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CREATIVE PROBLEM SOLVING LEARNING MODEL ON STUDENTS' ABILITY IN DETERMINING NETWORKS OF CUBOIDS AND CUBE

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ABSTRACT

The purpose of this study was to determine whether there was an effect of using creative problem solving learning models without the support of concrete media on the ability to determine the nets of cuboids and cubes in fourth grade students of SDN 3 Bajur. In addition, to determine whether there is an effect of using creative problem solving learning models supported by concrete media on the ability to determine the nets of cuboids and cubes in fourth grade students of SDN 3 Bajur. Experimental research technique with nonequivalent control group design. The data analysis used is Spss 16 for Windows using t-test at a significant level of 5%. The results of this study are: There is an effect of creative problem solving learning models without the support of concrete media on the ability to determine the nets of cuboids and cubes in fourth grade students of SDN 3 Bajur. There is an effect of creative problem solving learning models supported by concrete media on the ability to determine the nets of cuboids and cubes in fourth grade students of SDN 3 Bajur. The ability to determine the nets of cuboids and cubes students who follow the creative problem solving learning model supported by concrete media is better than students who follow the creative problem solving learning model without the support of concrete media in the fourth grade students of SDN 3 Bajur.

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INTRODUCTION

Mathematics is one of the fields of study that exist at all levels of education, from elementary school to university level. Learning mathematics is a sufficient condition to continue education to the next level. Kamid et al (2020) says that learning mathematics is a teaching and learning process built by teachers to develop students' creative thinking. One of the

problems faced by the world of education today is the problem of the weak implementation of the learning process applied by teachers in schools, the learning process applied so far has not been able to develop the abilities of students, this also affects mathematics learning which shows that so far the process of learning mathematics (Uricchio 2018). There are still many elementary schools that are carried out conventionally, namely lectures, questions and answers and giving assignments or household work (PR).

This causes students not to actively participate in learning, students only listen to the teacher's explanation who gives examples and solves the questions on the blackboard. Then ask students to work on the questions in the textbooks or student worksheets (LKS) that have been provided as a result, if students are given different questions they will have difficulty or make mistakes in their assignments. This has shown that students only memorize what the teacher explains and their understanding ability is lacking, teachers have not fully implemented active and creative learning in involving students and have not used various methods or learning models that vary based on the character of the subject matter (Higgins 2020).

Students as educational subjects are required to be active in learning to find information and explore themselves or in groups, and solve problems given by the teacher. It is expected that in the learning process students are willing and able to express opinions according to what has been learned understood, interacting positively between students and students as well as between students and teachers when there are difficulties (Bessa et al. 2019). But in reality now, the mastery of mathematics in elementary school (SD) always has problems, many students think that mathematics is difficult so that it makes them lazy with math subjects besides this is also shown by the low score of students on the net material. blocks and cubes (Ayuningtyas, Mardiyana, and Pramudya 2019);(Khairunnisa et al. 2020). Therefore, the use of learning models and learning media is very important and affects students' abilities, the role of learning media is very important to assist teachers in achieving these basic competencies. This learning media aims to make it easier for teachers to deliver teaching materials to students, the use of this media can generate interest and motivation for student learning, besides that it stimulates students to remember what they have learned, and provides new learning stimulation (Gittens 2015).

Many learning models can be used in the learning process. In this case the researcher uses the Creative Problem Solving learning model supported by concrete media. The Creative Problem Solving learning model is a learning model that shows how to find solutions and represent a problem creatively (Sunaringtyas, Asikin, and Junaedi 2017). In the Creative Problem Solving learning model, the teacher acts to train students' creativity in solving problems, to help make it easier for students to learn, concrete media is also used. According to Yosopranata, Zaenuri, and Mashuri (2018) concrete or tangible objects aim to introduce a certain unit of study, the work process of a particular object of study or parts and other aspects needed.

METHOD

This research was conducted at SDN 3 Bajur, Mataram City. The population taken in this study were all students in class IV A, class IV B and class IV C at SDN 3 Bajur, Mataram City. While the samples used were students of class IV A and class IV C. In this study using experimental techniques with the type of research Quasi Experimental Design. The Quasi Experimental Design in this study used the Nonequivalent Control Group Design type (Jennings 2018). The experimental group applied creative problem solving learning models supported by concrete media supported by concrete media, while the control group applied creative problem solving learning models without the support of concrete media. The research can be described as follows:

$$O_1 \quad X_1 \quad O_2$$
$$O_3 \quad \longrightarrow \quad O_4$$

Figure 1. Nonequivalent Control Group Design

Information:

O_1	=	pretest score (before using creative problem solving learning model
X_1	=	treatment with creative problem solving model
O_2	=	posttest score (after using the learning model creative problem solving).
O_3	=	pretest score (before using the creative problem solving learning model supported by concrete media)
$\longrightarrow$	=	treatment with creative problem solving models supported by concrete media
O_4	=	posttest score (after using creative problem solving learning model supported by concrete media)

The independent variable in this study is a creative problem solving learning model supported by concrete media and a creative problem solving learning model without being supported by concrete media, while the dependent variable is the ability to determine the nets of blocks and cubes. The data collection instrument used in the study was a description test of 20 items (Ramsay and Silverman 2015). The instruments used in the research have been validated by construct validation experts. Furthermore, the instrument was tested in the field and the results were analyzed based on the validity of the test items and the reliability of the test using the SPSS for windows version 16 program.

RESULTS AND DISCUSSION

Results

From the results of data analysis after conducting a pre-test on the ability to determine the nets of blocks and cubes in fourth grade students at SDN 3 Bajur using creative problem solving learning models without the support of concrete media, the following data were obtained:

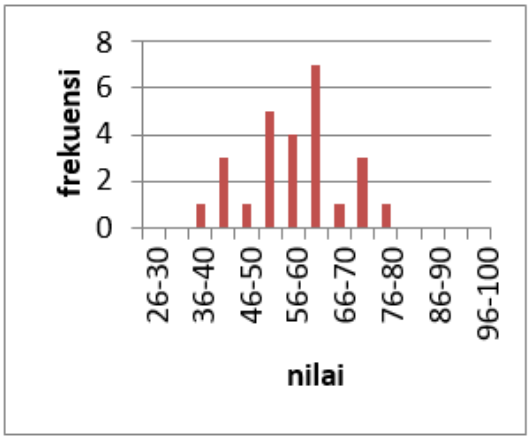

Figure 2. Graph Pre-test Ability to determine the Nets of Blocks and Cubes Control Class

Based on the existing data, it can be seen that the results of the pre-test in the control class have the lowest score obtained by students in the range of scores of 36-40, which scores are 1 student (3.8%). Meanwhile, the highest score is in the range of scores of 76-80, which scores are 1 student (3.8%). The highest frequency is in the score range of 61-65 each of which reached 7 students (26.9%). Based on this, it can be concluded that the ability to determine the nets of blocks and cubes is low.

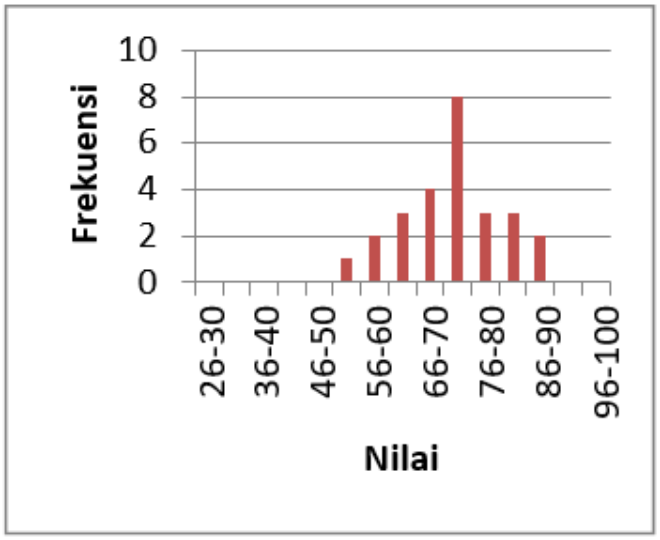

Figure 3. Post-test Graph Ability to determine the Nets of Blocks and Cubes for Control Class

Based on the available data, it can be seen that the results of the post-test in the control class were the lowest score in the range of 51-55 who got that score as many as 1 student (3.8%). Meanwhile, the highest score was in the score range of 86-90 who got that score as many as 2 students (7.14%). The highest frequency was in the score range of 71-75 which reached 8 students (30.8%). From the two data above, it can be seen that the post-test results of the control group have increased from the results of the pre-test after the application of the creative problem solving model without the support of concrete media.

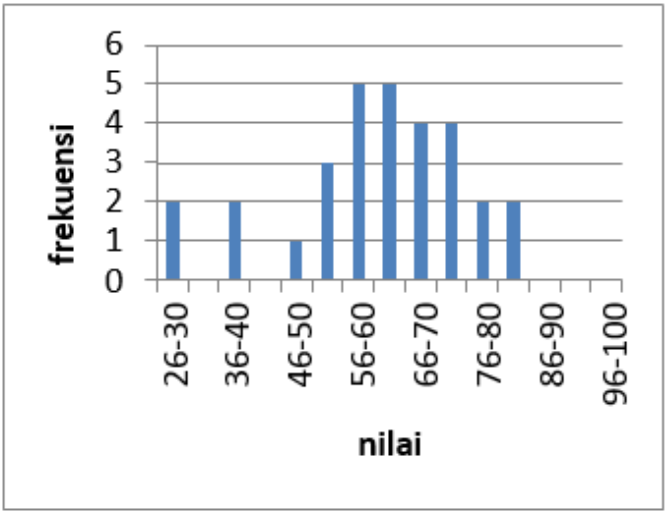

Figure 4. Pre-test Graph Determines the Nets of Blocks and Cubes for Experiment Class

Based on the existing data, it can be seen that the results of the pre-test in the experimental class the lowest score is in the score range 26-30, which scores are 2 students (7.7%). Meanwhile, the highest score is in the score range 81-85 which got that score as many as 2 students (7.7%). The highest frequency is in the range of scores 51-55 and 61-65 which reached 5 students (19.2%). Based on this, it can be concluded that the ability to determine the nets of blocks and cubes is low.

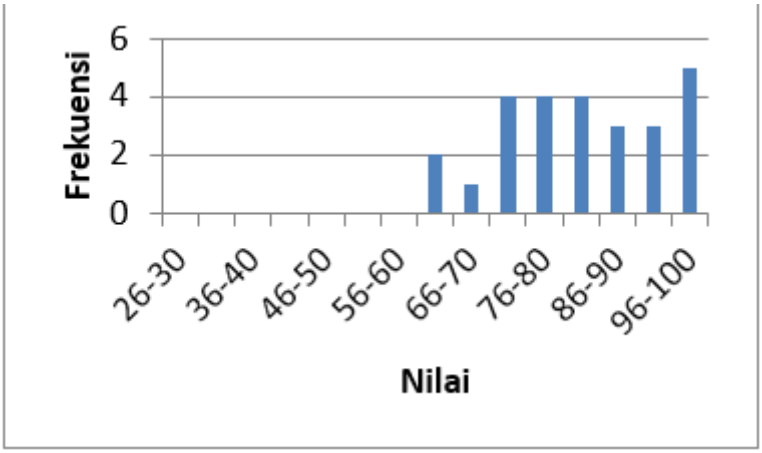

Figure 5. Post-test Graph Determines the Nets of Blocks and Cubes for Experiment Class

Based on the available data, it can be seen that the post-test results in the experimental class were the lowest score in the score range of 61-65, who got that score as many as 2 students (7.7%). Meanwhile, the highest value is in the range of a score of 96-100 who got that score was 5 students (19.2%). The highest frequency is in the score range of 96-100 which reaches 5 students (19.2%). Based on this, it can be concluded that the ability to determine the nets of blocks and cubes using creative problem solving learning models supported by concrete media tends to be high.

Discussions

Based on the results of the fourth grade data analysis of SDN 3 Bajur, it is known that 26 students obtained a pretest score with an average of 60.38. This value was obtained before fourth grade students were taught to use creative problem solving learning models. According to Pantaleon, Juniati, and Lukito (2018) states that the "CPS learning model" is "a learning model that shows ways to find solutions and represent a problem creatively", while according to Deviana and Prihatnani (2018) states that "the Creative Problem model Solving" is "a learning model that emphasizes group work that focuses on learning and problem solving skills followed by skill strengthening". After the fourth grade students of SDN 3 Bajur were taught to use creative problem solving learning models, the post-test scores increased on average to 74.03. This happens because the learning process uses creative problem solving learning models so that in learning activities students are so enthusiastic and active and creative, this is because students are directly involved and experience directly and solve problems. So that when the post test is given, it gets the maximum value.

Based on the results of the fourth grade data analysis of SDN 3 Bajur, it is known that 26 students obtained a pretest score with an average of 60.38. This value was obtained before fourth grade students were taught to use creative problem solving learning models supported by concrete media. According to Indrianto and Nurul Fatmawati (2020) states that the "CPS learning model" is "a learning model that shows ways to find solutions and represent a problem creatively", while according to Gorgorió and Planas (2015) states that "the Creative

Problem model Solving" is "a learning model that emphasizes group work that focuses on learning and problem solving skills followed by skill strengthening".

In addition to the use of creative problem solving learning models, in the teaching and learning process media are also needed that can make it easier for students to accept the material presented by the teacher, therefore concrete media are used. According to Lai et al. (2015) "concrete media" are "actual objects that can be used as learning media", According to Johnson et al. (2017) what is meant by "concrete media" is "To achieve optimal results from the teaching and learning process one One that is recommended is to use media that are direct, real or reality.

After the fourth grade students of SDN 3 Bajur were taught to use creative problem solving learning models supported by concrete media, the post-test scores increased on average to 85.19. This happens because the learning process uses creative problem solving learning models so that in learning activities students are so enthusiastic and active and creative, this is because students are directly involved and experience directly and solve problems. So that when given a post test, they get the maximum score, coupled with the use of concrete media which makes it easier for students to understand the material for nets of blocks and cubes, namely by disassembling pairs of blocks and cubes, that way they will more easily distinguish which nets are blocks and which are. cube nets because they know the real shape of the nets.

Based on the hypothesis test, it can be obtained the key to determine the nets of blocks and cubes of students who follow the creative problem solving learning model that is supported by well-supported media from students who follow the creative problem solving learning model without being supported by concrete media in fourth grade students of SDN 3 Bajur. This is evident from the average post-test scores of classes taught using creative problem solving learning models supported by media while obtaining an average of 85.19 classes taught without concrete media only obtained an average of 74.03. According to Navarro, Newell, and Schulze (2016) states that the "CPS learning model" is a "learning model that shows ways to find solutions and represent a problem creatively". Meanwhile, according to Gultom, Syahputra, and Fauzi (2020) stated that the "Creative Problem Sol model" is "a learning model for learning in groups that helps learning and problem solving skills followed by improving skills".

In addition to the use of creative problem solving learning models, in the teaching and learning process media are also needed that can make it easier for students to accept the material presented by the teacher, therefore concrete media are used. According to Baaren et al. (2018) "concrete media" are "actual objects that can be used as learning media". According to Desoete (2019) what is meant by "concrete media" is "To achieve optimal results from the teaching and learning process, one of the recommended uses is media that is direct, real or reality". A very significant influence occurs because the use model is supported by the right media so that students are able to understand the material given very well. This is proven by the difference in the post-test scores of the two classes, the class taught using creative problem solving learning models and supported by concrete media is superior.

CONCLUSION

Based on the results of the study, it can be concluded that; (1) influence of creative problem solving learning models without the support of concrete media on the ability to determine the nets of blocks and cubes in fourth grade students of SDN 3 Bajur; (2) effect of creative problem solving learning models without the support of concrete media on the ability to determine the nets of blocks and cubes in fourth grade students of SDN 3 Bajur; (3) the ability to determine the nets of blocks and cubes students who follow the media creative problem solving learning model that is supported by concrete is better than students who follow the

creative problem solving learning model without being supported by concrete media in the fourth grade students of SDN 3 Bajur.

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