ERROR OF STUDENTS IN ANSWERING THE QUESTIONS ABOUT CIRCLE MATERIAL FOR THE STUDENTS OF GRADE VIII

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ABSTRACT

Base on the result of the researcher's interview with one of the mathematics teachers in SMP Negeri 1 Yogyakarta. The teacher claimed that some students still make the error, concept, principle, and operation to answer the circle materials' questions. This research aimed to describe what errors are done by the students and describe the mistakes most often done of the eighth grade of SMP Negeri 1 Yogyakarta in doing the tasks of mathematics, in particular, that were circle materials. This research was descriptive qualitative. The researcher used a test and interview to collect data—the writer interviews with students of class VIII G of SMP Negeri 1 Yogyakarta. The researcher used data reduction, data presentation, and taking the conclusion to analyze the data. The researcher used triangulation to check the validity of data, comparing the result of students' tests and the result of the researcher's interview. The result of the research showed that students' ability to answer the questions was average. Nevertheless, it should be considered to cause many students who made the error. Those were: 1. Fact error (error in changing the problem into the form of a mathematical model) as much as 5.08%, 2. Concept error (getting the error in understanding mathematics concept) as much as 36,77%, 3. Principle error (getting the error in determining formula) as much as 9,10%, 4. Operation error (getting the error in calculating, mathematics notation, not write denomination, not answer the question) as much as 49,05%. The highest error which was made by students was the error in operation.

Keywords: Error, Student, Answering, Questions, Subject, Circle

INTRODUCTION

The development of science and technology that is increasingly advanced, demands quality improvement to make it easier for students to follow science and technology progress. Therefore efforts to improve the quality of education in Indonesia need to be improved, namely by making improvements in terms of the mathematics curriculum, procurement of mathematics books where we know that the availability of mathematics books is very little compared to other books, improvement in learning evaluation, procurement of learning tools and tools visual aid, and improve the quality of teachers by providing training by the current state of students. Where there are still many students who think that mathematics is a problematic subject other than that they have suggested their thoughts that mathematics is complicated so that it affects them when they do math problems. This also requires us to be able to eliminate these suggestions from students' thoughts.

According to the results of an interview, I conducted on 30 September 2016 with Mrs. Sri Prihatin Hartati, S.Pd as a mathematics teacher in class VIII at SMP Negeri 1 Yogyakarta said that the difficulty of students in working on questions about circle material is determining the area and circumference of a circle or a building shaded in a circle. Students often mistakenly apply the formula to the problem. For example, students use the broad formula even though the problem is to find the circumference. Hartati's mother also conveyed mistakes of principle, misconceptions, miss calculations in my interview.

Errors in concepts or principles are also factors that influence student achievement. Misconceptions can be fatal for students because the concept is the beginning of understanding or holding students to understand the lesson. Because concepts can be mutually sustainable between one concept with another concept.

Student mistakes in the application of formulas are also essential things to note because the application of formulas in the real problem is very important. After all, if students can match or correctly apply the formulas to the problems, it means students understand the concepts given, but if students are wrong, then the student has not understood the concept. Student errors in changing variables with numbers also often occur, where students always forget to replace the variable whose value has been sought in the form of numbers. Some of the errors mentioned above are included in concept errors, principle errors, and procedural errors.

The problem formulation in this research is: 1.) What is the fault of grade VIII students in SMP Negeri 1 Yogyakarta solving the mathematical matter of the circle material? 2.) What is the most widely committed mistake by class VIII students in SMP Negeri 1 Yogyakarta in solving the mathematical matter of the circle material?

The purpose of this research is: 1.) describe any mistakes performed by students of Grade VIII SMP Negeri 1 Yogyakarta even semester 2016/2017 school year in solving the mathematical matter of the circle material. 2.) describing the most errors done by class VIII students SMP Negeri 1 Yogyakarta even semester 2016/2017 school year in solving the mathematical matter of the circle material.

METHODS

This type of research is a type of qualitative descriptive research. The place and time of this research were conducted in SMP Negeri 1 Yogyakarta, lasting from 12 May – 19 May 2017. According to Sugiyono (2015:322) The interview steps, is; (1) stipulates to whom the interview will be conducted, (2) prepares the subject matter which will be the subject of the discussion, (3) Initiate or open the line of interviews, (4) Establish an interview flow, (5) Confirming an overview of the interview results and End it, (6) write the results of the interview into the field record, (7) identify the follow-up of the interview results that have been obtained. Additionally, Sugiyono (2015:366-375) states that the validity of the data in qualitative research includes the credibility test (internal validity), transferability (external validity), dependability, and confirmability (objectivity). In the credibility test, there are several different ways of testing data, namely:

1. Observation extensions.
2. Increased diligence.
3. Triangulate.
4. Negative case analysis.
5. Member check.
6. Using reference material.

To know the validity of data is used triangulation technique. According to Sugiyono (2015:373-374) says that the triangulation technique to test the credibility of the data is done by checking the data to the same source with a different technique (Sugiyono: 2015).

The data analysis used in this study is the Miles and Huberman model. According to Miles and Huberman (Sugiyono, 2015:337) suggests that the activity in the analysis of qualitative data is done interactively and continuously until complete so that the data has been saturated. Activity in data analysis, namely data reduction, display data, data conclusion drawing/verification. The Miles and Huberman model analysis steps are described as follows:

1. Data Reduction

   Once data is collected, subsequent data reduction is created, to select relevant and meaningful data, focusing the data that leads to solving problems, inventions, purposing, or to answer research questions. It then simplifies and compiles systematically and outlines essential things about the findings and their meaning. Data reduction is used for analysis that directs, classifies and removes unnecessary, and organizes the data, making it easier for researchers to conclude. Data in the form of student work is corrected and classified according to the type of error performed by students. From some sort of data, researchers have some samples/answers to be analyzed. The data selected is the data that can answer the problem formulation. Of the five

questions given, the students most answered correctly in Question No. 1, where from 34 students, there are 25 (73.52%). Students who answer correctly. In question number 2 of 34 students, only 14 (41.17%) The students who answered correctly. Then in question number 3, from 34 students, only 12 (35.29%) The students who answered correctly. Then in question number 4 of 34 students, only 14 (41.17%) answered correctly. While the students at least answered correctly in question No. Five were from 34 students, only 10 (29.41%) Students who answer correctly.

2. Data Display

The selected data is then analyzed further to determine the location of the student's error. The data of the interviews that have been analyzed are used to compare students ' answers. The interview is a clarification of the student's written answer. Here is the data presentation: The student who answered correctly in question No. 1 There are 25 students: S01, S02, S03, S05, S06, S07, S09, S10, S12, S13, S16, S17, S18, S19, S20, S21, S23, S24, S25, S26, S30, S31, S32, S33, S34. In question number 2, There are 15 people: S25, S34, S32, S18, S01, S03, S05, S24, S20, S12, S15, S13, S31, S06, S21. In question number 3 There are 11 students: S21, S28, S10, S32, S05, S24, S20, S12, S14, S30, S11. In question number 4, There are 14, namely: S07, S26, S09, S16, S08, S01, S25, S34, S18, S12, S20, S24, S05, S03. In question number 5, There are ten students: S20, S24, S12, S18, S01, S03, S16, S05, S08, S30.

3. Conclusion Drawing / Verification

The third step in qualitative data analysis is the withdrawal of conclusions and verification. Withdrawal of conclusions carried out during the research process took place. The initial conclusion is still temporary and will change when no evidence can support the next stage of data collection. However, if the preliminary conclusions are accompanied by valid evidence and answer the problem formulation, then the conclusion expressed is credible.

Out of the five items that are tested, most students mistake is the fault of the operation in which each item of some students is making an operation mistake. As many as 49.05% of students made an operating mistake, 36.77% of students made a draft mistake, then 9.10% made a significant mistake, and 5.08 students made an operation mistake.

Based on the results of the study above, researchers concluded that students are still struggling with circle material Math problems. Students ' understanding of geometric concepts or especially on circle material is still lacking. Students still do concepts, mistakes, principles, and procedures. Out of the five items that are tested, most students do wrong procedures such as wrongdoing in the calculation, error of mathematical notation, not writing units, and or writing wrong units. The following is a discussion of the mistakes that students do in each item:

Based on the students ' answers to the number one question, 25 students answered correctly, and nine answered incorrectly. Of the nine students who made mistakes in solving the problem, one student (2.94%) Mistake a fact, the fact that a student has done is a student cannot turn the problem into a mathematical model so that students cannot work on the question. Two students (5.88%) Operating Errors and six students (16.67%) Perform fault concepts and operating mistakes.

Based on the students ' answers to question number two, 15 students answered correctly, and 19 students answered incorrectly. Of the 19 students who made mistakes in solving the problem, five students (14.70%) Make the mistake of the concept, the mistake is that students do not understand the concept of mathematics as well as be less thorough in understanding the problem as one student answer by summing both fingers and then looking for a wide. Four other not to sum Both areas, one student (2.94%) Operating Errors and 12 students (38.24%) Make an operation mistake and mistake the concept, where the Kesland is done is seven people make a calculation mistake, one not to write a unit, 1 do a mathematical notation mistake and three not to write unit and make mistakes Mathematical notation.

In question number three, 11 students answered correctly, 22 students answered incorrectly. Of the 22 students who made mistakes in solving the problem, 3 students (8.82%) Make the mistake of the concept is because 3 students do not understand the question and concept of comparison, where 1

student compare the area and circumference of the circle but does not include the value π, then 1 student is wrong in comparing the area and circumference Should be compared is spacious with broad and perimeter with the circumference but the students compare the area with the circumference, 1 student is wrong in comparing both the area and the second circle circumference, 15 students (44.11%) Make an operation mistake and the concept of 4 make a calculation mistake, 3 students make a mistake mathematical notation, 4 students write the wrong unit and or not write a unit, 3 students make a mistake notation and do not write the unit , 1 student made a calculation mistake and did not write a unit, 1 student (2.94%) Doing operating errors (calculations) and 4 students (11.76%) Do mistake the fact that 2 students do not answer the question and 2 students can not change the problem into the mathematical model.

Based on the student's answer to question number four, 14 students answered correctly, 20 students answered incorrectly. Of the 20 students who made mistakes in solving the problem, one student (2.94%) Do mistake the fact is not understand the formula looking for a broad juring, three students (8.82%) Make a principle mistake that students write the wrong formula, and 16 students (47.06%) Do the operation mistake and the concept, that is three students make a calculation mistake, two students do not write a unit, eight students make a mathematical notation mistake, three students make a mathematical notation mistake and not write the unit.

Based on the student's answer to question number five, ten students answered correctly, 23 students answered incorrectly. Of the 23 students who made mistakes in solving the problem, one student (2.94%) Make a principle mistake that the student is wrong in using a square area formula, and 22 students (64.70%) Perform an operating error that is five students do not write the unit and or write the wrong unit, six students make the mistake of mathematical notation, six students make a calculation mistake, two people do not write the unit and wrong in the calculation, and 3 Students make mathematical notation errors and do not write the correct unit and one student (2.94%) Do wrong facts (do not answer the question).

CONCLUSION

1. The student error in working with the mathematical problem of the circle material can be explained as follows:
   a. The mistakes of students in making mistakes in the five items they have done. In question No. 1 There is one student (2.94%), in question number 2 There is no student who does wrong facts, in Question No. 3 There are four students (11.76%), then in question number four there is one student (2.94%) And in question number 5 there is one student (2.94%).
   b. The student's mistake in committing a draft mistake on the five items they have been working on. In question No. 1, There are six students (16.67%) Who made the mistake of the concept, in question number 2 as many as 17 students (50%). In Question No. 3 There are 18 students (52.94%) The five students lack understanding the question and concept of comparison, in Question No. 4 There is no student who made the concept mistake. In contrast, in question number 5, no student made the concept of mistake.
   c. The students' mistakes in committing the principal mistake on the five items they have been working on. In question No. 1, no student made the principal mistake. In number 2, no one is making the principal mistake. In Question No. 3, There are no students who commit the principle mistake, while in Question No. 4, There are three students (8.82%), and on Question Number 5 has one student (2.94%).
   d. The student error in making an operation mistake on the five rounds of the problem they have been working on. In question number 1 There are as many as eight students (25.53%) Who made the operation mistake, in question No. 2 There are as many as 13 students (38.24%), in Question No. 3 There are as many as 16 students (47.06%), in Question No. 4 There are 16 students (47.06%), and in Question No. 5 There are 22 students (64.70%).

2. From the problem given, the most widely done mistake by the students is the fault of the operation because, in each item of matter, students must make an operation mistake. Of the five items that have been tested, the students answered correctly at least 5, of which 34 students were only 10 (29.41%) Students who answered correctly. At the same time, most students answer right at number 1, where from 34 students, there are 25 (73.53%). Students who answer correctly. The highest value the student gained is 100, and the lowest value is 21. The average value of students is 70.05, with an average value of 70.05, indicating if the student's ability to solve the mathematical problem of the circle material is moderate. Although the student's ability is not low, there is still much to note, such as a deepening of the circular concept so that students not only get stuck with the formula memorizing.

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