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The Influence of Problem Based Learning and Student Teams Achievement Divisions on Student Achievement

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ABSTRACT

The purpose of this study was to find out how the application of the Problem Based Learning and Study Team Achievement Desicion learning model affects the learning achievement of 5th grade elementary school students in thematic learning. The research method uses a quasi-experimental or quasi-experimental method with the research design of Nonequivalent Control Group Design. In this study, researchers used two groups, namely the experimental 1 group which is treated with the Problem Based Learning model and the experimental 2 group which is required by the Student Team Achievement Divisions learning model. The sample was determined by total sampling, which means that the entire population became the research sample, namely the 5th grade students of SDN Purworejo, totaling 19 students and SDN Dersansari 02, totaling 22 students, meaning that the total sample was 41 students. Data collection tools using normative tests and data analysis using normality test, homogeneity test, and hypothesis testing. The results of the study in terms of the results of the different test (t) determine the experimental 1 class of 75.79 and the experimental 2 class of 84.09. Meanwhile, the results of the N-Gain test showed that the experimental 1 class was 39.9% and the experimental 2 class was 60.3%, so it can be concluded that improving student learning achievement is more effective when using the STAD model.

Keywords: Learning Achievement; Problem Based Learning; Student Team Achievement Divisions.

INTRODUCTION

Education is a guidance process carried out with awareness by educators towards students to actively develop the potential that exists in students so that they are useful for the benefit of their lives as individuals and citizens or society (Hobbs & Tuzel, 2017; McKnight et al., 2016; Nakajima & Goode, 2019; Vekić-Kljaić & Mlinarević, 2022). In Government Regulation of the Republic of Indonesia No. 57 of 2021 Article 1 education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have spiritual, religious, self-knowledge, personality, intelligence, noble character, and skills needed by themselves, the community, nation and state. To realize the function of basic education is not easy because the main object of education is human (Alanoglu et al., 2022; Lefa, 2014; Stringer, 2008). To humanize humans, special strategies are needed in education (Suprapto & Sunarsi, 2020).

Education in Indonesia cannot be separated from various problems, one of which is equal distribution of education and the difficulty of teachers in understanding the concepts of learning models that provide various obstacles in teaching. So that the uneven distribution of education causes uneven student achievement and results in low overall student achievement (Elacqua &

Marotta, 2020; Kamaluddin et al., 2018; Sletten, 2017). This is evidenced by the results of the 2019 Programmer for International Student Assessment (PISA) study. PISA is a program conducted every three years that is used to measure the level of learning competence of students globally. As for the results of the 2019 PISA, Indonesia ranks 73 out of the 78 participating countries. So it can be said that Indonesia is in the 6th lowest rank compared to other countries.

The low quality of education is inseparable from student achievement which is the benchmark for achieving the education system. The low achievement of students is caused by several main factors, namely (1) monotonous learning, (2) Lack of concepts in learning, (3) lack of adequate facilities, (4) low knowledge from teachers, (5) conflicts caused by family, (6) bad social factors, (7) self-factors that are less self-motivated on the importance of education. So that student achievement becomes a challenge for teachers who teach in order to make quality students.

The teacher's role in supporting student achievement is very important, because the teacher is the main example for his students. In the research observations that have been carried out, it has been shown that teachers still tend to teach using the lecture and memorization method so that there are still many students who are only fixated on the teacher's explanations and students are less interested in learning (McCombs et al., 2008; McKnight et al., 2016; Nakata, 2019; Saariaho et al., 2019). This is also a factor in the low learning achievement of students because learning is still centered on books and students are not motivated to learn.

The low learning achievement of students can be handled by applying various useful learning models to create an interesting and fun learning system for students. One of them is by applying Problem Based Learning and Student Team Achievement Decision learning models. Problem Based Learning is arranged in the form of learning that begins with a problem using the instructor as a metacognitive training and ends with the presentation and analysis of student work. In this learning model, the teacher only acts as a guide and facilitator. Students will be directed to solve existing cases. With this course students will be trained to think critically.

Problem Based Learning learning model is the learning material provided will also be easily embedded and remembered. In developing student creativity, the learning process can be directed according to the level of development, for example solving problems through everyday games. For example, by classifying the roles of family members, applying ethics and manners at home, at school, and in the surrounding environment, using geographic vocabulary to tell places and so on.

A phenomenon that often occurs, especially in Indonesia, students lack a critical attitude and actively participate in the learning process. No matter how high the level of education is, this activity has not yet become the identity of Indonesian students. This is because Indonesian culture, which previously mostly did not implement child-friendly schools or educators who had the heart to commit violence against students who were deemed inappropriate, formed a mentality of being afraid to ask questions, afraid to express opinions and this has become a hereditary culture. .

Apart from the Problem Based Learning model, another learning model that can be used is the Student Team Achievement Decision model. This learning model is a different learning model that can be used to increase the ability of students to excel (Shafritz et al., 2017). The Student Team Achievement Dicision model can also build interaction between students and study groups to help each other and encourage each other in making it easier to understand the material in order to achieve increased achievement. Through the STAD learning model, students can achieve problem solutions by working together in study groups. This learning model builds a cooperative

attitude between students. Students can express all their opinions and ideas. As for ideas and opinions from study group members, students can more easily decide on solutions to the problems they want to solve. The formation of a group of learning member guidance can minimize the possibility of students getting presentations that are not high.

The application of the Problem Based Learning and Study Team Achievement Division learning models can be carried out in thematic learning. Thematic learning as a teaching and learning approach that involves several subjects in one theme to provide a meaningful experience for students. This experience is intended for children to be able to understand the concepts they have learned through direct experience and connect them with other concepts that they already understand (Kazu & Demirkol, 2014). Thematic learning is oriented to the developmental needs of children, meaning that it rejects drill as the basis for the formation of knowledge and intellectual structure of children. When compared with conventional learning, thematic learning emphasizes active student involvement, both cognitive and skills in the learning process.

Research conducted by (Miterianifa et al., 2019; Tsybulsky & Muchnik-Rozanov, 2019) shows that the application of the PBL learning model can increase activeness and higher learning outcomes. This is in line with research conducted by (Barth et al., 2019; Naji et al., 2020) which shows that the implementation of the PBL model aims to increase student activity and learning outcomes. In addition, the results of the research by show that the average learning achievement given the STAD learning model is better than the average learning achievement given the conventional learning model. In line with (Damopolii & Rahman, 2019) the application of the STAD learning model has an influence in improving students' accounting learning achievement and has a positive impact on the enthusiasm of students to participate in the learning process.

This research was conducted to find out how the effect of applying the Problem Based Learning and Study Team Achievement Desicion learning model on the learning achievement of 5th grade elementary school students in thematic learning.

METHOD

The type of research used in this research is experimental research and to be precise is a quasi-experimental (quasi-experimental). The research method of quasi-experimental or quasi-experimental research that the researcher uses is defined as research that approaches experimental research. This type of quasi-experimental research is widely used in the field of education or other fields where the research subject is humans who cannot be manipulated and controlled intensively (Creswell & Clark, 2017; Creswell & Creswell, 2017; John W Creswell, 2013). This study uses a research design Noneequivalent Control Group Design. In this study will use two groups, namely group 1 and group 2.

Table 1. ***Nonequivalent Control Group Design***

Group	Pre-Test	Treatment	Post-Test
Experiment 1	O_1	X_1	O_3
Experiment 2	O_2	X_2	O_4

Experiment 1 is the group that will get the Problem Based Learning treatment, while Experiment 2 is the group that will get the Study Team Achievement Division treatment. The

population in this study was the 5th grade students of SDN Purworejo, which amounted to 19 students and SDN Dersansari 02, which amounted to 22 students, meaning that the total population was 41 students. Because this research is an experimental research and the subject is a group which means all students in a certain class. Then the sample research is referred to as total sampling. Which means that the entire population is the sample in this study. In this study, the tool used to obtain data was a formative test in the form of multiple choice. The student achievement assessment system will get the highest 4 points. Data analysis used normality test, homogeneity test, and hypothesis testing. The following are the guidelines for assessing problem-solving skills:

$$Score = \frac{Score\ obtained}{Maximun\ Score} x\ 100$$

RESULT AND DISCUSSION

In the research conducted in the experimental class 1 using the Problem Based Learning learning model. And experimental class 2 uses the Student Team Achievement Divisions model.

Result

1. Normality Test

Normality test using the Shapiro-wilk technique. This normality test aims to be able to see why the data in the experimental class and control class are normally distributed or not.

Table 2. Pre-Test Normalization Test

	Group	Shapiro-Wilk		
		Statistic	Df	Sig.
Pretes	Experiment 1 PBL	0.915	19	0.092
	Experiment 2 STAD	0.919	22	0.071

Table 3. Post-Test Normalization Test

	Group	Shapiro-Wilk		
		Statistic	Df	Sig.
Pretes	Experiment 1 PBL	0.934	19	0.207
	Experiment 2 STAD	0.915	22	0.061

Based on the results of the prettest and posttest normality tests of the two groups, it can be concluded that the distribution is normal.

a. The significance level of the prettest value of the experimental group 1 with the Problem Based Learning model is 0.092 > 0.05, meaning that the value is normally distributed.
b. The posttest score level of the experimental group 1 with the Problem Based Learning model is 0.207 > 0.05, meaning that the value is normally distributed.
c. The level of the prettest score for the experimental group 2 with the Student Team Achievement Divisions model was 0.071 > 0.05, meaning that the value was normally distributed.
d. The posttest score level of the experimental group 2 with the Student Team Achievement Divisions model is 0.61 > 0.05, meaning that the value is normally distributed.

2. Homogeneity Test

The homogeneity test was conducted to determine whether the samples of the experimental class and the control class had the same variance.

Table 4. Pre-Test Homogeneity Test

		Levene Statistic	df1	df2	Sig.
Pre-Test PBL and STAD	Based on mean	0.111	1	39	0.741
	Based on median	0.028	1	39	0.868
	Based on median and with adjusted df	0.028	1	38.335	0.868
	Based om trimmed mean	0.125	1	39	0.726

Based on the table above, it shows that the results of the homogeneity test before the treatment obtained a significance of 0.741 > 0.05, which means that from both groups, both experimental group 1 and experimental group 2 there were the same variants or were said to be homogeneous.

Table 5. Test of Homogeneity Post-Test

		Levene Statistic	df1	df2	Sig.
Pre-Test PBL and STAD	Based on mean	1.158	1	39	0.193
	Based on median	1.270	1	39	0.267
	Based on median and with adjusted df	1.270	1	38.156	0.267
	Based om trimmed mean	1.158	1	39	0.193

Based on the table above, it shows that the results of the homogeneity test after the treatment obtained a significance of 0.193 > 0.05, which means that from both groups, both experimental group 1 and experimental group 2, there is the same variance or is said to be homogeneous.

3. T . test

The t-test aims to determine whether there is a difference in effectiveness between experimental group 1 and experimental group 2 on student achievement. Based on the table

above, the results of the T test using an independent sample T test show that Tcount is 2.103 with a significance in the Sig(2-tailed) column of 0.042 > 0.05, so H0 is rejected and Ha is accepted.

4. Description of data

Based on the posttest mean difference test, it can be seen that the learning achievement ability of students in the experimental group 2 is higher than the experimental group 1. It can be seen that the treatment of the experimental group 2 is more effective than the treatment of the experimental group 1. The N-Gain test is used to know how strong the effectiveness of the application of the two learning models. The results of the N-Gain test to see the effectiveness of the two learning models, namely Problem Based Learning and Study Team Achievement Division, can be seen in table 6.

Table 6. Calculation Results of N-Gain Score Test

No.	Experimental class 1 PBL model N-Gain Score (%)	Experimental class 2 STAD model N-Gain Score (%)
1	0	100
2	50	60
3	60	83
4	0	20
5	17	33
6	50	25
7	-50	50
8	20	100
9	75	33
10	0	100
11	83	80
12	75	50
13	60	40
14	17	67
15	67	50
16	100	33
17	60	80
18	0	100
19	75	67
20		0
21		80
22		75
Average	**39,9%**	**60,3%**

The results of the N-Gain test for experimental class 1 and experiment 2 state that the average experimental class 1 has increased by 39.9%, while the average experimental class 2 has increased by 60.3%, which means that the N-Gain results have increased in the quite effective

category. From the table above, it can also be seen that the experimental class 2 has a higher increase than the experimental class 1.

Discussion

In this discussion it can be concluded that there are differences in student achievement abilities from the experimental class 1 which uses the Problem Based Learning learning model and the experimental class 2 which uses the Study Team Achievement Division learning model, these two models can improve students' thematic learning achievement with the results of the N-test. Gain to find out its effectiveness.

The results of the N-Gain test show that the experimental class 1 is 39.9% while the experimental class 2 is 60.3%, so it can be concluded that in order to improve students' learning achievement skills, it is more effective if using the Study Team Achievement Division learning model. From the results of the difference test (t) using an independent sample T test, the results show that Tcount is 2.103 with a significance in the Sig(2-tailed) column of 0.042. The mean difference of the group mean difference is -8,301. The table obtained from the data above is 0.432.

In the results of the hypothesis testing criteria, that the significant value shows 0.042 < 0.05 so that H0 is rejected and Ha is accepted. Therefore, the hypothesis test can be concluded that there are differences in the effectiveness of the Problem Based Learning and Study Team Achievement Division learning models on student achievement in 5th grade thematic learning of elementary school. The success of this research is supported by the increase in the results of the prettest to the posttest, so it can be seen that there is a significant difference (Castaneda et al., 2018; Hoffmann et al., 2022; Vallejo-Huanga et al., 2019). When the Problem Based Learning model has been implemented and the Study Team Achievement Division learning model has been implemented. By doing data analysis which shows the results of using the Study Team Achievement Division learning model is more effective than Problem Based Learning.

CONCLUSION

From the explanation of the research that has been done, it can be concluded that there are differences in student achievement in the experimental class 1 using the PBL model and the experimental class 2 using the STAD model. The PBL and STAD models can improve students' learning achievement with the results of the difference test (t) and N-Gain to determine student achievement. The results of the difference test (t) determined that the experimental class 1 was 75.79 and the experimental class 2 was 84.09. While the results of the N-Gain test showed that the experimental class 1 was 33.9% and the experimental class 2 was 60.3%, so it can be concluded that improving student learning achievement is more effective when using the STAD model.

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