

## THE EFFECTIVENESS OF APPLICATION OF NUMBERED HEAD TOGETHER ON STUDENTS' MATHEMATICAL LEARNING MOTIVATION IN VIEW OF GENDER

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### Abstract

This study aims to determine whether the Numbered Head Together model has an influence on the motivation to learn mathematics in class X in terms of gender. The research method used is a true experimental quantitative approach with a Posttest Only Control Design research design. The posttest was in the form of a questionnaire. Data were collected from 66 students from the experimental X class and the control class through questionnaires and documentation. In addition, 13 students from class X tried out to test the validity and reliability of tests and questionnaires. Data analysis was carried out using the help of a t-test with SPSS version 21. The results showed that in group statistical tests it was known that the Numbered Head Together learning model had an effect on students' motivation to learn mathematics. This is evidenced in the control class, namely the class with male gender, the mean value is greater than the experimental class, namely the class with female gender, which means that children with male gender are more motivated to learn mathematics, as evidenced by the mean value which is greater than the gender class. female, namely 53.67. However, in testing the hypothesis using an independent sample test, it shows that there is no significant effect of the Numbered Head Together model on students' motivation to learn mathematics as shown by the sig (2-tailed) value, namely 0.969 > 0.05, which means that there is no significant effect of the Numbered model. Head Together on students' motivation to learn mathematics. From the results of this study it can be concluded that the application of the Numbered Head Together model has a positive influence on the motivation to learn mathematics in class X. This research has an important influence in increasing students' motivation in learning mathematics and helping overcome students' difficulties in understanding abstract mathematics learning material. In addition, this learning model can also increase student activity by means of collaboration between students in completing the tasks given.

Keywords: Effectiveness, Numbered Head Together Model, Mathematics Motivation Achievement

## 1 INTRODUCTION

Education is an effort to impart knowledge, insight, skills and expertise to individuals to develop their talents and personality. To develop it, you have to go through stages after stages, namely learning. The failure and success of student learning depends on when students take part in learning activities.

One of the most important sciences in the world of education and in daily life is mathematics. Mathematics is a mandatory and important science in the world of education, besides that mathematics is also useful in everyday life. Mathematics is a science that is very involved in the development of science and technology in accordance with the opinion of Mulyana (2004: 180) who said that mathematics besides being able to broaden the horizons of thinking can also develop awareness about the values that are inherently contained therein. (Eva & Flora., n.d.)

The low achievement of students in learning mathematics is because they think that mathematics is a difficult subject to learn and understand. This tendency results in lower students' motivation to learn

mathematics. According to Hudojo (2003), one of several factors that influence students' success in learning mathematics includes: ability, readiness, interest, motivation, and condition of students when participating in learning activities. From this opinion, one of the factors that influence student achievement is learning motivation. Assessment of student achievement can increase student learning motivation, because in the learning process motivation is very necessary, if students do not have learning motivation students will become lazy when participating in learning but if students have automatic learning motivation students will try to get good achievement scores. (Fajriyati et al., 2019)

Motivation to learn mathematics is a person's drive or desire to achieve success or achievement in learning mathematics (Setiawan, 2016). Motivation to learn mathematics is influenced by several factors, including the use of appropriate, effective, and efficient teaching strategies by teachers and from student achievements themselves. If student achievement decreases, students will be motivated to increase their learning and try to understand the material in mathematics lessons and if student achievement is high students will be motivated to maintain that their mathematics learning achievement does not decrease..

To overcome this, it is necessary to apply an interesting and not monotonous learning model that allows students to interact with teachers by using the Numbered Head Together learning model. The Numbered Head Together learning model is one of the group variance learning models that emphasizes the process of collaboration in groups so that it supports active student involvement in learning activities.

## 2 METHODOLOGY

In this study, a quantitative approach was used with a true-experimental design in the form of a posttest only control design. In this study, the research subjects were obtained from the questionnaire values that had been filled in by class students who were treated, namely the experimental class and those who were not given treatment, namely the control class.

This research uses quantitative research where in this research there are two variables needed, namely:

- Independent variable (independent variable) is a variable that has an influence on what happens to other variables. The independent variable in this research is the Numbered Head Together learning model.
- The dependent variable (dependent variable) is a variable that is influenced by other variables, its existence is considered to be a result of the independent variable. The variables involved in this research are students' mathematics motivation achievements students' mathematics.

The population in this research is all students of class X in all of six classes. The total population is 173 students divided into six classes.

**Table 1** Student Population

Class	Gender	Many Students
X.1	P	30
X.2	L	13
X.3	P	33
X.4	P	32
X.5	L	33
X.6	L	32
Amount		173

From the results of sampling it was determined that class X.2 was the trial class, X.3 was the experimental class, and class X.5 was the control class.

Data collection techniques used are observation, documentation, and question. The data analysis techniques used were validity and reliability questionnaire tests, normality tests, homogeneity tests, and hypothesis testing through SPSS version 21.

### 3 RESULTS

The research data described are the mathematics motivation achievement data obtained by students after the question was carried out in the experimental class and the control class. To see student achievement, a posttest was held in the experimental class which was attended by 33 students and in the control class which was attended by 33 students. After the question was carried out, data were obtained about students' mathematics motivation achievement in the experimental class and control class.

#### 3.1 Research Instrument Test

##### 3.1.1 Validity Test

The test instrument test uses empirical validation, namely the test is carried out using the SPSS version 21 program.

**Table 2** Validity Test

Statement Number	$r_{count}$	$r_{table}$	Information
1	0,571	0,553	Valid
2	0,701	0,553	Valid
3	0,641	0,553	Valid
4	0,607	0,553	Valid
5	0,724	0,553	Valid
6	0,041	0,553	Invalid
7	0,342	0,553	Invalid
8	0,711	0,553	Valid
9	0,627	0,553	Valid
10	0,559	0,553	Valid
11	0,652	0,553	Valid
12	0,342	0,553	Invalid
13	0,338	0,553	Invalid
14	0,268	0,553	Invalid
15	0,707	0,553	Valid
16	0,527	0,553	Invalid
17	0,321	0,553	Invalid
18	0,361	0,553	Invalid
19	0,645	0,553	Valid
20	0,569	0,553	Valid
21	0,657	0,553	Valid
22	0,605	0,553	Valid
23	0,606	0,553	Valid
24	0,245	0,553	Invalid
25	0,764	0,553	Valid
26	0,662	0,553	Valid
27	0,628	0,553	Valid
28	0,583	0,553	Valid
29	0,460	0,553	Invalid
30	0,606	0,553	Valid

The question is said to be valid, if the value of  $r$  count  $>$   $r$  table. Based on table 2, at  $\alpha = 0.05$  it is known that there are 10 questions that are invalid.

### 3.1.2 Reliability Test

In the reliability test using the SPSS version 21 program.

**Table 3 Reliability Test**

Reliability Statistics	
Cronbach's Alpha	N of Items
.916	30

The question is said to be reliable, if the value of Cronbach's Alpha  $>$   $r$  table. Based on table 3, at  $\alpha = 0.05$  with N of items = 30 we get  $r$  table = 0.553 because  $0.916 > 0.553$ , the question is said to be reliable.

## 3.2 Research Data

### 3.2.1 Normality Test

The normality test for the final research data uses questionnaire values that have been tested for validity and reliability. The normality test for the final data involves the Kolmogorov-Smirnov test through SPSS version 21.

**Table 4 Normality Test**

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		33
Normal Parameters <sup>a,b</sup>	Mean	.0000000
	Std. Deviation	6.62830455
Most Extreme Differences	Absolute	.097
	Positive	.077
	Negative	-.097
Kolmogorov-Smirnov Z		.560
Asymp. Sig. (2-tailed)		.912

a. Test distribution is Normal.

b. Calculated from data.

Based on the table it is found that the sig (2-tailed) value is 0.912. These data indicate that the sig value is greater than  $\alpha = 0.05$ , so the questionnaire data is normally distributed.

### 3.2.2 Homogeneity Test

The homogeneity test on the final research data uses posttest values that have been tested for validity and reliability.

**Table 5 Homogeneity Test**

**Test of Homogeneity of Variances**

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Levene Statistic	df1	df2	Sig.
.873	1	64	.354

Based on table 5, a significance of 0.354 is obtained with a Levene Statistic of 0.873 and df1 is 1, df2 is 64. Because of the calculations from the posttest results, the sig. > 0.05, the data is concluded that the questionnaire data is homogeneous.

### 3.3 Hypothesis Test

To test the hypothesis using the independent sample test. The independent sample test was used to calculate the hypothesis, namely the effectiveness of the Numbered Head Together learning model on the motivation to learn mathematics in class X in terms of gender. Testing through SPSS version 21.

**Table 6 Hypothesis Test**

**Group Statistics**

	class	N	Mean	Std. Deviation	Std. Error Mean
the value of students' motivation to learn mathematics	experimental class	33	53.61	5.831	1.015
	Control class	33	53.67	6.688	1.164

**Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
the value of students' motivation to learn mathematics	Equal variances assumed	.873	.354	-.039	64	.969	-.061	1.545	-3.146	3.025
	Equal variances not assumed			-.039	62.832	.969	-.061	1.545	-3.147	3.026

Based on the table above, the sig (2-tailed) value is 0.969. The data shows that the sig value is greater than  $\alpha = 0.05$ , which means that there is no significant effect of the Numbered Head Together model on students' motivation to learn mathematics. the mean value is greater than that of the experimental class, namely the class with female gender, which means that children with male gender are more motivated to learn mathematics as evidenced by the mean value which is greater than that of the female gender class, namely 53,67.

## 4 CONCLUSION

Based on the table in the statistical test group, it is known that the Numbered Head Together learning model has an effect on students' motivation to learn mathematics. This is evidenced in the control class, namely the class with male gender, the mean value is greater than the experimental class, namely the class with female gender, which means that children with male gender are more motivated to learn

mathematics, as evidenced by the mean value which is greater than the gender class. female, namely 53.67. However, in testing the hypothesis using the independent sample test, it shows that there is no significant effect of the Numbered Head Together model on students' motivation to learn mathematics as shown by the sig (2-tailed) value, namely  $0.969 > 0.05$ , which means that there is no significant effect the Numbered Head Together model of students' motivation to learn mathematics..

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