

# Productive Learning Activities as an Effort to Improve Mathematics Learning Outcomes of the Circumference of a Circle and Area of the Circles Material using Jigsaw Cooperative Learning at Students of SDN 38 Ternate

Sahrin Karim<sup>1</sup>, Sarjuga<sup>1</sup>, Yahya Hairun<sup>2</sup>

<sup>1</sup>Mathematics Teacher at Elementary School of SDN 38 Ternate, Maluku Utara

<sup>2</sup>Mathematics Lecturer at the Faculty of Teacher Training and Educational, Universitas Khairun, Ternate, Maluku Utara

**Keywords:** Learning activities, Learning outcomes of mathematics, Jigsaw model.

**Abstract:** This research is a classroom action research that aims to determine the learning activities of students in mathematics learning and mathematics learning outcomes in the circumference and area of the circle by using Jigsaw cooperative learning. The subjects used as respondents were 44 students in the 6th grade of SDN 38 Ternate city. The instruments used were learning videos and Student Evaluation Sheets (LES). The results obtained from learning activities observed through learning videos that are analyzed in full are stated that students are very responsive and active between students and students in groups and students as a whole so that it can be said to be very good learning activities. While the learning outcomes obtained through the LES score with an average score are 90 with very good categories.

## 1 INTRODUCTION

Objectives of the assignment of lecturers at PDS schools that underlie this Classroom Action research article is to produce collaborative learning tools which include learning models as collaboration to support quality learning objectives in the classroom, then to reflect on the goals of the PDS can be coupled with a class action research (PTK). Thus collaborative learning and quality learning tools are presented and coupled with classroom action research (CAR).

Achieving the goal of PDS is the role of students in the learning process in the classroom. The role of students as a real activity in the learning process both in group activities and inter-group activities in learning will greatly determine the results that will be obtained in learning. The selection of models also greatly supports the motivation and enthusiasm of students to learn. One of the models used is the Jigsaw cooperative model, with circumference and circular area material. Thus the topic of classroom action research (PTK) is "Productive learning activities as an effort to improve mathematics learning outcomes in the circumference and area of

the circle using Jigsaw type cooperative learning by students of SDN 38 Ternate city".

### 1.1 Problem Formulation

The problem formulations or research questions in this CAR are:

1. What are the learning activities of the students of SDN 38 Ternate City on the circumference and area of the circle by using Jigsaw co-operative learning?
2. What are the learning outcomes of students of SDN 38 Ternate City on the circumference and area of the circle using Jigsaw cooperative learning?

### 1.2 Research Objectives

The objectives to be achieved in this study are:

1. To find out the learning activities of students of SDN 38 Kota Ternate on the circumference and area of the circle by using Jigsaw cooperative learning.
2. To find out the learning outcomes of students of SDN 38 Kota Ternate on the circumference and

area of the circle by using Jigsaw cooperative learning.

### 1.3 Research Benefits

This study is expected to be useful for: Principals, Teachers, Lecturers and Parents as input on learning outcomes and learning activities of students in 6th grade of SDN 38 Ternate City.

## 2 LITERATURE REVIEW

Learning and teaching activities are the processes carried out by teachers and students when learning takes place and productive learning activities will produce good learning outcomes. Herman (2002: 10), that every teaching and learning process always produces learning outcomes. The problem faced is to what level of learning outcomes have been achieved. According to Zain Aqib (2013: 65), learning outcomes are when someone has learned and there will be behavioral changes in that person. For example, not knowing being aware and not understanding being understanding.

The learning process is a psychic / mental activity that takes place in active interaction with the environment which produces changes that are relatively constant and traceable. This behavior change is a learning outcome that covers the cognitive, effective domain, and psychomotor domains (Uzlifatul Janna 2010: 4). The principle underlying the assessment of learning outcomes is to provide hope for students and teachers to be able to improve the quality of learning. Quality in the sense of students becomes effective learning and the teacher becomes a good motivator.

Jhon M. Keller as quoted by Mulyono Abdurrahman (2002: 46) holds that: learning is strongly influenced by two kinds of input, namely personal input groups (personal inputs) and input groups that come from the environment (environmental inputs). Another opinion expressed by Muslims in the Journal of Research in the field of education mentions the factors that influence learning, namely:

Learning strategies, one of the strategies that can increase student involvement in the learning process are: pre-learning, information presentation, student participation, evaluation, and action go on.

Students' cognitive style, habit of acting that is relatively fixed in receiving, thinking, solving problems, or in information. From various descriptions of the factors that influence learning can

be grouped into two, namely internal factors and external factors. Internal factors are factors that arise from within the students while external factors are factors caused by external stimulation of students so that students are affected or conditioned by these external factors.

### 2.1 Cooperative Learning Model of Jigsaw

Cooperative refers to the learning model in which students work together in small groups helping each other in learning. Most involve students in groups consisting of 4 (four) students who have different abilities.

Lukman (2009: 26) states that the basic elements of cooperative learning are as follows:

- a. Students are responsible for everything in the group as their own.
- b. Students try to see that all members in the group have the same goal.
- c. Students must share the same tasks and responsibilities where members of the group.
- d. Students will be subject to an evaluation or gift / award which will also be applied to all group members.
- e. Students will be asked to account individually for the material handled in the cooperative group.
- f. Students are various leaders and they need skills to learn together during the learning process.

### 2.2 Steps of the Jigsaw Cooperative Learning Model

The steps of the Jigsaw cooperative learning model are as follows:

- a. Students are grouped with 4-5 people
  - b. Each person in the team is given different tasks and assignments
  - c. Members of different teams with the same assignments form groups new (expert group)
  - d. After the expert group discussed, each member returned to the original group and explained to the group members about the sub-section they mastered.
  - e. Each expert team presented the results of the discussion.
- Discussion of the  
Covering

## 2.3 The Material of the Circumference of a Circle and Area of the Circles

### 2.3.1 The Circumference of a Circle

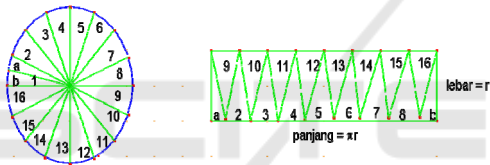
The formula of the circumference of a circle  $K$  with diameter  $d$  or radius  $r$  is as follows:

$$K = \pi d \text{ atau } K = 2\pi r$$

To facilitate calculation, in using  $\pi = 3.14$  or  $22/7$ , you can pay attention to the diameter or radius of the circle. If the diameter or radius of the circle is a multiple of 7, then use  $\pi = 22/7$ . If the value of the diameter or radius of the circle is not a multiple of 7, then use  $\pi = 3.14$ .

### 2.3.2 Area of Circle

After studying the circumference of the circle, in this section we will study the area of the circle. The area of the circle is the area of the area bounded by the circumference of the circle. Pay attention to the following picture.



A circle is divided into 16 jays. Then the juring is arranged like a rectangle above. The build has a length equal to half the circumference of the circle ( $1/2 \pi d$  or  $\pi r$ ). The wake width is equal to the radius of the circle ( $r$ ). So that the area of a circle with radius  $r$  is equal to the area of a rectangle with a length of  $\pi r$  and  $r$ . Obtained:

$$L = \text{length} \times \text{width}$$

$$L = \pi r \times r$$

$$L = \pi r^2, \text{ or because } r = 1/2 d, \text{ thus } = \pi r^2 = \pi (1/2 d \times 1/2 d) = \pi (1/4 d^2) = 1/4 \pi d^2$$

So, the area of a circle with radius  $r$  or diameter  $d$  is as follows:

$$L = \pi r^2, \text{ or } L = 1/4 \pi d^2$$

## 3 RESEARCH METHOD

This research is a classroom action research with respondents or subjects are students of SDN 38

Ternate City, in total of 40 students. The research instrument used was the LES (Student Evaluation sheet) with the number of items as many as 4 (four items). The item used is the item in the reference book (not homemade) so that the level of validity and reliability can be guaranteed. In addition to LES, observation instruments and video documentation are used to measure activity during learning. Observation instruments to answer the first problem and LES to answer the second problem. The variables are student learning outcomes on the material area and circumference of the circle taught by Jigsaw cooperative learning. The analysis used is Benchmark Reference Assessment (PAP) Nana Sudjana (2008: 107)

Minimum completeness standard (SKM) of mathematics subjects at SDN 38 is 75.

## 4 RESULTS AND DISCUSSION

### 4.1 Research Results

The results of the video analysis showed that all groups of students consisting of 4 (four) groups were all very active in taking lessons and were directly involved in the learning process carried out with the Jigsaw type learning model. Thus the results of the analysis said that the activities of students in the 6th grade of SDN 38 in 2018 at the time of learning with traveling material and area of the circle observed by students as a whole play an active role in classroom learning.

Evaluation results through the student evaluation sheet (LES) obtained scores of students learning outcomes of students in the 6th of SDN 38 Ternate City in 2018 when learning the Roving and Area of Circle material using Jigsaw cooperative learning gained an average score of 90.

### 4.2 Discussion

Based on the results of the study above, it can be explained as follows:

Student learning activities observed through the full video analysis observation instrument obtained information that all students in the sixth grade of Ternate City Elementary School in 2018 played an active and learning role in the circumference and area of the circle using Jigsaw cooperative learning. Thus it can be stated that the learning activities of students in the sixth grade of SDN Kota Ternate are very good.

The results of the evaluation score based on the student evaluation sheet (LES) obtained an average score was 90. Thus it can be stated that the learning outcomes of students in the sixth grade of SDN 38 Kota Ternate were very good.

Based on the results of observations made by the analysis of the whole learning video obtained by the learning activities of students in the sixth grade of SDN Kota Ternate was very good and the learning outcomes obtained through evaluating the learning outcomes of student evaluation sheets (LES) were very good. This shows that the activities carried out in the learning process in class with the results obtained are balanced, meaning that the suitability between observations and learning outcomes.

## 5 CONCLUSIONS AND SUGGESTIONS

### 5.1 Conclusions

The conclusions of this Classroom Action Research are as follows:

Learning activities of the sixth grade students of SDN 38 Kota Ternate, when learning about the Roving and Area Circle material using the Jigsaw type learning model is very good.

The learning outcomes of the sixth grade students of SDN 38 Kota Ternate, when learning about the Roving and Area Circle material using the Jigsaw type learning model was very good.

### 5.2 Suggestions

Variation in teaching using various strategies and models can create motivation and enthusiasm for learning so that it needs to be done when megajar in class.

CAR is one of the studies conducted in the study room which is a condition created by a teacher with the aim of improving learning outcomes is a good effort that needs to be done to measure student learning completeness.

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