

## THE INFLUENCE OF MATHEMATIC CREATIVE ABILITIES ON STUDENT LEARNING OUTCOMES

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**Abstract:** The purpose of this study was to see the effect of mathematical creative thinking skills on student learning outcomes. The research method used is quantitative research. The sample used in this study were fourth grade elementary school students who were selected by purposive sampling technique. While the design used in this study is to use the pretest and posttest One Group Design. The data in this study were obtained from the pretest and posttest values which were analyzed statistically by the Paired Sample T-Test. The result of the research means that there is a significant influence between the influence of mathematical creative thinking skills on learning outcomes of elementary school students

**Keywords:** Ability to think creatively; Learning outcomes; elementary school students

## 1. Introduction

Education plays a very important role in supporting the progress of a nation. Quality education is automatic for the nation's generation and human resources in that country. There are many factors that determine the quality of education, one of which is seen from the learning outcomes.

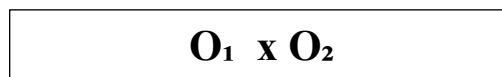
Learning outcomes can be seen at the end of the learning process. According to Winkel (in Purwanto, 2010), learning outcomes are changes that cause humans to change in their attitudes and behavior. Meanwhile, Sudjana (2010) states that learning outcomes are the abilities students have after receiving a learning experience. Learning outcomes are obtained through the transfer of knowledge from educators to students to achieve pre-designed competency standards. One of the abilities currently being developed in the high class is the ability to think creatively in mathematics.

Mathematical creative thinking skills need to be developed at this time, because this ability examines mathematical abilities in the learning process, so that the learning process is more interesting and easier. Sumarmo (in Sariningsih, 2014) states that "mathematical understanding is important for students because it is needed to solve math problems, problems in other disciplines, and problems in everyday life, which is the vision of developing mathematics learning to meet today's needs. . " In line with what was formulated by the National Council of Teachers of Mathematics (NCTM) (in Purwasih, 2015) understanding mathematical problems is a fundamental mathematical thinking ability using reasoning. Nico (in Fajri, 2017) states that "reasoning is a thought to be able to produce a conclusion."

One of the problems faced by students regarding the low learning outcomes of mathematics is due to the low ability of students to think creatively. So that it causes low mathematical creative thinking skills. The ability to think mathematically creatively is needed because students are able to reason, analyze, and apply mathematical concepts not only in the learning process but in everyday life.

## 2. Research Methods

This research was conducted at SDN Cipete Utara 5 Pagi, South Jakarta. The sample used in this study were fourth grade elementary school students who were selected by purposive sampling technique. While the design used in this study is to use the pretest and posttest One Group Design. According to Sugiyono (2014) The structure of this research design is as follows:



Information.:

$O_1$  = Pretest value (before implementing mathematical creative thinking skills),

$O_2$  = Posttest value (after implementing mathematical creative thinking skills),

$x$  = Treatment with the implementation of mathematical creative thinking skills

Figure 1 Pretest-Posttest Research Design

The data in this study were obtained from the pretest and posttest values which were analyzed statistically by the Paired Sample T-Test. Qualitative data were obtained from observations, interviews, and student activities during the learning process which were analyzed and described descriptively.

## 3. Results And Discussion

The normality test is carried out to determine whether the data obtained is based on the value of learning outcomes from populations with normal distribution or not. The normality test that researchers use is the Kolmogorov Smirnov test. The results of the normality test are shown in Table 1 below.

Table 1 Normality result

Class		Kolmogorov-Smirnov <sup>a</sup>		
		Statistic	df	Sig.
Mathematical Creative Thinking Ability	IV Grade	,152	28	.080

From table 1 above, based on the test using Kolmogorov Smirnov, the results show that the normality test using the Kolmogorov Smirnov data on the mathematical creative thinking ability of student learning outcomes has a significant value of 0.80 which means that  $p > 0.05$  so it can be concluded that the data on thinking ability mathematically creative normally distributed. This is evidenced by the significance value in Table 1, namely the significance value in class IV using Kolmogorov-Smirnova obtained a significance value of  $0.080 > 0.05$ ,

After the normality test, the homogeneity test is carried out which aims to see that a variant of two or more groups is homogeneous or not. This homogeneity test is carried out when the data for the normality requirements are met, that is, the data is declared normally distributed. The homogeneity test used One-Way ANOVA which was calculated using the help of the SPSS 25.0 program with a significance level of 0.05. So, if the significance value  $> 0.05$ , the data distribution is homogeneous. The results of the homogeneity test can be seen below.

Table 2 Homogeneity Test Results

Levene Statistic	df1	df2	Sig.
2,223	1	34	,131

Based on Table 2, the data on the results of mathematical creative thinking abilities have data that are homogeneously distributed with a significance value of  $0.131 > 0.05$ , which means that the variant of mathematical creative thinking abilities is homogeneous.

After the normality and homogeneity tests were carried out, then the hypothesis testing stage used in this study was the Independent Sample T-Test to determine whether there was an effect of a contextual approach on students' mathematical creative thinking skills at SDN Cipete Utara 5 Pagi. The results of hypothesis testing can be seen in table 3 below.

Table 3 Hypothesis Test Results of the Independent Sample T Test

<i>Mathematical Creative Thinking Ability</i>	<i>t-test for Equality of Means</i>		<i>T</i>	<i>Sig. (2-tailed)</i>
	<i>Mean</i>	<i>Std. Error Difference</i>		
<i>Equal variances assumed</i>	-7,093	1,889	-3,754	,001

Based on table 3 the results of the hypothesis test above obtained the sig value. (2-tailed) 0.001. In accordance with the independent sample t-test that the sig. (2-tailed)  $< 0.05$  then there is a significant difference. Hypothesis 0 is rejected, meaning that there is a significant influence between the influence of mathematical creative thinking abilities on learning outcomes of elementary school students.

Sumarmo (in Sariningsih, 2014) states that "mathematical understanding is important for students because it is needed to solve math problems, problems in other disciplines, and problems in everyday life, which is the vision of developing mathematics learning to meet today's needs.

#### 4. Conclusion

Mathematical creative thinking skills are needed both in the learning process and in everyday life. Based on the results of the research conducted, it means that there is a significant influence between the influence of mathematical creative thinking abilities on learning outcomes of elementary school students.

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