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Comparison Of Pre-Test Values Before Study Assistance And Post Test After Learning Assistance Against The Concept And Application Of Circumference Circle (Class VIII Students Of Tamalabang Public Middle School)

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Abstract: Mathematics learning is a teaching and learning process built by teachers to develop students' creative thinking that can improve students' thinking skills, and can construct new knowledge as an effort to improve good mastery of mathematical material, especially around circles. The purpose of this research is how the knowledge of class VIII SMP Negeri Tamalabang on the value of phi (π) and the ability to understand and solve problems related to determining the circumference of a circle. The research method used is descriptive qualitative. The form of descriptive research used is case research. The results showed that students' understanding in finding the value of phi and the formula for the circumference of a circle developed well from the comparison of pree test and post test. This learning design makes students look more active and begins to show the ability to express opinions even though the result is that there is a development in students' understanding. The average pree test and post test scores of 21 class VIII students of SMP Negeri Tamalabang were 55.05 for the average pree test and 84.76 for the pree test. This indicates that there is a well-developed understanding of the eighth grade students. In other words, many students understand the concept of the circumference of a circle or there is an increase in students' understanding in solving problems related to the circumference of a circle. There needs to be motivation that stimulates students to continue to study hard, especially in the field of mathematics.
Keywords: Circumference, circle

INTRODUCTION

In learning mathematics, especially in solving problems, students are required to be involved in learning activities to think, interact, try, and find concepts to solve problems. In addition to

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students who are required to be directly involved, teachers as facilitators are also required to create learning activities that are in accordance with the stages for solving problems encountered in the process of teaching and learning activities (KBM). By choosing to use a learning model is one way for teachers to plan learning activities. The learning model used by the teacher must be a learning model that is in accordance with the goals of learning mathematics. The learning model is a conceptual/ operational framework, which describes a systematic procedure for organizing learning experiences to achieve certain learning goals and serves as a guide for teachers in planning and implementing learning activities. The purpose of this study was to present material about circle circumference and evaluate students' understanding of circle circumference material. The method in this study was that the researcher directly gave a pre-test, provided learning to Tamalabang State Middle School students regarding circle circle material, gave a post-test, and concluded the research results based on the evaluation results that had been given.

In understanding the basic concept of the circumference of a circle, it is necessary to explore how to get the formula for the circumference of a circle. The application of the integral in determining the length of a curve in a plane can be used to prove the formula for the circumference of a circle. A circle is a set of points in a plane that are a fixed distance from a certain point called the center of the circle. Circle as a simple closed curve, the length of the curve is called the circumference of the circle. Determining the length of a curve that has curved boundaries such as a circle is by using the polygon approach, namely by approximating the curve through polygon line segments. However, this method will only produce approximate numbers. Therefore, to obtain accurate results, the approximation is continued by adding up the total length, then calculating the limit as the line segments of the polygon increase. Thus, the circumference of a circle can be interpreted as the limit of the length of the polygons that make it up. This procedure can be written mathematically as a definite integral method. So, in this study the formula for the circumference of a circle will be proven using certain integrals, both in Cartesian coordinates and polar coordinates (Imaniyah, A., Susanto, K., & Lestari, A. S. B. 2021).

Learning circle material sometimes starts with giving the circle circumference formula, working on sample questions, and ends with giving practice questions that are similar to the examples given. The teacher forgets that in the process of learning around a circle, students can be invited to find the formula from familiar circle-shaped objects so that students contribute by bringing out their ideas. This can stimulate thought processes and compile facts so as to generalize from these facts. Before finding the formula for the

circumference of a circle, of course, students must first know the value of phi. The process of rediscovering the value of phi is carried out with the guidance of the teacher as an adult in stages (Sari, N. 2017). The circle is one of the material in mathematics that is taught to students in class VIII SMP. Circle material has many uses in everyday life, such as in building circular buildings, making car wheels, making glasses with circular lips, and many other objects that contain circular elements. Therefore, from the various benefits of learning, it would be nice if learning about circles could use real contexts in everyday life (Nurdiansyah, N., & Prahmana, R. C. I. 2017). In learning mathematics, especially in solving mathematical problems, students are required to be involved in learning activities to think, interact, try, and find concepts to solve problems. In addition to students who are required to be directly involved, teachers as facilitators are also required to make strategic efforts that target students' understanding in understanding the material around the circle.

RESEARCH METHODS

1. Planning: in planning there are the following steps, namely: recognizing symptoms. First of all observing the presence of one of the symptoms, the symptom may be found or obtained in several ways, namely the supervising teacher finds the symptoms of students with problems themselves, the subject teacher provides information, there are students who have problems with the supervising teacher to handle a student who has problems based on the information provided. received from other parties, such as students, teachers, or administration.
2. Make a case description, after the symptoms are understood by the supervising teacher then make the case objectively, simple, but clear enough.
3. After the description is made, the aspects or areas of the problem that might be found in the description are further studied, then the type of problem is determined, whether it involves personal, social, learning or career problems.
4. The types of problems that have been grouped are described by developing ideas or concepts in detail, so that it is easier to understand the problems.
5. The existence of a more detailed description of the problem can help the supervising teacher to estimate the possible source of the problem.
6. Estimating the possible sources of the problem knowing the type of information collected, sources of information that need to be collected, and techniques or tools used to collect information.

7. Data collection, there are several techniques, but those that are often used in case studies are observation, interviews, and documentation. Once collected the counselor can classify the data into manageable data sections.
8. Use and processing of data, is a data processing business to summarize, classify and link data obtained in data collection. Thus it can show an overall picture of the child's self, this formulation is concise and concise.
9. Synthesis and interpretation of data after processing the data, then the case study data is interpreted with case conferences involving special officers who study each case from a problematic individual. This formulation is carried out through logical conclusions.
10. Planning the implementation of help (treatment) is a step that is formed to determine the technique or assistance given to students who have problems and predict the possibility that students will arise in connection with the problems experienced.
11. Evaluation and follow-up (follow-up) of this activity is carried out after carrying out treatment or making assistance. Follow-up can be carried out by the teacher himself, the counseling teacher, or referred and transferred to other parties who are more competent or from the parents of the students themselves.

Descriptive analysis is used to discuss in depth the ability of students' mathematical understanding which is the center of this research. So that through this descriptive research the researcher can describe the students' answers to the mathematical understanding questions about circle circumference. In this study, the researcher directly gave the pre-test, provided learning to Tamalabang State Middle School students regarding circle circle material, gave the final test (post-test), and concluded the research results based on the evaluation results that had been given.

RESULTS AND DISCUSSION

RESULTS

a. Meet picket on art day, may 2022

Figure 1a. picket on art day, May 2022

a. Teaching and learning activities

Figure 1b. The researcher is giving motivation to Grade VIII students of Tamalabang Public Middle School

Researchers directly met with Grade VIII students of SMP Negeri Tamalabang. The researcher is an alumni of Tamalabang State Middle School. The researcher now works as a lecturer in the Mathematics study program at Tribuana Kalabahi University. As an alumni, of

course, it is a separate stimulus for the juniors of Tamalabang State Middle School. Researchers provide motivation to students so they don't only study mathematics when there are lesson schedules, free time and just before daily tests and don't be lazy to study mathematics. Students must have a high desire and desire to stay motivated that learning is a necessity that cannot be postponed. The researcher in his motivation stated that today younger siblings learn tomorrow to be leaders. The leader in question contains many meanings, one of which is younger siblings can lead themselves to be useful people for themselves, others, and especially useful for this nation.

Figure 2. The researcher is teaching mathematics around the circle

Teaching is an activity of organizing or managing the environment as well as possible so as to create opportunities for children to carry out the learning process efficiently. Teaching is guiding (guiding) student learning activities, organizing and organizing the environment around students so that they can encourage students to learn. Methods of teaching are ways, rules, or systems applied by a teacher in organizing and managing the learning environment as well as possible so as to create opportunities for students to carry out learning efficiently and can encourage students to study well in order to achieve learning objectives in the form of good learning achievements. good. attitude as a certain regularity in terms of feelings (affection), thoughts (cognition), and a person's predisposition to action (conation) towards an aspect of the surrounding environment. Attitude is a state from within the human being that moves to act, includes certain feelings in dealing with objects and is formed on the basis of experience. Researchers assume that every teaching activity should be a teaching exercise. Thus before teaching, the teacher will as much as possible prepare himself thoroughly to teach.

Figure 3. The researcher is teaching mathematics around the circle

The circumference of a circle is the length of the curved line that forms the circle. A circle is a type of simple closed curve. The circumference of a circle can be measured by cutting the circle at a point, then straightening the curve of the circle and then measuring the length of the circle line. From the above process, the results of dividing the circumference divided by the diameter are always the same. This value is 3.141592…… hereinafter referred to as π (pronounced phi). If rounded with an approximation, π = 3.14 is obtained. Therefore π = 3.14 is used if the radius is not a multiple of 7, and the value of π can also be expressed by π = 22/7, if the radius is a multiple of 7.

So, it can be written that

$$K/d = \pi$$

$$K = \pi x\ d$$

Because Diameter (d) = 2 x radius, then: K = 2 x π x r

In the learning process, the examples given are as follows: Calculate the circumference of the circle if

a. The radius of the circle is 7 cm

Figure 4. Draw a circle, r=7cm

b. The radius of the circle is 6 cm

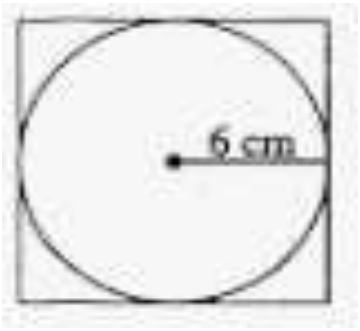

Figure 4. Draw a circle, r=7cm

Completion

a. K = 2 x π x r

   K = 2 x 22/7 x 7 cm

   K = 44 cm

   So the circumference of a circle when the radius of the circle is 7 cm is 44 cm.

b. K = 2 x π x r

   K = 2 x 3,14 x 6 cm

K = 37,68 cm

So the circumference of a circle when the radius of the circle is 6 cm is 37,68 cm.

1. Comparison of pre-test and post-test

Assessment of the results of solving the questions about the circumference of the circle obtained from Grade VIII students of Tamalabang Public Middle School as shown in table 1 below

Students	Pre test value	Post test value
1	90	100
2	10	50
3	60	100
4	80	100
5	30	100
6	90	100
7	30	90
8	30	90
9	18	25
10	80	100
11	80	90
12	100	100
13	30	60
14	50	80
15	40	100
16	90	100
17	30	90
18	30	90
19	38	25

20	70	100
21	80	90

Of the 21 students when the researchers conducted the pre-test before starting the mentoring, it turned out that the average pre-test score was 55.05. Meanwhile, after the assistance was carried out, it turned out that the average value of the post test was 84.76. This can be seen in detail for each student in the following figure

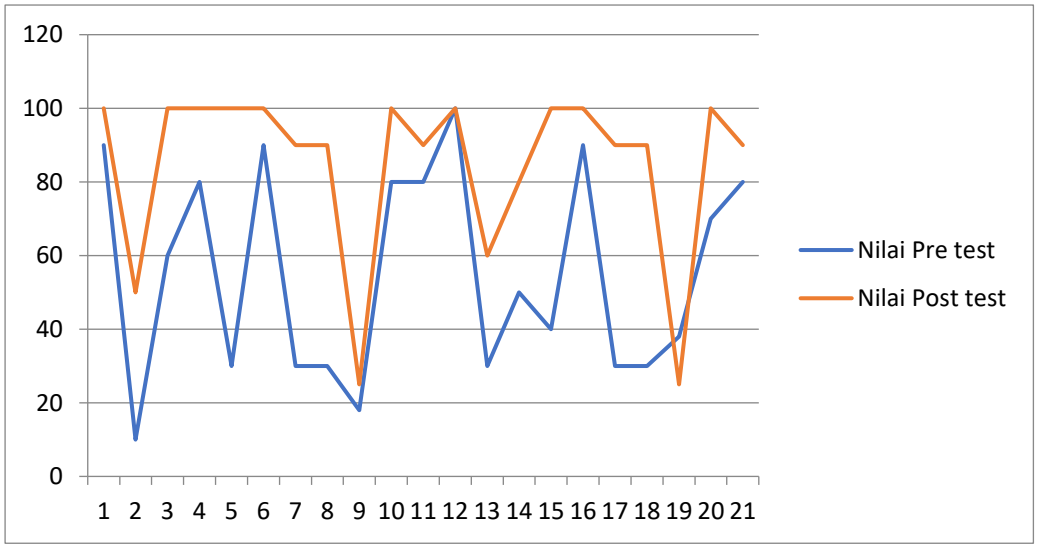

Figure 5. Pree test and post test results for class VIII students of Tamalabang Public Middle School

DISCUSSION

The researcher was at the Tamalabang State Middle School location, immediately met the picket teacher. After the researcher filled out the guest book given by the picket teacher, the researcher discussed or shared stories with the picket teacher reciprocally. Researchers feel happy with all the services provided by the school. Friendly conditions, a smile in every service characterizes how harmonious the atmosphere is for learning activities at Tamalabang Public Middle School. If this general description becomes a valuable experience for readers and educational administrators at one level or at another level, it becomes a role model to be inspired and emulated.

Figure 5. Group photo of Tamalabang Public Middle School Principal: Mr. Jacobus Rifael Tuaty, S.Pd

Researchers met with the Principal of the Tamalabang Public Middle School, East Pantar sub-district, Alor district, East Nusa Tenggara province: Mr. Jacobus Rifael Tuaty, S.Pd. In a brief discussion Mr. Jack said that in his leadership, he tried to direct all teachers and employees to continue their careers to the fullest, for the sake of and for a mission of serving the nation's generation. Mr. Jack said that a sincere intention accompanied by sincerity of dedication, discipline, and hard work will have an impact on an educational order that is measurable in all dimensions. In addition, learning support facilities, administrative arrangements, the welfare of educators and educational staff are one unit that can support efforts to improve the quality of learning in schools, which has a very positive impact on improving the quality of student learning. According to Mr. Jack, the purpose of general education is the importance of the value of the existence of education as a reference and for the achievement of life and social interaction between people that is good, harmonious, disciplined, compassionate, democratic, responsible, loyal and devoted, and compatible or harmonious. Thus the purpose of learning and learning is to develop students' awareness to be devoted to God Almighty (TYME), master science and technology, master knowledge about diversity, equality and human dignity as individuals, and social beings in social life, foster a critical attitude , sensitive and wise in understanding the uniformity of equality and human dignity on the basis of aesthetic, ethical and moral values in social life. In addition, the purpose of learning and learning can provide a broad foundation of knowledge and insight as well as confidence in students as provisions for living in society as individuals and civilized

social beings in practicing academic knowledge and expertise and being able to solve socio-cultural problems wisely. According to Mr. Jack, the research and service carried out by researchers and field practitioners who conduct research and service, especially in the field of education, have a positive impact on students. This is also a form of cooperation, effort, and evaluation of improving the quality of education for the nation's next generation. .

Figure 6. The principal introduces the researcher and provides motivation

The principal of Tamalabang Public Middle School, Pantar Timur sub-district, Alor district, East Nusa Tenggara province, Mr. Jacobus Rifael Tuaty, S.Pd, introduced the researcher to class VIII students. After the introduction, the researcher immediately made observations through the pre-test, study assistance, and post-test. Based on Lestari et al. (2016) in Jayanti, R. A., & Hidayat, W. (2020) states that the types of errors that often occur to students when solving questions regarding the circumference as well as the area of a circle are: (1) conceptual errors, namely errors in applying the circle formula; (2) fact errors, errors in writing the unit area of a circle and mistakes when drawing final conclusions on answers; (3) principle errors, namely mistakes when interpreting the questions; and (4) procedural errors, namely student errors when performing multiplication and exponential calculations. In the observations and research of researchers, many students have not been able to distinguish between the use of phi values when multiples of 7 and when the radius of a circle is not a multiple of 7. Students are still confused about distinguishing when to use phi equal to 22/7 and phi equal to 3.14. Of the 21 students when the researchers conducted the pre-test before starting the mentoring, it turned out that the average pre-test score was 55.05. Meanwhile,

after the assistance was carried out, it turned out that the average value of the post test was 84.76.

a. **Figure 7. Group photo of the principal, father, and teacher of SMP Negeri Tamalabang**

b. **Figure 8. Group photo of one of the Tamalabang State Middle School Alumni**

c. figure 9. Group photo of students in class VIII SMP Negeri Tamalabang and Alumni of Tribuana Kalabahi University

CONCLUSION

The students of SMP Negeri Tamalabang, especially class VIII, have not been able to differentiate the use of phi values based on the known radius of the circle. Many students use a phi value equal to 3.14 even though the radius of the circle is a multiple of 7 or conversely uses a phi value equal to 22/7 even though the radius of the circle is not a multiple of 7. There are still some students who do not understand multiplication and rank number.

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