the highest total score being 96 and the lowest score 64. Based on the calculations that have been carried out using the Struges formula, it is known that the class range is 32, the number of classes is 6 and length of the interval class is 5, then posttest frequency data table is obtained as shown in Table 4.

Based on the posttest results obtained, it shows that students who have posttest scores are classified as having increased, because as many as 85% of students have been able to achieve scores that are in accordance with the Minimum Graduation Criteria (KKM) that have been set at SMA Negeri 1 Kedondong in geography subjects. this is because in student learning has been given treatment or treatment using a project-based learning model so that students are able to achieve a value that is in accordance with the KKM and even exceeds the KKM value for the geography subject.

C. *Test Data Analysis Requirements*
1) *Normality Test*

The test for normality of posttest learning outcomes for the experimental class XI IPS 1, which begins with sorting the minimum values of 64 to the maximum of 96. Next, determine the maximum value or the largest value of F(Xi)-S(Zi) which is L0 = 0.140103704 and Lt = 0.173, so it can be concluded that the value of L0 < Lt which means H0 is accepted in other words the data comes from a normally distributed population.

2) Linearity Test

It can be concluded between the independent variables of the project-based learning model with learning outcomes that have a value of 0.991 so that the Deviation from

Table 4. Distribution of Values of Experimental Class Posttest Learning Outcomes

No.	Interval Class	Frequency	%
1.	60–64	2	7
2.	65–69	2	7
3.	70–74	1	4
4.	75–79	2	30
5.	80–84	8	44
6.	>85	12	
Amount		27	100.00
Average		83.40	
Standard Deviation		10.38	

Source: Results of Research Data Processing in 2021

Table 5. Summary of t-test Analysis Results of Learning Activities

Learning Outcomes	Before Treatment			After Treatment			t_{count}
	n	$\bar{x}$	Sd	n	$\bar{x}$	Sd	
	27	8340	10.38	27	54.66	7.84	12.28

Source: Research Data Processing Results in 2019

Linearity Sig > 0.05, it can be concluded that there is a significant linear relationship between the independent variable and the dependent variable.

D. *Hypothesis Testing Analysis*

This study tests three hypotheses. That is, the first hypothesis aims to see the difference in student learning activity before and after using the project-based learning model, and the second hypothesis aims to The goal is to later see differences in student learning outcomes. Looking at the use of the project-based learning model, the third hypothesis aims to confirm the effect of the project-based learning model on the learning outcomes of students in class XI IPS SMA Negeri 1 Kedondong.

1) T-test

T-test on the first hypothesis show that the value of df (52) in table t with a significance level of 0.05 shows the number 1.674. The decision from the test results of data analysis using the t test is obtained tcount = 3.06 and ttable = 1.674 which shows that tcount > ttable means the test decision rejects H0 and accepts Ha. With the acceptance of Ha, it means that there is a significant difference in the average student learning activities between after being treated and before being treated using a project-based learning model, with the value of student learning activities being higher after being treated using a project-based learning model (Table 5).

2) *Simple Linear Regression Test*

Simple linear regression test shows that with the average value of the questionnaire obtained is 26.18, it can be predicted that an increase in student learning outcomes is 83.68: 26.18 = 3.196, it can be stated that the increase in learning outcomes is 3.196. The conclusion from the simple linear regression test calculation is that the existence of a project-based learning model variable can strengthen or increase the effect of student learning outcomes in the XI Social Studies experimental class at SMA Negeri 1 Kedondong.

4   Discussion

A. *Differences in Student Learning Activities before and after Using the Project-based Learning Model*

The research conducted can be seen from the increase in the average value of student learning activities in the experimental class at meetings one and two. At the meeting,

one student who got the very active category was 2 students with a total percentage of 7.41%, students who got the active category were 11 students with a total percentage of 40.74%, students who got a moderately active category were 14 students with a total percentage by 51.85%. Meanwhile, after being treated using a project-based learning model at a meeting of two students who got the very active category as many as 9 students with a total percentage of 33.33%, students who got the active category as many as 12 students with a total percentage of 44.44%, and students who get quite active category by 22.22%.

Studies conducted by researchers show differences in student learning activity in experimental classes before and after being treated with a project-based learning model. A project-based learning model ensures that students are more active after treatment than they were before treatment. This is supported by the results of a study conducted that showed significant differences in experimental classes before and after treatment with project-based learning models.

This project-based learning model prioritizes activities that take place both individually and in groups that produce a product or practical task whose results will be presented in front of the class. This is in line with the opinion of Suyatno [5] that project-based learning is a project-based learning method that involves students working in groups to compile a report, experiment, or other project. During the learning process using a project-based learning model, researchers also experienced some difficulties, such as in the application of the learning model which was quite time-consuming so they had to make the best use of the time possible.

The learning process before using the project-based learning model most students just listen without trying to ask questions or seek new knowledge about the learning material presented to increase student knowledge. In addition, students just sit and pay attention to the teacher who explains the material in front of them without having to be actively involved in the ongoing learning process.

From the results of the data analysis tests we conducted, we found that there were differences between the activities before and after applying the project-based learning model. This can also be seen in the student learning activity value average score results. Students had a mean Learning Activity Score of 71 before treatment, whereas students had a mean Learning Activity Score of 82 after treatment. Therefore, these results demonstrate that post-treatment experiential instruction using a project-based learning model is superior to pre-treatment.

B. *Differences in Student Learning Outcomes before and after using the Project-Based Learning Model*

The results of the value calculations performed on the pre-treatment pre-test values using the project-based learning model can be the results of the post-treatment test value calculations using the project-based learning model. There is a nature. The classes processed with the project-based learning model are higher than the first experimental classes before being processed with the project-based learning model. This is evidenced by the post-treatment experimental class mean score (83.40 with a standard deviation of 10.38) compared to the pre-treatment mean score of 54.66 with a standard deviation of 7.84. A total of 27 students have completed the experimental class, the overall percentage

is 85.19%, or 23, and the number of uncompleted students is 14.81%, or 4. There are complete categories for treatments. none.

The results of the research that have been carried out prove that there are differences in the learning outcomes of experimental class students after being treated using a project-based learning model and before being treated using a project-based learning model. After being given treatment, students have higher learning outcomes than before being given treatment. This is supported by the results of relevant research from Erika Manda Sari [6] which has stated that there are significant differences in learning outcomes in the experimental class after being treated using a project-based learning model.

The experimental class before using the project-based learning model, students were more monotonous where learning was only teacher-centered, students only became listeners rather than being active in the implementation of learning activities. In addition, teachers control the class more than students, thus making students bored more quickly and less able to understand the material given well. Students are more required to listen without having to be much involved in the learning process. However, in the application of such learning has advantages where by presenting a lot of material or broad can make students understand more of the material taught by the teacher.

Applying the learning done in Class XI IPS 1 before and after using the project-based learning model, we find significant differences in learning outcomes both. Computational data received by the students after the post-test experiment class showed higher learning outcomes than before the implementation of the project-based learning model. The average student learning outcome score after applying the project-based learning model is 83.40, and the average student learning outcome score before applying the project-based learning model is 54.66. Then, as a result of the analytical test using the significance test criterion, if tcount > ttable, then we can accept the hypothesis with the calculations performed, i.e. tcount = 12.28 f and ttable = 1.674. Based on the research conducted, we find that students in experimental classes achieve higher learning outcomes after being treated with the project-based learning model than students before being treated with the project-based learning model.

C. *The Effect of Project Based Learning Model on Students Learning Outcomes of Class XI IPS 1 SMA Negeri 1 Kedondong*

The effect of the project-based learning model on learning outcomes is because during the learning carried out, students are more active in participating in learning. Students are required to develop ideas during the learning process. The ono project-based learning model is student-centred, where students must express ideas and work actively in groups. When applying this learning model students look enthusiastic and active in expressing their respective opinions, sharing knowledge and listening to opinions from friends.

The results obtained from the simple linear regression test are = 57.07 + 1 (26.18). The predictive value of the dependent variable of student learning outcomes in the experimental class after being given treatment is 83.25, the value after experiencing an increase. The results of the study by applying the project-based learning model proved that the hypothesis of the project-based learning model affected the learning outcomes of XI IPS 1 students at SMA Negeri 1 Kedondong.

Project-based learning model or also called Project Based Learning has an effect on improving geography learning outcomes. This is suitable because this learning model requires students to immediately be able to practice either individually or in groups to work on geography assignments that are field or out door. This is supported by the results of relevant research from Dwi Pudi Lestari [7] regarding the effect of out door study-based project-based learning models on social studies student learning outcomes. higher.

The project-based learning model has advantages for students, one of which is in student learning to be more active and in doing group work students not only discuss and solve problems but also apply their knowledge by working on a project and producing a product. This is in line with Sumarmi's opinion [8] about some of the advantages of project-based learning models, namely 1) Improving problem solving abilities, 2) Encouraging students to develop and practice communication skills, 3) Provide experience to students in learning and practice in organize projects, and allocate time and other resources such as equipment to complete tasks. The existence of advantages in the project-based learning model helps students increase activeness in learning activities so that they can improve student learning outcomes.

Learning in the experimental class becomes more active after the implementation of the project-based learning model and this can help students more easily understand and master the learning material. after students master the learning material that has been delivered, students will be helped in improving existing learning outcomes. This is in line with the opinion of Hamalik [9] which suggests that if a person has learned there will be a change in behavior in that person, for example from not knowing to knowing, and from not understanding to understanding. Learning outcomes are able to grow students' knowledge of the material that has been studied, with mastery of the material it will make student learning outcomes increase.

5   Conclusion

There are differences in student learning activities in the experimental class before using the project-based learning model with students in the experimental class after using the project-based learning model. With the acceptance of Ha, it means that there is a significant difference in the average student learning activities between before using the project-based learning model and after using the project-based learning model with a higher value of learning activities in the experimental class after using the project-based learning model. It can be seen that the average results of student learning activities obtained from the experimental class are before using the project-based learning model of 71 and after using the project-based learning model of 82.

There are differences in student learning outcomes in the experimental class before using the project-based learning model with students in the experimental class after using the project-based learning model. With the acceptance of Ha, it means that there is a significant difference in the average student learning outcomes between before using the project-based learning model and after using the project-based learning model with higher learning outcomes in the experimental class after using the project-based learning model. This can be seen from the average student learning outcomes achieved

in the experimental class before using the project-based learning model of 54.66 and after using the project-based learning model of 83.40.

The learning outcomes of XI IPS 1 students at SMA Negeri 1 Kedondong have the impact of a project-based learning model applied in an experimental class. The value achieved can be predicted as an increase in learning outcomes using a project-based learning model. = a + b X the result I got was 83.25. Therefore, we can estimate that there is an increase in learning outcomes equivalent to 83.25.26.18 = 3.179, which means that her learning outcome increases by 3.196.

References

1. Yunus Abidin, "Desain sistem pembelajaran dalam konteks kurikulum 2013," *Bandung: Refika Aditama*, vol. p. 336, 2014.
2. M. Hosnan, "Pendekatan Saintifik dan Konstektual Dalam Pembelajaran Abad 21 Kunci Sukses Implementasi Kurikulum 2013," *Bogor: Ghalia Indonesia*, vol. p. 242, 2016.
3. S. Suryabrata, *Metodologi Penelitian.* Raja Grafindo Persada, 2012.
4. D. Sugiyono, "Metode penelitian pendidikan pendekatan kuantitatif, kualitatif dan R&D," *Bandung: Alfabeta*, p. 458, 2015.
5. W. Suyatno and B. Nurgiyantoro, "Menjelajah pembelajaran inovatif," *Masmedia Buana Pustaka. Sidoarjo*, vol. p. 90, 2009.
6. Erika Manda Sari, "Pengaruh Model Project Based Learning Terhadap Hasil Belajar Siswa pada Pembelajaran IPS Kelas V Sekolah Dasar Negeri 30 Pontianak Selatan.," *Pontianak: Universitas Tanjungpura*, 2015.
7. D. Pudi Lestari, A. Fatchan, and N. Ruja, "Pengaruh Model Pembelajaran Project Based Learning Berbasis Outdoor Study Terhadap Hasil Belajar Geografi Siswa SMA SISWA SMA," *Malang: Program Pascasarjana Universitas Negeri Malang*, 2016.
8. Sumarmi, *Model-model Pembelajaran Geografi.* Malang: Aditya Media Publishing, 2012.
9. O. Hamalik, "Proses belajar mengajar," *Jakarta: PT. Bumi Aksara*, vol. p. 242, 2009.