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Application of the Open Learning Model to Improve the Creative Thinking Ability of Elementary School Students

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ABSTRACT

Creative thinking is an important ability for students because it allows them to generate new ideas that are effective to solve problems or create something innovative, but in contrast to what is in the field, it can be seen that there is a lack of maximum learning applied in the classroom in creative thinking. The purpose of this study is to find out whether the application of the open learning model at SDN Perigi 01 improves students' creative abilities. This research is quantitative with a Pre-Experimental design in the form of One-Group Pretest-Posttest. The sample obtained by grade IVB students consisted of 30 students. The instruments in this study are pretest posttest and data processing using SPSS 26. The results of the study were obtained by Sig. (2-tailed) 0.000. Where 0.000 < 0.05, then Ho was rejected and Ha was approved, and the N-Gain results showed an average pretest score of 6.93 and an average posttest score of 10.7 and an N-Gain score of 0.71 with high interpretation. This study found that students had better creative thinking skills after open learning

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Introduction

Education is an important part of the formation of intellectual human resources so that they can handle problems and meet future needs. [1]The education system determines the way learning is carried out and the teaching method and that is what determines the success of an education. Good and appropriate education is when education makes learning easier and more enjoyable, and allows students to achieve goals according to the learning objectives [2]. In school education, Mathematics is very important in school education because it is a science that can train students to think creatively and solve problems [3]. In addition, Mathematics also teaches creative, critical, analytical, and systematic thinking to solve these problems seen during mathematics lessons as well as in daily life [4]. The use of learning models that are assessed appropriately and well is one way that can help students understand mathematical concepts However, in reality, students' understanding and interest in lessons are influenced by the problems faced in the mathematics learning process in school [5]. [6] Mathematics is one of the subjects that is not interesting to students, students even consider the lesson difficult, so it becomes a scary thing for some students, this affects the teaching and learning process. In addition, the main problem that often occurs is ineffective teaching methods, as well as problems faced by students when learning mathematics, one of which is their inability to understand the material [7], This is the importance of improving students' creative abilities during the learning process is very important for a teacher [8]. Creative thinking is not just a ability, but also a necessity in the era of globalization. Furthermore, the ability to think creatively is the ability to see a different view and solve it in a different way, creative thinking has the meaning of an activity carried out by individuals aiming to develop new ideas and thoughts with various points of view [9]. This shows that creative thinking is related to problem solving in various types, allowing students to solve problems in everyday life [10]. Assessing students' creative thinking, there are several indicators, one of which includes four indicators, namely:

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Table 1. Creative Thinking Indicators

Indicator	Definition
Fluency thinking	The ability to think and produce ideas, answers and solution smoothly
Flexibility thinking	Ability to generate varied ideas, answers and solutions with many alternatives
Originality thinking	Ability to generate new ideas, answers and solutions with your own
Elabration thinking	The ability to expand or detail an idea or answers as well as a solution

On this basis, it is important to use an effective learning model that is in accordance with learning objectives. That by using the right learning model, students can interact with each other, which produces good learning outcomes and has an impact on students' creative thinking skills [11]. Therefore, teachers need to improve and find solutions so that they can take full advantage of their students' creative thinking skills and appropriately apply the learning model they use. One of the learning models that can help students think creatively is *the open ended* model. This *open-ended* learning model allows students to think openly based on students' abilities [12]. The *open-ended* learning model also focuses heavily on problem-solving strategies based on students' abilities [13].

Method

The method in this study is quantitative. Quantitative methods are used as proofs that use numbers in statistical analysis to solve research problems [14]. The type of research used is *preexperimental* with *a one-group pretest-posttest design.* The explanation of the design of this study is explained as follows [15]:

Table 2. *One Group Pretest Posttest Design Table*

Pretest	Application Of The Open Ended Learning Model	Posttest
01	x	02

Symbol description:
01= Pretest results (before using *the open ended* model)
02 = Posttest results (after using *the open ended model)*
x = Applied open *ended model*

This research was carried out at SDN Perigi 01 with the sampling technique in this study, namely *simple random sampling*. According to *simple random sampling* is to randomly select sample members from the population without considering the population level and a sample of class IVB with 30 students at SDN Perigi 01 was found. To analyze the improvement of students' creative thinking skills, validity tests, reliability tests and analysis prerequisite tests were used consisting of normality tests and homogeneity tests and *N-Gain* tests and hypothesis tests using *paired sample t-tests* with data processing using
SPSS.

Results and Discussion

A. Validity Test

In the validity test, two tests were carried out, namely expert validation and validity construct, with the aim of conducting expert validation to see the feasibility of the questions that will be used during the research, while the validity of the construct in this study which was carried out in class IVB aims to test the 12 questions that have been made and validated by experts really in accordance with the researcher's objectives and can be used in the research, with the results of the validity test obtained all valid questions meaning that the 12 questions can be.

B. Reliability Test

Table 3. Reliability Test Calculation Results

Reliability Statistic	
Cronbach's Alpha	N of Items
.888	12

From the results above, the alpha value on 12 questions was 0.888, where 0.888 the score has a very strong interpretation which means that the 12 questions are suitable for use.

C. Normality Test

Table 4. Results of Normality Test Calculation

	Kolmogorov-Smirnov			
Grade	Test Pretest And Posttest	Statistic	Df	Sig.
	Pretest	.181	30	0,13

	Pottest	.171	30	0,25

In the table of the results of the normality test at the *pretest* value Sig 0.13 > 0.05 while at the *posttest* value 0.25 > 0.05, it can be concluded that the normality test in the pretest and pottest Ho is approved and Ha is rejected, which means that the data is normal.

D. Homogeneity Test

Table 5. Homogeneity Test Calculation Results

Test of homogeneity of variances					
		Levene statistic	df1	df2	Sig.
Grade	Based On Mean	2.658	1	58	.108
	Based On Median	2.578	1	58	.114
	Based On Mendian And With Adjustest df	2.578	1	47.399	.115
	Based On Trimmed Mean	3,120	1	58	.083

In the results of the homogeneity test in the table above for the *value based on mean* , 0.108 was obtained, which means 0.108 > 0.005, then Ho was approved and Ha was rejected.
So the data is homogeneous or the same.

E. *N-gain* Test

Table 6. Results of *N-Gain Score Pretest* and *Posttest Calculation*

Average pretest	Average Posttest	N-Gain score pretest and posttest
6,93	10,7	0,71

Based on the results obtained in the N-Gain test on the *pretest* and *posttest* results with the results on average pretest getting a score of 6.93 and on the average posttest score of 10.7 with the results *of the N-Gain test score* 0.71 which in this number has a high interpretation value which means that the open learning model applied has an increase in learning outcomes in students' creative thinking skills. The increase in average score results occurred because students were able to explain the concept of flat building with their own understanding. Students are also better able to visualize flat shapes by looking at objects around them and students are also easier to answer and respond to questions and practice problems given by the teacher, as well as an average increase in each indicator of creative thinking ability which can be seen in the discussion of the percentage chart of creative thinking indicators.

F. Paired Sample *T Test*

Table 7. Table of *Paired Samples T-Test Results*

Paired Samples Test								
Pair1	Pretest and Posttest	Paired Differences					t	df	Sig.(2-Tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval Of The Difference				
					lower	upper			
		-3.767	2.096	.383	-4.549	-2.984	-9.844	29	.000

From the results obtained on Sig. (2-tailed) with a value of 0.000. Where 0.000 < 0.05, and the tcount value is 9.844 with a table value of 1.699, Ho is rejected and Ha is approved. By looking at the results of the average score before and after the test, it can be interpreted that there has been an improvement in students' creative thinking skills with the application of *the open-ended learning model* in the classroom.

G. Percentage of Creative Thinking Ability Results

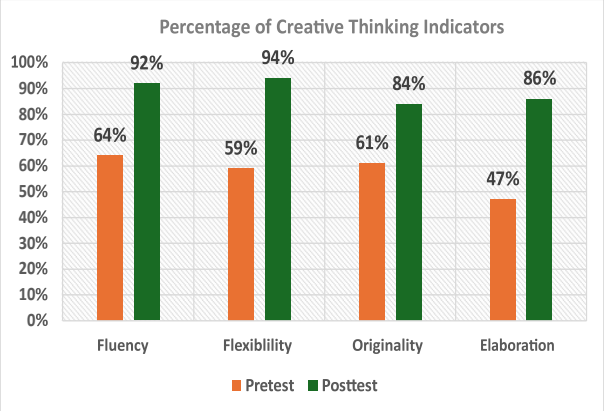
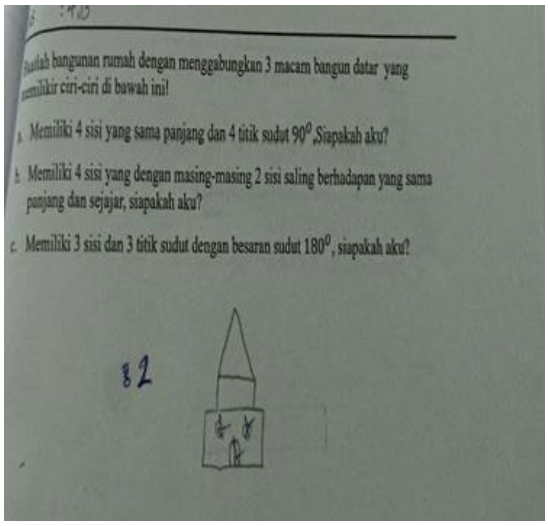


Figure 1. Recapitulation of the percentage of creative thinking indicators *pretest* and *posttest*

1. Fluency Thinking

The fluent thinking indicator shows that students answer questions in the wrong way and do not follow the instructions. However, after applying the *open ended learning model, students* were able to answer the questions correctly and in accordance with the instructions so that the results *of the posttest* of the fluent thinking indicator improved.

Pretest *answers*



Posttest Answers

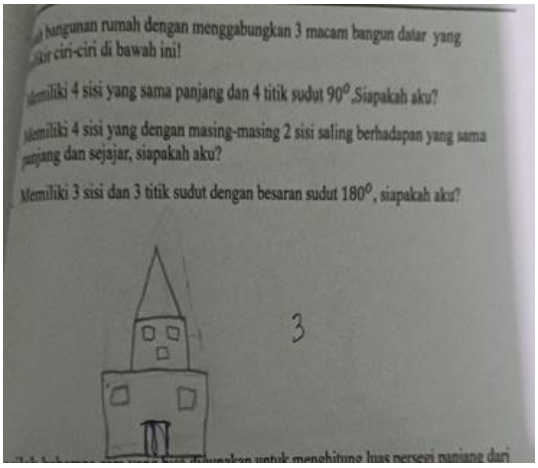
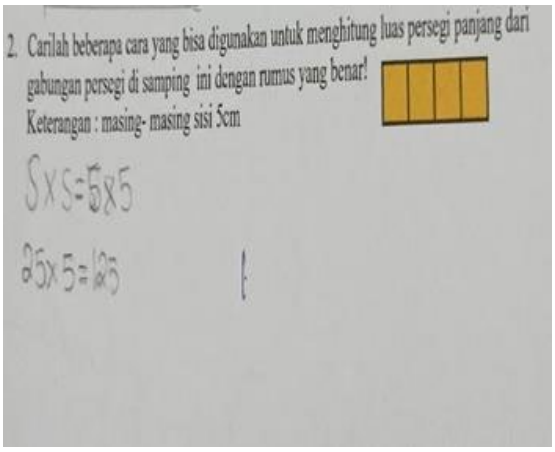


Figure 2. Fluent Thinking Indicator Answers

2. Flexibility Thinking

The indicator of flexible thinking in the *pretest* shows that students are not able to follow instructions accurately and consistently, they are only able to follow instructions related to their subject matter. In addition, students' answers are not much different from those taught during the learning process, in contrast to *posttest answers,* where students have begun to understand the subject matter and are able to answer questions with a variety of different solution options and answers.

Pretest *answers*



Posttest Answers

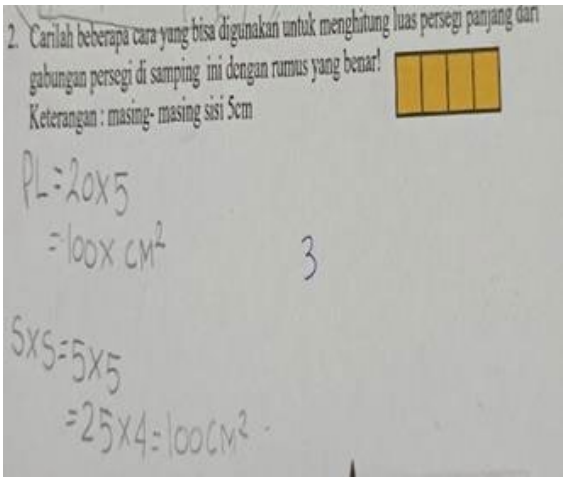
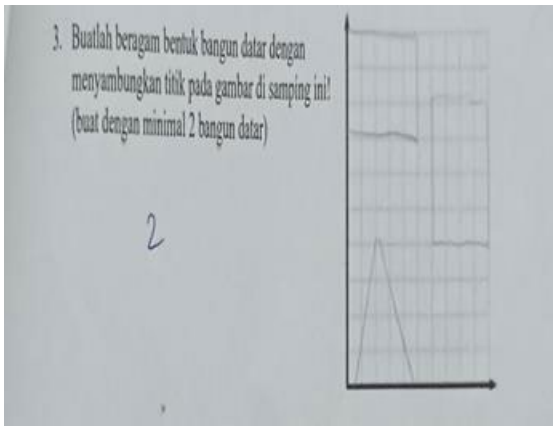


Figure 3. Flexible Thinking Indicator Answers

3. Original Thinking

In the original thinking indicator, some students conducted *a pretest* by identifying the flat shape of the building that was only presented by the teacher in class. On the other hand, students in *the posttest* answer various forms of flat shapes simply by knowing their characteristics and imagining their answers in the form of flat figures.

Pretest *answers*



Posttest Answers

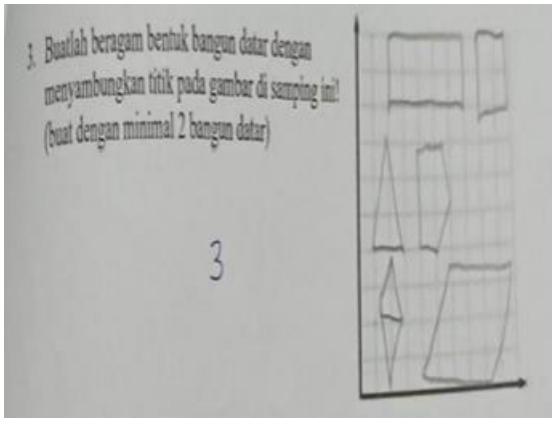
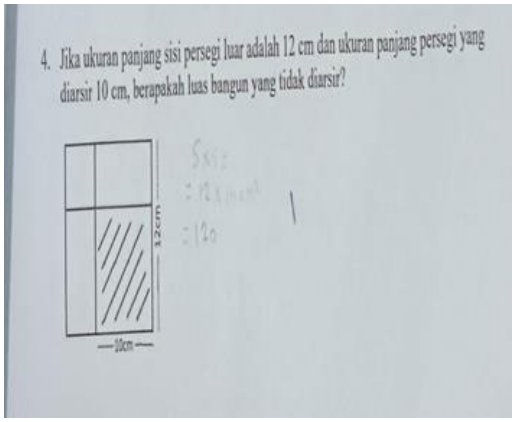


Figure 4. Original Thinking Indicator Answers

4. Elaboration Thinking

The detailed thinking indicator also shows that the student has given the answer to the question with the right formula, but not in a way or stage that is appropriate for the question. On the contrary, students in *the posttest* have given answers to the questions in a clear way, and detailed explanations.

Pretest *answers*



Posttest Answers

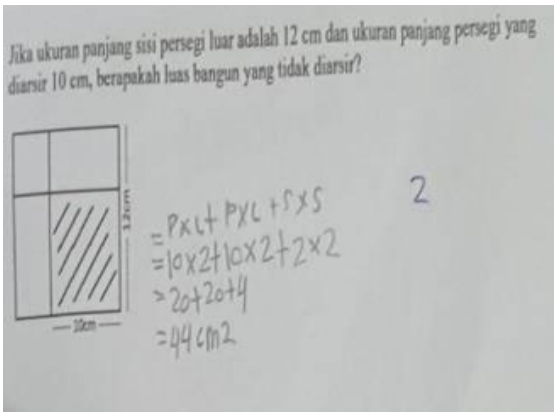


Figure 5. Detailed Thinking Indicator Answers

Conclusion

According to data obtained from research on the application of *the open ended* learning model to improve the creative thinking skills of elementary school students at SDN Perigi 01, students' creative thinking padz skills became better before and after the implementation of *the open ended* learning model. This shows that *the open-ended* learning model can improve students' creative thinking skills. Judging from the results of the Sig. (2-tailed) value of 0.000. Where 0.000 < 0.05, and the tcount value is 9.844 with a table value of 1.699 and in the N-Gain test the *pretest* score is 6.93 and in the *posttest is 10.7 with an N-Gain score of 0.71 high interpretation. By looking at the difference in the results before and after the test as well as the increase in the average results, it can be concluded that students'* creative thinking skills improved after the application of the *open-ended* learning model in the classroom. Thus, it can be said that *the open-ended* learning model can improve students' creative abilities. Because it provides a broader understanding for students to learn their concepts and find different ways to solve them. Therefore, it is important for teachers to use a good learning model and actively involve students in a learning atmosphere to achieve learning goals.

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