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Submission date: 18-Mar-2021 06:21AM (UTC-0700)
Submission ID: 1536141003
File name: Anam_2021_J._Phys.__Conf._Ser._1779_012048-converted.docx (419.44K)
Word count: 2565
Character count: 14411

Journal of Physics: Conference Series

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Abstract. The study focuses to exceed student learning outcomes in mathematics subjects on polygon material using puzzle learning models in the fourth grade of Gebang Elementary School 1 Sidoarjo, Indonesia. The study employs Class Room Action research method and learning puzzles as model with a Kurt Lewin approach through a single cycle and consisted of four main steps for each cycle: planning, action, observation and reflection. Data is gathered with observations and tests. The results revealed that the implementation of the puzzle learning model on mathematics subject on polygon material can improve the students' score up to 86% in the fourth grade of Gebang Elementary School 1 Sidoarjo, Indonesia and can aid the achievement criteria of learning process between students and teachers are categorized as "very good"

Keywords: Learning Puzzel Model, Improve Math

1. Introduction

Some students experience mathematical learning problems because math are considered as more difficult than other lessons. This is because mathematics is very related to numbers and formulas. Mathematics is one of many areas of study that occupy a major role in education [1]. Mathematics becomes a subject delivered to all levels get under way from elementary level to equip learners with logical, systematic, analytical, critical and ingeniousness thinking skills, along with capability to cooperate. This is because mathematics as a source of science has produced a lot of invention and development of knowledge that is affected by the development of mathematical fields. So, math subjects are very necessary for other learners [2]. The intricate and difficult opinion of mathematical materials makes students become more hard to comprehend and learn [3]. The difficulties students experience in studying mathematics vary greatly. One such difficulty is that students are difficult to master the polygon material. In learning mathematics, students need intermediaries to understand and clarify teachers explanation.

Polygons is part of geometry. Geometry is a branch of mathematics shown at every degree of education, from the lowest to the highest [4]. Each student has different abilities to master the geometry. The capability to understand geometry in learning and teaching process need to be considered by the teachers [5]. Teachers play an essential role in the process[6].

The success of student insight is influenced by several factors, which are derived from students themselves as well as from teachers as educators. The teachers' factors are the capability to design learning that has the capacity to foster the students' learning motivation and to generate a fun and exciting learning atmosphere [7]. Many students say that math is a difficult lesson. So, students are reluctant to learn it and affects the lack of their learning results on mathematical subjects. Learning outcomes are a result of a person's learning process. Learning outcomes related to the changes of learner. Forms of change as an outcome of learning in the configuration of knowledge, understanding, behaviour and attitudes, skills and proficiency [8].

Mathematical learning models need to be fixed and produced relating with the objectives and features [9]. Students need intermediaries a proper learning medium to understand and clarify what teachers are bringing to improve learning outcomes. As with polygon material, Students not only see the objects in the classroom but also able to know various kinds of polygon with media that contains elements of games. Students can find out the various shapes of polygons, and practise in finding the features of the builds. Students can also learn while having fun in composing these polygons. Examples of schools that face the case of learning polygon mathematics material is in the fourth graders Gebang Elementary School 1 Sidoarjo, Indonesia.

Media is an agency of messaging or learning information that is to be brought by the source of the news to the receiver of the news. The user of teaching media or learning models can help learning success achievement [10]. Among the proper learning models for this problem is to use a puzzle media. The application puzzle models can make it easy for learners to perform tasks on polygon material. Puzzle is a game that has been very popular among children. Puzzle is becoming an effective medium to introduce or test children knowledge through pictures as a result of their nature that arouses children's curiosity. Children will learn to examine a problem by recognizing the clues from the image snippet through the Puzzle game [11]. Despite the common belief that puzzles can increase motivation [12]. Puzzles are created specifically to enlarge students ' mental abilities, raise and train their intelligent, which helps to comprehend and combine better knowledge acquisition, arouse students' fascination in mathematics [13].

The application of Media puzzle used in mathematics learning is very motivating students. So, students can enhance their achievement in Grade 1 semester 1 at SDN Watuagung District Watulimo in Trenggalek District, Indonesia. The improvements can be seen found on the results of cycle 1 activity and cycle 2 activity after applying the media puzzle to the mathematics subjects in Grade 1 [14]. The Learning implementation can enhance student achievement [15].

Education is the ultimate weapon against ignorance. Education management serves to integrate the cooperation of all elements to realize the achievement of educational objectives. The achievement of macro-scale educational objectives is constructed from the achievement of micro-educational objectives of learning results in the classroom. The aims of this research is to increase the learning results of fourth graders in Gebang Negeri 1 Sidoarjo, Indonesia so that students find it undemanding to understand mathematics learning organized by teachers with Puzzle learning models.

2. Research Methods

To solve the difficulties of learning mathematics in polygon material in elementary students then this study uses Classroom action research model class puzzle with Kurt Lewin model. This puzzle method performs an approach through two cycles consisting of four principal steps for each cycle: planning, action, observation and reflection. The subject of this research is grade IV

tudent of Gebang Elementary School 1, Sidoarjo, Indonesia. The main Data is derived from 22 students consisting of 10 men and 12 women. The research variables used are X variables applying the puzzle model as a primary variable; and variable T student learning ability as supporting variables. Data is collected with observations and tests. The indicator that students have mastered a subject is the learning result which is measured to achieve the minimum submission criteria or predefined standard setting [16]. There are two categories in determining the student's learning submission, which is to study individually using equation 1 and student learning outcomes classically. Each student is concidered complete the individual study if it reaches the minimum submission criteria or standard setting S 76%. class is concidered complete in its classical class if there are S 80% of students who have accomplished their studies. Quation 1 consists of LM = Learning mastery of individual, Σ NS = Total of all students with a value of S 76%, and N = number of students.

$$LM = \{\Sigma NS)/N \times 100\% \{1)$$

Table 1. The Criteria of Student and Teacher Learning Process includes five levels of exposure, and the predicate of learning when a learning model is implemented.

†able 1. Criteria of Student and Teacher Learning Process

No	†he Level of Submission	†he †itle of Submission
1	80% - 100%	Excellent
2	60% - 79%	Good
3	40% - 59%	Sufficient
4	20% - 39%	Less
5	<20%	Very lacking

3. Result

This step explained the results of the study on the use of puzzle learning models on mathematical subjects in polygon material.

a. Pre-cycle results description

Based on the observations results and discussions with the fourth-grade teachers at Gebang Elementary School 1, Sidoarjo, Indonesia before the implementation of the puzzle learning model, it shows that many students have below Minimal submission criteria learning results in mathematical subjects polygon material. The invidual learning results in the fourth grade of Gebang Elementary School 1, Sidoarjo, Indonesia is 76. But the fourth graders who score equal to or above 76 are only 12 students so that the value of the submission of classical learning is only 54% of 22 students.

b. Cycle I research results description

According to the observation in this cycle, it is possible to know that there has been an increasement in mathematical subjects learning results on polygon material using a puzzle learning model. The majority of students reach the classical indicator of learning, which is = 86%, which is very good and with an average value of 80.90. The number of students who have completed individual study as many as 19 students and the number of students who have not completed individual study are 3 students as shown in table 2.

4. Discussions

The data results of the study and development data of the pre-cycle action and cycle I can be found in the table 2. In the pre-cycle, low student learning results in mathematical subjects in polygon material are suspected as a result of students less interested in learning with a lecture-learning model used by teachers. It makes students feel confused and less understand of the teachers' explanation. The discrepancy of learning models can be a problem of learning math difficulties in students. This is relating with the investigation ourcomes of Naufalia Izzul Islamy

and M. Husni Abdullah which suggests that teachers should be able to create active, creative and innovative learning conditions to improve the students ' learning outcomes. The learning process should use a suitable learning model to be applied for the learning objective to be achieved. One of its way is the implementation of a learning model to change the learning process that is initially monotonous and less attractive becomes more meaningful and inherent to students [17].

†able 2. The Results of The Pre-Cycle Action and Cycle I

	Mastery Students		Not Mastery Students	
Description	**Frequency**	**%**	**Frequency**	**%**
Pre-cycle	12	54%	10	45%
Cycle I	19	86%	3	13%

Data Table 2 is the result of the pre-cycle and the cycle 1 shows the progression of learning results in pre-cycle and cycles 1 that use the puzzle method in learning mathematics on polygon material. On pre-cycle there are still 10 students who get below average or 45% score and there are 12 students or 54% who score above average. In cycle I, there is a significant increasement in learning outcomes. There are 19 students or 86% who score above average and only 3 students or 13% are given below average scores. The puzzle learning method makes students able to know different types of polygons, practicing their characteristics with the media that contains the game's elements. Because learning math becomes more fun like playing and not boring. The implementation of the puzzle learning method in cycle I proved to improve the learning results of students who study the mathematical subjects of polygon material in accordance with the research objectives. Other factors that contribute to students ' success include intelligence, student learning style, teacher, and classroom conditions. This is relating with the study of Kartini which suggests that the achievement of students who have scores above lower level completeness criteria 87.50% in the second cycle on the use of puzzle methods for mathematical subjects [17].

5. Conclusion

From this study we can learn that the implementation of the puzzle model can improve the learning results of students of polygon material mathematics in the public elementary school Gebang 1 Sidoarjo, Indonesia. With this puzzle method, there is a decline of students who feel difficulties in learning mathematics in polygon material. This can be proved by increasing the score from the pre cycle to the I cycle. At pre-cycle there are 12 students who got the student's mastery or 45%. Then in cycle I there is an increasement, the student who gains as many as 19 students or 86%. This puzzle method makes the learning process criteria between students and teachers classified as "very good".

Acknowledgment

We would like to thank our parents, family, friends, Nahdlatul Ulama and Indonesia.

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