The Influence of the Problem Based Learning (PBL) Model and the Numbered Head Together (NHT) Model on Social Studies Learning Outcomes for Class V Students

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Abstrak

Tujuan penelitian adalah untuk melihat: 1) pengaruh model pembelajaran Problem Based Learning terhadap hasil belajar siswa kelas V Gugus 8 Kecamatan Biringkanaya; 2) pengaruh model pembelajaran Numbered Head Together terhadap hasil belajar siswa kelas V Gugus 8 Kecamatan Biringkanaya; dan 3) Perbedaan hasil belajar siswa kelas V Gugus 8 Kecamatan Biringkanaya yang diajarkan dengan model pembelajaran Problem Based Learning dan model pembelajaran Numbered Head Together. Jenis penelitian ini adalah quasi eksperimen dengan rancangan pretest-postest control group design. Jumlah sampel dalam penelitian ini adalah siswa kelas V SDN Bulurokeng untuk kelas PBL dan SDN Bulurokeng I pada kelas NHT. Metode pengumpulan data yang digunakan yaitu tes hasil belajar untuk mengukur Hasil belajar siswa dan dokumentasi. Tehnik analisis data yang digunakan yaitu pendekatan statistik deskriptif dan analisis inferensial. Hasil penelitian 1) Hasil belajar siswa yang menggunakan model pembelajaran PBL berdasarkan hasil analisis deskriptif, diperoleh hasil bahwa hasil belajar siswa meningkat dengan rata-rata nilai 81,29; 2) Hasil belajar siswa dengan menggunakan model NHT berdasarkan hasil analisis Deskriptif, diperoleh hasil bahwa hasil belajar siswa meningkat dengan rata-rata nilai 79,03; 3) Perbandingan hasil belajar PBL dan NHT dari uji hipotesis bahwa nilai signifikansi $0,282 > 0,05$ maka dapat disimpulkan bahwa tidak ada perbedaan yang signifikan antara model pembelajaran PBL dengan model NHT ditinjau dari hasil belajar IPS siswa kelas V Gugus 8 Kecamatan Biringkanaya.

Kata Kunci: *pembelajaran problem based learning; pembelajaran Numbered Head Together (NHT); hasil belajar*

Abstract

The aim of the research is to see: 1) the influence of the Problem Based Learning learning model on the learning outcomes of class V students in Gugus 8, Biringkanaya District; 2) the influence of the Numbered Head Together learning model on the learning outcomes of class V students in Cluster 8, Biringkanaya District; and 3) Differences in learning outcomes for class V students

in Gugus 8, Biringkanaya District, who were taught using the Problem Based Learning model and the Numbered Head Together learning model. This type of research is quasi-experimental with a pretest-posttest control group design. The number of samples in this study were class V students at SDN Bulurokeng for the PBL class and SDN Bulurokeng I for the NHT class. The data collection method used is learning outcomes tests to measure student learning outcomes and documentation. The data analysis techniques used are descriptive statistical approaches and inferential analysis. Research results 1) Student learning outcomes using the PBL learning model based on descriptive analysis results showed that student learning outcomes increased with an average score of 81.29; 2) Student learning outcomes using the NHT model based on the results of descriptive analysis, showed that student learning outcomes increased with an average score of 79.03; 3) Comparison of PBL and NHT learning outcomes from the hypothesis test that the significance value is 0.282 > 0.05, so it can be concluded that there is no significant difference between the PBL learning model and the NHT model in terms of the social studies learning outcomes of class V students of Cluster 8, Biringkanaya District.

***Keywords**: problem based learning; Numbered Head Together (NHT) learning; learning outcomes*

Introduction

In the current era of globalization, everyone can easily and quickly get various kinds of information. This shows that technology and science are currently increasingly developing. To keep pace with the demands of developments in science and technology, everyone must be able to adapt to keep up with the changes that occur. To meet these demands, a person must understand and train themselves to solve everyday problems. This ability can be obtained through the educational process.

Education is every action carried out consciously which includes mental and physical development (teaching) of students that lasts throughout life to improve their personality (Purwanto, 2014). Therefore, education is very important for humans and should not be abandoned. Humans will develop into strong individuals through education. Schools, as formal places for education, must be properly directed to produce individuals who are qualified, competitive, and have noble morals and character in the modern era. The school gives students Social Sciences (IPS) subjects.

Social Sciences (IPS) is included in the school curriculum which is very closely related to the role of humans in society (Gunawan, 2013; Kemendikbud, 2013). Social studies learning teaches about social life and how to socialize in the environment (Hidayati, 2008; Supriya, 2006). Students socialize with their immediate environment, namely family and community. This is attached to the memory that humans are social creatures who cannot live alone. Students are also required to solve problems in life and problems in society (Saputra, 2009). All students, especially in elementary schools, need social studies learning to develop logical, analytical, systematic, critical and creative thinking skills, as well as social skills. This ability is needed so that students can obtain, manage and utilize information to solve problems.

The learning carried out at school does not meet expectations. Learning in class is very passive because the learning process only involves listening, doing assignments, and focusing on books (Hamalik, 2009). This causes a lack of interaction between teachers and students as well as between students and each other,

which causes ineffective learning activities and poor learning outcomes. Teachers must also encourage students to be more active, creative and innovative in solving problems in their environment (Amna, 2017). Teachers are also expected to be able to provide solutions to problems based on their knowledge and understanding (Trianto, 2013). Students will be actively involved in the learning process and solve problems if these problems are ignored. The solution to this problem is to implement a learning model that allows students to be actively involved in the learning process.

The most effective and beneficial learning model for students is a model that is centered on problem solving and requires students to participate actively in the learning process (Fathiah, 2014). A model that can influence student learning outcomes is the Problem Based Learning (PBL) learning model (Rusmina W., 2014) and *Numbered Head Together* (NHT) (Hardianti & Haryati, 2020). These two learning models each influence learning outcomes in social studies subject matter regarding analyzing the role of the economy in efforts to improve people's lives in the social and cultural fields, as well as their relationship with spatial characteristics. So, the PBL learning model is a solution to social studies learning problems in grade V elementary school.

Based on the description above, research on social studies learning using the PBL model and NHT model must be carried out. This research should engage students to be active and encourage them to learn actively with concepts and principles that are relevant to them. Apart from that, it is hoped that this research can improve social studies learning outcomes by encouraging students' learning process to search for and find their own answers.

According to the results of direct student observations carried out by a teacher on November 13 2023, the teacher-

centered learning pattern still applies in the social studies learning process. The teacher remains the center of information and does not involve students in their own search and discovery activities. As a result, students are less active in the learning process. The results of the second observation were carried out on senior teachers, namely grade 5 teachers, on December 15 2023, that in the process of learning how to teach teachers still centered on books, they were still very lacking in using learning models. Likewise, the results of the principal's interview, on December 17 2023, stated that to improve student learning outcomes, teachers should use several variations of learning.

Based on the description above, it can be concluded that to measure student learning outcomes in social studies learning in elementary schools, it is necessary to apply learning using the PBL learning model and the NHT model, because with this learning model students are encouraged to be active during the learning process.

Metode (15%)

1. Research Design and Type

The design of this research is a quasi experiment, using two groups as research samples (Burhan, 2010). The reason for using a quasi-experimental model in this research is that the researcher cannot fully control the two groups studied because not all external variables can be controlled, so the changes that occur are not entirely due to the influence of the treatment.

The form of quasi-experimental design in this research is a pretest-posttest control group design. Because in this study there were 2 groups chosen at random and then given a pretest and posttest for the Problem Based Learning (PBL) class group and the Numbered Head Together (NHT) class.

2. Sample

A portion of the number belonging to the population is usually called a sample (Sukmawati, Salmia, 2023) states that "the sample is a part of the population itself". Meanwhile, according to (Riduwan, 2009) "A sample is a part of a population that has certain characteristics or conditions to be studied. Because not all data and information will be processed and not all people or objects will be researched, but it is sufficient to use a representative sample." So it can be concluded that the sample is the number or characteristics that represent the population studied.

The sample selection in this study was carried out by random sampling obtained from the entire population consisting of 6 elementary schools. Next, samples were obtained, namely class V at UPT SPF SDN Bulurokeng and UPT SPF SDN Bulurokeng I.

3. Data Collection and Data Analysis Techniques

The data collection techniques used in this research are observation, learning results tests and documentation. The data analysis techniques used in this research are descriptive analysis and inferential analysis. Testing the research hypothesis used the Statistical Package for Social Science (SPSS) version 25 program, namely the Independent Sample T-Test.

Results and Discussion (70%)

1. Hasil Penelitian

This research was carried out at two schools as samples, namely SDN Bulurokeng I using the Problem Based Learning (PBL) learning model and SDN Bulurokeng II using the Numbered Head Together (NHT) learning model. These two models were applied for 6 days with details of the research results as follows.

a. Student Learning Results with the Problem Based Learning (PBL) learning model

This research was conducted for 6 days, namely the first day by giving a pretest to determine students' initial abilities regarding the theme of the role of economics in society's life. Furthermore, at the second meeting until the fifth meeting, students were given treatment using the PBL learning model, and at the sixth meeting, students were given a posttest to determine student learning outcomes after being given the treatment. Data on student learning outcomes obtained through pretest and posttest were then analyzed using SPSS 25.

Table 1 Statistical Test of PBL Class Learning Results

Statistics

		Pretst PBL	Postest PBL
N	Valid	31	31
	Missing	0	0
Mean		60.97	81.29
Std. Error of Mean		1.456	1.371
Median		60.00	80.00
Mode		60	85
Std. Deviation		8.105	7.634
Variance		65.699	58.280
Range		35	30
Minimum		45	65
Maximum		80	95
Sum		1890	2520

Based on the statistical test of learning outcomes in the pretest and posttest above, the learning outcomes in the pretest totaled 1,890 with an average of 60.97 from 31 students. Meanwhile, during the posttest implementation, the total score was found to be 2,520 with an average score of 81.29. Based on the table above, it can be concluded that the application of the PBL learning model can improve the learning outcomes of class V at

SDN Bulurokeng I. The values of the pretest and posttest learning outcomes can be categorized into the achievements below.

b. **Student Learning Results with the Numbered Head Learning (PBL) Model**

The implementation of learning in the NHT class is carried out over 6 meeting days, namely the first meeting by giving a pretest, the second meeting to the fifth meeting by providing treatment using the NHT learning model and the sixth meeting by giving a posttest to find out student learning outcomes after implementing the NHT learning model.

Table 2 Statistical Test of NHT Class Learning Results

Statistics

		Pretest NHT	Postest NHT
N	Valid	31	31
	Missing	0	0
Mean		60.81	79.03
Std. Error of Mean		2.126	.910
Median		60.00	80.00
Mode		50	75ª
Std. Deviation		11.839	5.069
Variance		140.161	25.699
Range		40	20
Minimum		40	70
Maximum		80	90
Sum		1885	2450

a. Multiple modes exist. The smallest value is shown

Based on the table above, the pretest learning result scores in the NHT class are 1,889 with an average score of 60.81 and after students are given treatment using the NHT learning model, they are then given a posttest to find out the students' learning results. The posttest results obtained a total score of 2,450 with an average of 79.03 from a total of 31 students. Based on income, the average

student score on the posttest can be stated to have increased with achievement above the KKM. Below we will describe the categorization of posttest scores for class V students in the NHT class.

c. **Normality test**

The normal test criterion is if χ^2count is smaller than χ^2table where χ^2table is obtained from the χ^2 list with dk = (k-1) at the significance level α = 0.05. In this study, the One Sample Kolmogorav-Smirnov test was used using a significance level of 5% or 0.05 with the conditions: If Pvalue ≥ 0.05 then the distribution is normal, and if Pvalue <0.05 then the distribution is not normal.

Table 3 Normality Test

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		62
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	6.85040734
Most Extreme Differences	Absolute	.148
	Positive	.071
	Negative	-.148
Test Statistic		.148
Asymp. Sig. (2-tailed)		.022[c]

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

Based on the One Sample Kolmogorav-Smirnov normality test, it can be explained that the Asymp. Sig. (2-tailed) as much as 0.022 with the conclusion that if the Sig. (2-tailed) > 0.05 then it is normally distributed. So the two learning models applied to the NHT and PBL classes are normally distributed.

d. **Homogeneity Test**

The homogeneity test was carried out to see whether the two samples had the same variance. The analysis technique used in the homogeneity test is the Levene test with the help of SPSS v.25 with the following conditions: If the sig. > 0.05 then the data is homogeneous, and if the sig value < 0.05 then the data is not homogeneous.

Table 4 Normality Test

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Unstandardized Residual	Based on Mean	1.045	16	42	.434
	Based on Median	.706	16	42	.772
	Based on Median and with adjusted df	.706	16	24.086	.762
	Based on trimmed mean	.993	16	42	.481

Based on the homogeneity test above, the Sig value is 0.481 > 0.05 which indicates that the two groups are homogeneous with a statistical levance of 0.993. The homogeneity test has a homogeneous distribution, then a hypothesis test will be carried out to answer the third hypothesis.

e. Hypothesis test

Testing the research hypothesis uses the Statistical Package for Social Science (SPSS) version 25 program, namely the Independent Sample T-Test.

Table 5 Hypothesis Testing

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Hasil Belajar	Equal variances assumed	1.178	.282	4.719	60	.000	8.387	1.777	4.832	11.942
	Equal variances not assumed			4.719	57.898	.000	8.387	1.777	4.830	11.945

Based on the table above, the results of the Independent Sample Test scores in the PBL learning model class and NHT class, Levene's test analysis, can be seen that the significance value is 0.00, indicating that 0.282 > 0.05, so H0 is accepted and H1 is rejected, meaning that the population variance is identical/same. , meaning that it can be concluded that "There is no significant difference between the PBL learning model and the NHT model in terms of the social studies learning outcomes of class V students in Gugus 8, Biringkanaya District."

2. Discussion

The research was conducted in class V with a sample of two schools, namely SDN Bulurokeng I for the PBL class and SDN Bulurokeng II for the NHT class. The two classes were held each for 6 meetings by giving a pretest and posttest to determine the value of learning outcomes before and after being given treatment.

The learning results obtained from the pretest were carried out and continued with the posttest after treatment using the PBL learning model. This is proven by the average score on the pretest being 60.97 and after carrying out the posttest the students' average score was 81.29. Problem-based learning (PBL) is an effective approach to improving student learning outcomes. This method requires students to solve problems relevant to the subject matter being studied, allowing them to develop deeper understanding and strong problem-solving skills.

PBL learning students are actively involved in the problem solving process which requires a deep understanding of the subject matter (Kusumawat, 2015). This encourages students to understand key concepts better because they must apply students' knowledge to solve complex problems. The PBL learning model often sparks students' interest because it involves solving problems that are challenging and relevant to everyday life (Sudrajat, 2021). This can increase students' intrinsic motivation to learn, because students see the immediate value of what they learn in everyday life.

Studies on improving student learning outcomes through the PBL learning model have been the focus of much research. This is in line with constructivism theory that the PBL learning model is based on constructivist theory, which emphasizes that students build their own understanding through active and reflective learning experiences. In a PBL context, students are given the challenge of solving real problems that enable them to construct new knowledge through inquiry, collaboration, and reflection.

This research is in line with research conducted by (Sudrajat, 2021) that there is an influence of the Problem Based Learning learning model on student learning outcomes in social studies content for fifth grade elementary school students. In the learning process using the PBL model, it not only teaches certain facts or information, but also develops critical skills such as problem solving, critical thinking, collaboration, communication, and teamwork. Students learn how to apply their knowledge in real contexts and face the challenges they encounter in solving problems.

Research conducted by applying the NHT learning model to measure social studies learning outcomes for class V students at SDN Bulurokeng II. This can be seen from the average score in the pretest implementation of 81% or with a frequency of 25 students who received a poor score classification and the average score after the posttest implementation was 72% with a fair score classification and the rest got a good score classification.

This happens because students study with less focus on the lessons that are currently taking place, but after implementing the NHT learning model, class V students are more focused on studying. The increase in the learning outcomes of class V students at SDN Bulurokeng II can already provide the conclusion that the learning outcomes of class V students increased with the learning results test. NHT model learning is a cooperative strategy where students work in small groups and are assigned numbers. When the teacher gives a question or assignment, each group plans an answer together, and then one member from each group is randomly selected to provide the answer on behalf of their group.

NHT learning promotes active student involvement in learning (Pendy & Mbagho, 2020). Each group member should participate in planning the answer, because students never know who they will choose to answer. This encourages active participation from all group members, thereby discouraging students who are more passive and hide behind their peers.

This is supported by cognitive theory, that cognitive theory states that learning involves complex cognitive processes such as processing information, organizing knowledge, and constructing new understanding (Ahmadi, 1991). In the NHT context, students engage in problem solving, analysis, and synthesis of information as they plan answers together. This process allows them to develop a deeper understanding of the subject matter (Asriyanti & Janah, 2019).

This research is supported by research conducted by (Mimpin, 2022), that there is an increase in student learning outcomes in each cycle, so based on these results it can be concluded that the application of the NHT type cooperative learning model can significantly improve the learning outcomes of class II elementary school students. The NHT learning model teaches students important group work skills, such as listening, giving feedback, and working together to achieve common goals. They learn to appreciate the contributions of each group member and learn how to collaborate effectively in group situations.

Based on the researcher's observations and the results of observations that the classes were taught using the PBL learning model and the NHT model, both classes applied different learning models, but students' activities when studying were actively involved in completing assignments and became more motivated in learning.

Researchers can conclude that student learning outcomes can be seen from the average social studies learning outcomes during the posttest for the inquiry model and PBL model classes. From the learning results obtained by students, they can prove the learning results of students after establishing the PBL learning model and NHT model. Furthermore, to find out whether there are differences between the two learning models, an independent sample test was carried out on the values in the PBL learning model class and the NHT class. Levene's test analysis shows that the significance value is 0.282, indicating that $0.282 \geq 0.05$, then H0 is accepted, meaning that the population variance is identical/ the same, so it can be concluded that there is no significant difference, in other words there is no significant difference between the PBL learning model and the NHT model in terms of the social studies learning outcomes of class V students of Gugus 8, Biringkanaya District.

This research is in line with research conducted by (Milenia & Yonisa, 2023) By implementing the integration of Problem Based Learning and Numbered Head Together learning models with the help of Crossword Puzzle media, it can improve student learning outcomes on the subject of Business Entity Concepts in Economics subjects.

Conclusion (5%)

Based on the results of the research and discussion above, it can be concluded that: (1) The learning outcomes of students who applied the PBL learning model obtained an average pretest result of 60.97 and after being given a posttest the average learning outcome value was 81.29. So, there is an influence of the PBL learning model on the social studies learning outcomes of class V students at SDN Bulurokeng I, Biringkanaya District. It can be concluded that the Problem-Based Learning learning model is effective in improving the learning outcomes of class V students in terms of understanding concepts, developing problem solving skills, intrinsic motivation, student involvement, and meaningful learning experiences. (2) Student learning outcomes with the application of the NHT learning model, with the average score on the pretest being 60.81 and after being given treatment, student learning outcomes increased after being given the posttest, namely 79.03. So, there is an influence of the NHT learning model on the social studies learning outcomes of class V students at SDN Bulurikeng II, Biringkanaya District. It can be concluded that the NHT learning model is effective in improving the learning outcomes of class V students, by strengthening student involvement, collaboration, understanding of subject matter, social skills, and learning motivation. (3) The difference between the PBL learning model and the NHT learning model is that $0.282 > 0.05$, so it can be concluded that "There is no significant difference between the PBL learning model and the NHT model in terms of the social studies learning outcomes of class V students of Cluster 8 of Biringkanaya District".

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