

# THE EFFECTIVENESS OF STRUCTURED NUMBER HEAD LEARNING MODELS ON CLASS V IPS LEARNING OUTCOMES

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## Abstract

Based to the result, the observation and interview the low quality of education in Indonesia was caused by students' learning outcomes in some subjects were classified as low. This was supported by the data on social studies learning outcomes in the 5th grade students of elementary school of Kartini Cluster, Banjarnegara Regency, that were quite low. One of the reason was the teachers had not applied the appropriate learning model in accordance with educational regulations. The teachers used a teacher-centered learning model. The purpose of this study was to test the effectiveness of the Structured Numbered Heads model to result of social studies learning outcomes of 5th grade students of elementary school of Kartini Cluster, Banjarnegara Regency. This research used quantitative method with experiment design and nonequivalent control group design. The sample technique was cluster random sampling of 97 participants. Data collection used test, observation and documentation. Hypotesis test result showed that  $t_{count} > t_{tabel}(5,8883 > 2,0003)$  which mean structured numbered heads model is was more effective to result of social studies learning outcomes of 5th grade students. The experiment class n-gain test result 0,4611 belong to medium criteria while control class n-gain test result 0,481 belong to low criteria. The conclusion of this research is structured numbered heads was effective to be used in social studies learning material of 5th grade students of elementary school of of Kartini Cluster, Banjarnegara Regency.

Keywords: Effectiveness; learning outcome; mathematics; quantum teaching

## 1. INTRODUCTION

According to Surahman and Mukminan (2017: 2) Social Sciences (IPS) is a subject matter that can be formed due to problems, social facts, and phenomena through an interdisciplinary approach by combining knowledge in social and humanities clumps to create a society that is able to play an active role in solving social problems. Susanto (2016: 145) argues that the main goal in social studies learning is to develop students' potential so that they are sensitive to social problems that occur in the surrounding environment, have a positive mental attitude towards improvements in all imbalances that are happening, and are skilled in solving problems contained in real life both that happens to oneself and in society. The implementation of social studies learning in elementary schools has been running according to the objectives of social studies, but in its implementation there are still various problems. In line with what Roseramadhana (2017: 52) argues, social studies learning problems start from two factors, namely students and teachers. Weaknesses of teachers in social studies learning are in mastery of material, media and management of learning resources, as well as conventional.

Based on the data from the observation and observation interviews with the fifth grade teacher of SDN Gugus Kartini Banjarnegara, when the teacher implements the implementation

of social studies learning using the lecture method and direct instruction, students tend to be more bored and it is easier to divert their attention from the teacher who explains in front. This is because the communication of learning activities on social studies subject content in class V SD Gugus Kartini is still carried out in one direction with a lot of material coverage and is memorizing in nature, student understanding only occurs during learning so that students easily forget the material that has been delivered. This problem is reinforced by the data on the learning outcomes of the fifth grade students of SD Gugus Kartini for social studies subject matter. The data shows that the average UTS score for the subject matter is low.

Based on the problems regarding learning social studies content, the researcher wanted to test the effectiveness of the model, namely the Structured Numbered Head model in learning because this learning model can form cooperative learning conditions, structured creatively and fun. So that the use of the Structured Number Head learning model is expected to improve student learning outcomes.

According to Baloché and Brody (2017: 274-275) cooperative learning has its own place as a pedagogical which is respected in various countries in the world because it has the potential to influence student achievement, learning motivation, relationships with others, and critical and creative thinking in solving problems.

According to Gull and Shehzhad (2015: 247) cooperative learning has advantages over others, teaching methods in terms of their effectiveness for improving cognition, social skills and motivation.

According to Huda (2015: 139) Structured Numbred Head is a development of the numbered head technique learning model, but in this structured numbered head model in addition to each student being numbered, there is a sequential assignment. The Structural Numbered Head Model is a modification of the Numbered Heads Together learning model used by Spancer Kagan.

Todd Haydon, Lawrence Maheady, and William Hunter (2010), show that the Numbered Head Together learning model, or cooperative learning, is more effective than lecture methods in academic fields such as social and science studies.

The research that supports this research is research conducted by Maimuna Rizqi Aulia (2018) entitled "The Effectiveness of the Structured Number Head Learning Model with Zig Zag Media on Writing Skills for Class V of SDN Gugus Arjuna Semarang City". The results of t-test or hypothesis testing show the value of  $t_{count} > t_{table}$  1.692 > 1.666. These results can be interpreted that the learning outcomes in the experimental class are higher than in the control class. Research conducted by Fika Tivany, Fuad Abdurachman, and Hartono in 2016 entitled "Application of a Structured Number Head Learning Model to Improve Student Chemistry Learning Outcomes". The results obtained in this study indicate that the Structured Number Head learning model can increase the average chemistry learning outcomes.

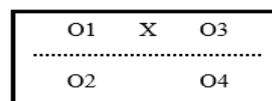
The formulations of the problems in this study are: (1) Is the Structured Numbered Head Learning Model more effective than the Direct Instruction Model in increasing social studies learning outcomes if initial knowledge is taken into account? (2) Is the Structured Number Head Learning Model more effective than the Direct Instruction learning model in improving Social Studies learning outcomes if initial knowledge is not taken into account? (3) What is the level of effectiveness of the structured number head learning model on social studies learning outcomes for fifth grade students of SDN Gugus Kartini, Banjarnegara Regency?

Based on the formulation of the problem, the purpose of this study is to test the effectiveness of the Structured Numbered Head Learning Model in improving Social Studies Learning Outcomes if initial knowledge is taken into account, Testing the Effectiveness of the Structured Numbered Head Learning Model in improving Social Studies Learning Outcomes if initial knowledge is not taken into account and

Finding the level of effectiveness of the learning model Heads with Structured Numbers on Social Studies Learning Outcomes for Class V SDN Gugus Kartini, Banjarnegara Regency.

## 2. METHOD OF INVESTIGATION

This research uses quantitative methods. This type of research is experimental research with the research subjects of fifth grade students of SDN Gugus Kartini, Banjarnegara Regency. The design of this research is Quasi Experimental Design in the form of Nonequivalent Control Group Design which is described by the following formula (Sugiyono, 2015: 116).



(design drawing Nonequivalent Control Group Design)

The population of this study were all fifth grade students of SDN Gugus Kartini, Banjarnegara Regency, which consisted of 6 elementary schools with a total of 147 students. The independent variable in this experimental research is the structured numbered head learning model and the dependent variable is the learning outcomes of social studies content. Data collection techniques using tests and documentation. Analyzing the test instruments in the form of validity, reliability, difficulty level of questions and different power of questions before the instrument is used in data collection.

The analysis technique consists of preliminary data analysis and final data analysis. Initial data analysis is normality test and homogeneity test, while final data analysis is normality test, homogeneity test, hypothesis test and n-gain test. The calculation of the hypothesis test uses the t-test with the help of Microsoft Excel.

Hypothesis testing is used to determine the effectiveness of the structured numbered head learning model in the experimental class on social studies learning outcomes. The t-test calculation uses the independent sample t-test with the help of Microsoft Excel. The testing criteria according to Priyatno (2017: 201), namely if  $t_{count} > t_{table}$  or a significance value > 0.05, then  $H_0$  is rejected. While the n-gain test is used to test the average increase between the pretest and posttest scores in the control class and the experimental class.

## 3. FINDINGS AND DISCUSSION

There is a difference in the average posttest scores of students in the experimental

class and the control class between learning using the Direct Instruction model and learning using a structured numbered head model. Evidenced by the average posttest results for the experimental class of 77.8 and for the control class of 65.9. Data from student learning outcomes were tested for data analysis prerequisites to determine the formula used to test the hypothesis. The prerequisite analysis test was the normality test and the homogeneity test. The significance value of the normality test results in the experimental class is 0.059 and the control is 0.169. Both classes have a value of  $\text{Sig} > \alpha = 0.05$ , so it can be concluded that  $H_0$  is accepted and  $H_a$  is rejected, namely the posttest data analysis for the experimental class and the control class with a normal distribution.

The calculation of the normality test is assisted using the SPSS22 Kolmogorov Smirnov test and assisted homogeneity using Microsoft Excel with the Bartlett test criteria which shows that the social studies learning outcomes from the posttest results in the experimental class and control class are normally distributed and have homogeneous variances. After the normality test and homogeneity test are carried out, then to find out the difference in the average control class and the experimental class, then the hypothesis is tested. Hypothesis testing in this study shows that the structured numbered head learning model is more effective than the direct instruction model for the social studies learning outcomes of the fifth grade students of SDN Gugus Kartini, Banjarnegara Regency, which is shown by the results of the Independent Sample T-Test test, namely the t-count value is 5,8883, and the value of t table is 2,0003, so that  $t_{\text{count}} = 5.8883 > t_{\text{table}} = 2,0003$ , then  $H_0$  is rejected and  $H_a$  is accepted based on the testing criteria according to Priyatno (2017: 201), namely if  $t_{\text{count}} > t_{\text{table}}$  then  $H_0$  is rejected. The results of the hypothesis test can be seen in the following table:

	<i>eksprimen</i>	<i>kontrol</i>	
Mean	77,8	65,8594	
Variance	59,7989	67,9877	
Observations	30	32	
Pooled Variance	64,0297		
Hypothesized Mean Difference	0		
Df	60		
t Stat	5,8883		<i>t hitung</i>
P(T<=t) one-tail	0,009434		
t Critical one-tail	1,6706		
P(T<=t) two-tail	0,01886		
t Critical two-tail	2,0003		<i>t tabel</i>

**Table 1.** Independent Sample T-Test Test Results

This achievement was strengthened by research conducted by Selvi Meliawati, Muhajir, and Khusnul Fajriah (2018: 90-95) with the title "The Effect of Structured Numbered Heads Learning Model on Learning Outcomes of Class III Students in Natural Science Subjects SDN Palebon 01 Semarang". The results showed that

$t_{\text{count}} > t_{\text{table}}$  was  $4.233 > 2.005$ , then  $H_a$  was accepted and  $H_0$  was rejected, which means that the structured numbered head model was effective in improving learning outcomes.

Research conducted by Muhyani, Dida Dahlia (2015) with the title "The Effect of a Structured Numbered Head Type Cooperative Learning Model on the independence and hard work of students" in this finding was obtained based on the acquisition of student independence values where the  $t_{\text{count}} > t_{\text{table}}$  ( $2.951 > 2.14$ ), indicating that  $H_a$  was accepted. Likewise with the acquisition of the value of hard work where the value of  $t_{\text{count}} > t_{\text{table}}$  ( $2.951 > 2.14$ ), which indicates if  $H_a$  is accepted.

The results of research conducted by I Kadek Puji Artha, I Md Putra, and IB Surya Manuaba (2016) entitled "The Influence of the Scientific Approach Based on the NHT Model on Social Studies Learning Outcomes in the Theme of the History of Indonesian Civilization for Class V Students of the Kompyang Sujana Group in 2015/2016". The results obtained in the form of an increase in learning outcomes, namely where  $t_{\text{count}} > t_{\text{table}}$  ( $4.54 > 2.00$ ), which means that the NHT model is effective and influential in increasing learning outcomes.

Then, the difference in the increase in social studies learning outcomes can be calculated using the n-gain test. The control class obtained a posttest score of 65.9, and the experimental class obtained an average posttest score of 77.5. The n-gain value of the experimental class is higher than the n-gain value in the control class. The n-gain value for the control class, namely 0.1977, is included in the low criteria, and the n-gain value for the experimental class is 0.4611 which is included in the moderate criteria. Based on the results of the pretest and posttest, these calculations show that students in the experimental class with the application of the Structured Numbered Head model have a higher learning outcome than students in the control class who use the Direct Instruction model.

**Figure 4.1** Diagram of Increasing the Average Value of the Pretest and Posttest Students of Class V SDN Gugus Kartini, Banjarnegara Regency in Social Studies Learning.

The results of this study are in line with research conducted by Kaerudin and Abdul Rozak (2019) with the title "The Use of a Cooperative Model Type Head with Structured Numbers in Learning to Read Children's Stories in Elementary School Students 2014/2015". The findings in this study indicate that the average value of student learning outcomes increased after the implementation of a structured head number model in learning.

Research by Dassucik (2017: 104) entitled "Application of a Structured Number Head Model to Increase Activities and Learning Outcomes of Class IX A Students of SMP Negeri 5 Panji Situbondo". In this study, it was found that the structured numbered head learning model was effective in increasing student activity and learning outcomes.

Research by Rina Hapsari (2014) entitled "The Effectiveness of Using Structured Numbered Head Techniques in Learning German Reading Skills for Class XI Students of SMA N 1 Tempel Sleman". In this study, the results of data analysis calculated using the T-test obtained  $t_{count} 2.892 > t_{table}$  with a significant level of 0.05, it can be concluded that the structured numbered head model is more effective in learning German reading skills than using the conventional model.

Another research was conducted by Suci Rahmayani (2016) with the title "The Effect of the Application of a Structured Numbered Header of the Head Technique Cooperative Learning Model on the Understanding of Mathematical Concepts of Class VIII Students of SMP Negeri 18 Padang". The results obtained in this study indicate that  $t_{count} 3.68 > t_{table} 1.671$  which means that  $H_a$  is accepted. It can be concluded that in this study the structured numbered head model was effective in increasing students' understanding in mathematics.

Based on these results, it can be concluded that the learning outcomes in the experimental class are better than in the control class, which indicates that the learning process using a structured head number model is effective in improving student learning outcomes.

#### 4. CONCLUSION

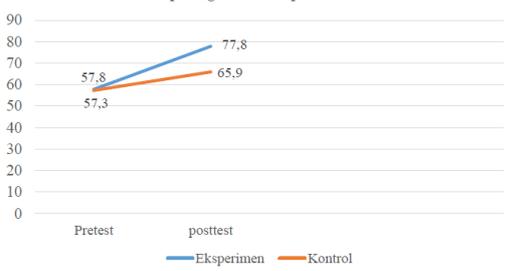
The results obtained in this study at SDN Gugus Kartini Banjarnegara obtained an average final score of 77.8 with completeness results of 90% in the experimental class, while the final average of the control class was 65.9 with learning completeness only 40.62. %. Based on these results, it can be concluded that learning in the experimental class by applying a structured numbered head model results in better learning

results of calculations using the independent sample test obtained  $t_{count}$  of 5.88883 and  $t_{table}$  of 2,0003. Because  $t_{count} = 5.8883 > t_{table} = 2$ ,

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Rata-rata peningkatan hasil pretest dan Posttest



outcomes compared to the control class that applies the direct instruction learning model. The

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