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The Effectiveness of Lesson Study on Student Learning Outcomes in The Study of Mathematics Education Issues

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Abstrak

Isu-isu pendidikan matematika adalah salah satu mata pelajaran wajib di Program Studi Pendidikan Matematika. Mata pelajaran ini mempelajari tentang isu-isu penting tentang pendidikan, terutama bagi siswa yang akan membuat tesis. Penelitian ini merupakan penelitian untuk mengukur sejauh mana pengaruh lesson study terhadap hasil belajar siswa dalam pembelajaran isu-isu pendidikan matematika. Tujuan dari penelitian ini adalah untuk menguji pencapaian hasil belajar siswa antara pembelajaran dengan lesson study dan pembelajaran dengan model tradisional. Penelitian ini adalah penelitian eksperimental semu dengan desain kelompok kontrol posttest. Penelitian ini dilakukan pada siswa matematika di Universitas Singaperbangsa Karawang. Data dikumpulkan dengan tes dan dianalisis dengan analisis statistik deskriptif dan inferensi statistik (uji-t). Berdasarkan hasil analisis data, pencapaian hasil belajar siswa yang pembelajarannya menggunakan lesson study lebih baik daripada siswa yang belajar dengan model tradisional. Dengan demikian, dapat disimpulkan bahwa ada perbedaan hasil belajar siswa yang signifikan antara siswa yang belajar dengan lesson study dan siswa yang belajar dengan model tradisional.

Kata Kunci: Lesson Study, Hasil Belajar Siswa

Abstract

The study of mathematics education issues is one of the compulsory subjects in the Mathematics Education Study Program. This subject studies about crucial issues regarding education, especially for the students who are going to make a thesis. This research is a study to measure the extent of the effect of the lesson study on student learning outcomes in the study of mathematics education issues. The purpose of this study is to examine the achievement of student learning outcomes between the learning with lesson study and the learning with traditional model. This research is a quasi-experimental research with posttest control group design. The study was conducted on mathematics students in University of Singaperbangsa Karawang. The data was collected by tests and analyzed by descriptive statistical analysis and statistical inference (t-test). Based on the results of data analysis, the achievement of student learning outcomes whose learning uses the lesson study is better than the students who learn with traditional model. Thus, it can be concluded that there are significant differences in student learning outcomes between students who learn with lesson study and students who learn with traditional model.

Keywords: Lesson Study, Student Learning Outcomes

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INTRODUCTION

Professionalism is a demand of every job, including the lecturer profession, which handles college students that have different characteristics from one to another. The profession as a lecturer becomes heavier when it comes to capacity building as written in Peraturan Pemerintah No.19 Tahun 2005 tentang Standar Nasional Pendidikan. It states that the learning process in educational units is held interactively, inspiratively, fun, challenging, motivates students to participate actively and provide sufficient space for initiative, creativity, and independence, according to talent, interests and physical and psychological development.

The study of mathematics education issues is one of the compulsory subjects in the Mathematics Education Study Program at University of Singaperbangsa Karawang. Until now, the

learning outcomes of the subject have not met expectations, possibly because the learning process or learning model is not interesting or it's because mathematics students having difficulty in memorizing subjects. To support the learning process that enhances the ability of these students, a development of learning models is needed, one of the efforts to overcome these problems is to try to apply lesson study. Lesson Study has been developed and implemented in Japan which is proven to be able to improve the quality of learning that has a direct impact on improving the quality of education.

Lewis (2002) states that lesson study has a significant role in making a change systematically. Lewis describes how this can occur by discussing the five paths that lesson study can achieve: 1) bringing the standard goal of education to the real world in the classroom; 2) promoting the improvements on the basis of data; 3) targeting the achievement of various quality students that affect learning activities; 4) creating fundamental demands for increasing the learning; and 5) upholding lecturer's value. Therefore, this research aims to examine the achievement of learning with lesson study comparing to those using traditional learning.

METHODS

This research used a quasi-experimental method. According to Sugiyono (2015), an experimental research method is a research method used to look for the effect of certain treatments under controlled conditions (laboratory). In this study, two classes were used, these are the experimental class and the control class. In the experimental class, students were taught with lesson study and in the control class, students were taught with traditional model.

Population is a generalization area consisting of objects or subjects that have certain quantities and characteristics that are applied by researchers to be studied and then be concluded (Sugiyono, 2015). The population in this study were all students on the 5th semester in Mathematics Education Program at the University of Singaperbangsa Karawang.

A researcher does not have to research an existing research population, but can be taken in part according to the used sampling technique. The sample is part of the number and characteristics possessed by the population (Sugiyono, 2015).

The sample were selected by the purposive sampling technique. The research samples were two classes that selected randomly from six classes. The consideration for this selection were: 1) it is not based on the ranking but randomly by the researcher, 2) all classes are given lessons with the same curriculum, and 3) lecturers who teach in the class are the same person. The two classes were given the different treatments, students in the experimental class were taught with lesson study and students in the control class were taught with traditional model. Data collection techniques used in this study are based on the research instruments. This study used only a posttest.

RESULTS AND DISCUSSION

This research was conducted for a month with the aim to study the achievement of lesson study learning and compare it with the achievement of traditional learning. This research was conducted at the University of Singaperbangsa Karawang in the Study of Mathematics Education Issues class. This reseach was conducted in two classes, the experimental class was V-C consisting of 34 students and the control class was V-B consisting of 34 students.

The data from this study are quantitative data obtained from the results of student learning outcomes in the experimental class and the control class. The data was analyzed by compare means test. This analysis aims to know the significant differences between student conceptual understanding in experimental class and control class. Before compare means test is conducted first, the normality test is done as a prerequisite for choosing the type of statistical test that will be used. Homogeneity test is used for noemal data and nonparametric test is use for abnormal data.

Data normality test is carried out to find out data from both samples whether they are normally distributed or not. This test uses SPSS version 23 for windows. Normality test is done by Shapiro-Wilk test with a significant level $\alpha = 0.05$. The hypothesis for normality test is:

H_0: Data is normaly distributed

H_1: Data is not normaly distributed

The testing criteria are as follows:

1. If the significance value is greater than or equal to 0.05, H_0 is accepted
2. If the significance value is less than 0.05, H_0 is rejected

The results of the normality test of the student learning outcomes from the experimental class and the control class can be seen in the following table:

Table 1. Normality test of student learning outcomes

Class	Statictic	Df	Sig.
Control	0.875	34	0.001
Experiment	0.941	34	0.065

Based on Table 1, it can be seen that the significance value based on Shapiro-Wilk for student learning outcomes in the experimental class is 0.065 and greater than 0.05; and significance values for control classes is 0.001 and less than 0.05. Because one of the classes has a significant value that less than 0.05, then H_0 is rejected. So, the samples are not normally distributed.

Because the test results show that the posttest data of student learning outcomes come from populations that are not normally distributed, the homogeneity test couldn't be done and the analysis of data continued with nonparametric test using Mann-Whitney test. This test aims to see the difference test of two average posttest scores of student learning outcomes in the experimental class and the control class. The hypotheses tested are:

H_0: $\mu 1 \geq \mu 2$ Mean rank of learning outcomes of experimental class students is better than the student learning outcomes in control class.

H_1: $\mu 1 < \mu 2$ Mean rank of learning outcomes of experimental class students is worse than the student learning outcomes in control class.

The formulation of the statistical problem that proposed on hypothesis is:

μ_1: mean rank of student learning outcomes in the experimental class

μ_2: mean rank of student learning outcomes in the control class

The hypothesis testing criteria are:

1. If the significance value is greater than or equal to 0.05, H_0 is accepted.
2. If the significance value is less than 0.05 then H_0 is rejected.

The results of the Mann Whitney test using SPSS 23 are as follows:

Table 2. Mann-Whitney test of student learning outcomes

Class	N	Mann Whitney	Asymp. Sig. (2-tailed)
Control	34	17.500	0.000
Experiment	34		

Based on Table 2, it shows that the value of Sig. (2-tailed) is 0.000 and less than 0.05. Because the value of Asymp.Sig (2-tailed) is 0,000, the value of Asymp.Sig (1-tailed) is also smaller than $\alpha = 0.05$. This means that H_0 is rejected and H_1 is accepted. So, it can be concluded that the learning with lesson study learning is effective for improving student learning outcomes.

From the analysis of data, the achievement of students' mathematical understanding ability that learning with lesson study is better than students that learning with traditional model. This is because in every element in the lesson study is used to link old information with new information, organize a variety of varied material, reflect everything that students learn, and develop a learning environment. The problems are solved together, and the solution is used as input for learning. Based on the observation in class, learning with the lesson study has advantages in improving students' mathematical understanding abilities, because learning with lesson study encourages students to actively learn, practice their memory about a concept, train their critical thinking towards a problem, and provide learning that is meaningful.

CONCLUSION

Based on the result and discussion, this study provides a conclusion that the achievement of student learning outcomes whose learning with the lesson study is better than that which uses traditional learning. Learning with lesson study has advantages in improving students' mathematical understanding abilities, because learning with lesson study encourages students to actively learn, train their memory about a concept, train their critical thinking towards a problem, and provide meaningful learning.

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