Implementation of the use of project-based learning models in the application of online geography learning strategies

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Abstract. In 2020, the Indonesian government has arranged the learning process during the Covid-19 Pandemic to be carried out simultaneously online. So there needs to be an adaptation related to learning strategies in order to be able to carry out the driving learning process properly. In the teaching and learning process in student geography education, there is a need for online student-centered learning. One execution is to utilize the Project-Based Learning Show within the application of geography learning methodologies online. The reason for the think about was to test the online Venture Based Learning Show on understudy learning results. The subjects of this consider were understudies of Geography Instruction lesson 2019, FKIP Universitas Jember, which comprised of 2 classes. Course A was characterized as the test lesson and course B as the control course. The comes about of the evaluation are within the frame of information which is at that point analyzed utilizing the t-test with the assistance of the SPSS 16.0 for Windows program. The comes about of this ponder demonstrate that there's a critical impact of utilizing the Project-Based Learning Demonstrate within the application of the online Geography Learning strategy.

1. Introduction

The time of the Covid 19 pandemic was a time when the world was hit by the Covid 19 virus which started in Wuhan, China. The Covid 19 virus is a virus that can spread quickly from one person to another, from one country to the rest of the world. Handling the covid 19 virus is not easy, it takes several months and various ways to eradicate the virus within a country. The methods that are considered the most effective are social distancing and physical distancing. Social distancing and physical distancing are maintaining physical distance and guarding from one person to another with the aim of breaking the chain of spread of the Covid 19 virus [1]. In addition, handling also requires a very large cost. So that many countries are experiencing economic problems due to the COVID-19 pandemic. The pandemic period affects many fields, such as education, economy, health and so on.
One of the biggest impacts is in the field of education. Education is learning that aims to develop knowledge, skills, character development by students that can be obtained from both formal and non-formal [2]. Education aims to improve the quality of life of students in society and will be useful in the future. In the covid 19 pandemic situation, it has a lot of influence on the education sector, both learning methods, learning facilities, and the learning process. Learning that is usually carried out in schools or universities that are offline but with the COVID-19 pandemic, learning is carried out at home or online.

In the implementation of geography learning, the material being learned cannot continue only explain theory but by combining it with field learning (real practice) or a work or project so that it can construct student knowledge in an analysis of spatial, regional and environmental approaches. Sumarmi in Raditya[3] argues that geography learning is difficult to discuss theoretically but needs to be combined with environmental conditions.

The core problem of learning geography so far is that students cannot combine theoretical knowledge with real life (field practice) and real life. The learning that is currently being carried out is that most teachers deliver material conventionally in the form of methods that are usually used in the lecture and assignment methods. The lecture and assignment method is not a bad method but the teacher must be able to position the transfer of material, not the only source of information. A good teacher must be able to position himself as a manager, not a source of information.

Effective learning is student centered learning that encourages students to construct their knowledge. Students seek their own knowledge needed in the learning process. So that the memory in search of knowledge can last a long time. According to Wulan[4], which states that student-centered learning, students will be more motivated to take part in learning. Where students from memorizing lessons are transformed into sharing knowledge. And students are given facilities in making projects.

Project-based learning steps according to Susanto[5] are 1). defining the project theme, the project theme should have indicators containing general and original ideas, important and interesting, describing complex problems. 2) establish the learning context. The learning context should meet the indicators of project questions questioning real-world problems, prioritizing student autonomy, conducting inquiries in the context of society. 3) planning activities activities. Learning experiences associated with planning a project are reading, researching, observing, interviewing. 4) processing activities. Indicators in processing activities include; sketching, painting analysis, calculating, generalizing and developing prototypes. 5) applying activities to complete the project. The steps taken are to try to work on a project based on a sketch, test the steps that have been done and the results obtained, evaluate the results, recycle other projects and classify the best results.

By using the Project Based learning model, students in conducting investigations are divided into groups so that students can have good socialization to the community. Concurring to this see, social exchanges play an awfully critical part within the arrangement of cognition [6].

Based on these problems, the researcher conducted a study entitled "Implementation of Using Project Based Learning Models in implementing online Geography Learning strategies." The purpose of this study is to determine the effect of using the Project Based Learning Model in the application of online Geography Learning strategies."
2. Method

Research Design and Research Procedures

2.1 Research Design

This considers points to decide the impact of utilizing the Project-Based Learning Show within the application of online Geography Learning techniques. Based on the defined goals, this think about utilized a quasi-experimental plan. The quasi-experiment according to Sudjana[7] is a class situation where the treatment conditions do not allow tight control. Then the control is carried out in accordance with existing conditions.

The inquire about the plan utilized was a Nonequivalent control gather plan. The analyst chose a nonequivalent control bunch plan since this analyst had two bunches that were not haphazardly chosen. The plan utilized in this ponder was a pretest-posttest where they investigate subjects comprised of an exploratory course and a controlled lesson. The inquire about the plan for both test and control course treatment can be seen within the following table 1.

| Class         | Pretest | Perlakuan | Posttest |
|---------------|---------|-----------|----------|
| Experiment    | O₁      | X₁        | O₂       |
| Control       | O₁      | -         | O₂       |

Information:
O₁ : Pre test before learning
O₂ : Pos test after learning
X : The treatment uses an online project based learning model
- : The treatment uses lectures, discussions, questions and answers, and online assignments

2.2 Treatment

The experimental and control classes have different treatments. These treatments include: First, limited initial observation to obtain general information about conditions at school. This activity is carried out to obtain data about the number of classes and students (subjects) who will be involved in the research. In addition, at this stage it is also used to determine the learning conditions of the 2019 class of Geography Education class, and the learning outcomes of the 2019 class of Geography Education class in the odd semester.

Second, the determination of the research subjects by random sampling between class A and class B which is done by calculating the average semester UTS with SPSS 16 for windows software. So that it is obtained that class A is the experimental group and class B is the control group.
Third, the test trials were carried out in class B Class 2018. The use of this class is because the student has received the subject matter that will be used in the research. The trial test consists of 5 questions in the form of an essay.

Fourth, then an experiment was carried out using the 5 pretest questions in the essay form. This is done to determine the initial ability of students in both the experimental and control classes.

Fifth, giving diverse treatment, specifically for the experimental gather it was carried out with an internet project-based learning show, whereas the control bunch was given address strategies and online assignments. Then the final stage after being given treatment is giving a postest. According to Seniati, etc[9] the ability of geography results will be obtained from the calculation of getting a gain score between postest and pretest. So that you will get the results of learning geography whether it affects the project based learning model.

3. Results and Discussion

3.1 Results

In this ponder, there are two classes, specifically the exploratory lesson and the control lesson which have diverse medications. The test course employments the think match and share learning demonstrate, whereas the control lesson employments the ordinary show. The point is to get information on understudy geology learning results in each course. The information will be gotten a gain score, to be specific the pretest score short the postest. The esteem of geography learning results is the comes about of understudy learning topography on natural fabric. From the comes about of inquire about conducted in April 2020 that gotten pretest and postest information within the exploratory and control classes for pretest information.

Learning results by giving a pretest at the starting of the lesson and posttest at the conclusion of the lesson within the frame of an paper test of 5 thing questions. Already, these address things were to begin with counseled with specialists to approve the achievability of questions related to environmental material and learning plan. In the event that it is doable, it can be tried. This address was tried on geography understudies course 2018 at FKIP, Jember University on March 19, 2020. It is known that the prerequisite test comes about have met and are appropriate for utilize in this investigate. There are a few tests that are evaluated counting the control of distinction, address legitimacy, address unwavering quality, and issue trouble. The comes about can be seen in table 2 underneath.

| No | Level of Difficulty | Criteria | Difference | Criteria | Validity | Criteria | Realibility | Criteria |
|----|---------------------|----------|------------|----------|----------|----------|-------------|----------|
| 1  | 33%                 | Good     | 0.38       | Enough   | 0.780    | Valid    |             |          |
| 2  | 39%                 | Good     | 0.46       | Good     | 0.776    | Valid    | 0.783>0.304| Reliable |
| 3  | 36%                 | Good     | 0.39       | Enough   | 0.840    | Valid    |             |          |
Table 2 above shows that based on the feasibility of the questions that have been tested, they include the difficulty test, difference power, validity, and reliability, after the five questions tested are declared valid. Based on this, these questions are feasible and good enough to be used as a measurement of online geography learning.

In its implementation, before using the project based learning model, students are asked questions that aim to see the students' initial abilities. These questions are questions that will be used in the pretest and posttest. The whole class, both the experimental and control classes, were given the same questions.

Then, after it is known that the students' initial abilities both high and low, the next step is to carry out the teaching and learning process by providing treatment according to the learning model in their respective online classes. The test lesson was given treatment utilizing the project-based learning demonstrate, whereas the control course utilized the lecture, question and reply and task show.

After being given the instructing and learning handle, the moment step is to decide the students' last capacity by giving a postest. The postest given employments the same questions at the pretest. The clarification of the speculation in this consideration is that in case $H_0$ is acknowledged, the demonstrate will not influence the comes about of learning topography online, and vice versa for $H_1$.

This think about employments a parametric factual test as a speculation test. Based on this, the factual test autonomous test was 3.675 with a significance of 0.000. From the comes about of this handling, it can be concluded that $H_0$ is rejected. So that $H_1$ is utilized as the inquire about result. The handling comes about for the pretest can be seen in table 3 below.

| Class      | n  | Ideal score | Minimum value | Maximum value | Average |
|------------|----|-------------|---------------|--------------|--------|
| Experiment | 22 | 100,00      | 10            | 50           | 47,73  |
| Control    | 22 | 100,00      | 10            | 60           | 55,25  |

The table above shows that the results of the 2019 class of geography education students' initial ability test for the control class have a higher average score than the experimental class. From the maximum value of 60, it is known that the control class is able to get an average value of 55.25. From these results, class A at the time of online learning is very suitable to be used as an experimental class using a project based learning model.
Table 4. Processing Results for the Pretest Normality Test Results

| Class     | Asymp. Sig. (2-tailed) | A   | Decision | Information |
|-----------|------------------------|-----|----------|-------------|
| Experiment| 0.134                  | 0.05| Accept $H_0$ | Normal      |
| Control   | 0.328                  | 0.05| Accept $H_0$ | Normal      |

After getting the mean, it can be seen the pretest normality. Based on the table, with a confidence level of 0.05, the pretest normality test was obtained between the experimental and control classes. The decision obtained between the experimental and control classes has a significance of more than 0.05, which indicates that the data is normally distributed. While the results of the posttest can be seen in the table as follows.

Table 5. Processing Results for the Postest Results

| Class     | n   | Value          |              |              |              |
|-----------|-----|----------------|--------------|--------------|--------------|
|           |     | Ideal score    | Minimum value| Maximum value| Average      |
| Experiment| 22  | 100.00         | 45           | 90           | 80.17        |
| Control   | 22  | 100.00         | 40           | 85           | 71.67        |

Posttest is gotten after understudies get treatment within the lesson. From table 5 over, it can be seen that the normal esteem of the experimental course is higher than the control lesson with a esteem of 80.17. This appears that after being given a project-based learning demonstration treatment amid the online learning prepare it can move forward understudy learning results in that course. At that point, the comes about of the posttest of the two classes were tried for typicality utilizing SPSS 16 for windows, the comes about can be seen in Table 6 below.

Table 6. Processing Results for the results of the postest normality test

| Class     | Asymp. Sig. (2-tailed) | A   | Decision | Information |
|-----------|------------------------|-----|----------|-------------|
| Experiment| 0.201                  | 0.05| Accept $H_0$ | Normal      |
| Control   | 0.397                  | 0.05| Accept $H_0$ | Normal      |

From the table over, on the off chance that it is seen for the post-test typicality test within the test class and control course employing a 5% certainty level, it is additionally gotten a choice to acknowledge $H_0$, which implies the information is normally conveyed.

After it is known that it is homogeneous and ordinary from the comes about of the pretest and posttest, then another step is to know the Normalized Pick up (N-Gain Score) or what is called Normalized Gain. The point is to decide the viability of a specific treatment in a think about. The N-Gain comes about can be seen within the taking after the table.
Table 7. Processing Results for the of N-Gain results

| Class  | n | Ideal score | Minimum value | Maximum value | Average |
|--------|---|-------------|---------------|---------------|---------|
| Experiment | 22 | 100.00 | 15.38 | 55.00 | 53.15 |
| Control  | 22 | 100.00 | 14.29 | 42.00 | 39.77 |

From the table over, it can be seen that the exploratory lesson encompasses a higher normal N-Gain esteem with a distinction in the esteem of 13.38 when compared to the N-Gain esteem of the control course. The comes about of the N-Gain typicality test can be seen within the taking after the table.

Table 8. Processing Results for the results of the N-Gain normality test

| Class  | Asymp. Sig. (2-tailed) | α     | Decision | Information |
|--------|------------------------|-------|----------|-------------|
| Experiment | 0.211 | 0.05 | Accept H₀ | Normal |
| Control  | 0.106 | 0.05 | Accept H₀ | Normal |

From table 8 over that with a certainty level of 0.05 that the N-Gain information is normally distributed. Besides, the homogeneity test is carried out with the Levene Test which can decide whether the information is homogeneous or not. The information can be seen in table 9 below.

Table 9. Processing Results for the results of the pretest-postest homogeneity test and N-Gain

| Class                 | Asymp. Sig. (2-tailed) | α     | Decision | Information |
|-----------------------|------------------------|-------|----------|-------------|
| Pretest-postest       |                        |       |          |             |
| Experiment            | 0.107                  | 0.05  | Accept H₀ | Normal |
| Pretest-postest       |                        |       |          |             |
| Control               | 0.173                  | 0.05  | Accept H₀ | Normal |
| N-Gain – Experimen and Control | 0.224 | 0.05 | Accept H₀ | Normal |

In table 9 over, all the classes were tried with a centrality >0.05, which suggests that they have homogeneous information. This implies that online student topography learning results don't have a noteworthy distinction based on understudy bunches.

Based on the handling of inquiring about comes about with the assistance of SPSS 16 for windows program, it appears that the utilize of the Project-Based Learning Show within the application of online Geography Learning procedures has an impact on understudy learning results of the Geography Instruction Ponder Program, FKIP University of Jember. The comes about of this think about is in line with the comes about of [9], [10], [11], [12], [13], and [14].
3.2 Discussion

a. The Advantages of Project based Learning Model in Research

The use of project based learning models in its implementation in online geography learning in the experimental class for 2 meetings is able to have a significant effect on student learning outcomes. The findings obtained in this study are that there are advantages that are obtained, including: First, students are more enthusiastic in working together independently or in groups. This is in line with the research of Subagia[15] and Yagus[9] state that the project based learning model enables students to design, solve problems, make decisions, and work together independently and in groups. Second, students are more interested in learning because they are invited to collaborate in making projects in the Environmental Education course. This is in line with Rika [16] research which states that Pjbl is able to motivate students in preparing projects.

b. The Weaknesses of Project based Learning Model in Research

The drawbacks that were found during the learning process using the Project Based Learning model, including: first, it takes a lot of extra time. This is because in making a project, creative ideas are needed in its preparation. Second, it requires adequate tools and materials in order to avoid substantial costs in project preparation.

4. Conclusion

Based on the inquire about comes about, it can be concluded that the usage of the utilize of the project-based learning show has an impact on understudy learning results in online learning. This influence is because the project based learning model has several advantages, among others students are more enthusiastic in collaborating independently or in groups, and are more interested in learning because they are invited to collaborate in making projects in the Environmental Education course.

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