

Students' concept understanding ability and discipline attitude in mathematics learning

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Abstract

This research was conducted based on the background of the importance of understanding concepts and student learning discipline in learning mathematics, especially in the material of quadrilaterals. Where the population in the study was taken from class VII Junior high school Bangun Rejo in the 2021/2022 academic year with a sample taken by VII.1 which consisted of 30 students. The data collection technique used a concept understanding ability test instrument in the form of a description question. As for the discipline of learning data collection techniques, namely direct communication with data collection tools such as interview guidelines and conducting field observations. The results of the research on students' understanding of the concept of 20% in the high category, 33.33% in the medium category, and 46.67% in the low category. While the results for student learning discipline are quite good, it can be seen from student learning activities that are by following the plans made by the teacher.

Keywords: constructing quadrilaterals, learning discipline, understanding concepts

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INTRODUCTION

Good quality learning depends on the level of professionalism, performance, and competence possessed by the teacher. Many factors determine the quality of education, but the teacher is still seen as the main factor, this is because the teacher is the holder of learning control, so hopefully the teacher can determine the direction of achieving learning goals, and be able to manage student learning well (Istihapsari, 2017). Mathematics is one of the subjects in the learning curriculum, including the 2013 curriculum. Mathematics itself has an important part of the education system in Indonesia, as seen from its benefits. In everyday life and with the development of science and technology. With this learning, mathematics will make a person accustomed to thinking critically, and systematically and increase one's creative power (Febriyanto, 2018). One of the abilities that must be developed in mathematics is understanding concepts.

According to Febriyanto (2018), the ability to understand concepts is a basic ability that guides a person to higher-order thinking skills, which are related to understanding mathematical ideas as a whole and functionally, while indicators of conceptual understanding are: (a) restating a concept that has been studied ; (b) clarify objects based on mathematical concepts; (c) applying the concept algorithmically; (d) provide examples or counterexamples on the concepts being studied; (e) presenting the concept in various representations; (f) linking various kinds of mathematical concepts internally and externally.

According to Fuadi (2019), the objectives of learning mathematics in general are: (a) understanding mathematical concepts, explaining the relationship between concepts, and being able to apply concepts or algorithms flexibly, accurately, efficiently, and precisely in problem-solving; (b) using reasoning on patterns and characteristics, performing mathematical manipulatives in making generalizations, compiling evidence and explaining mathematical ideas

and statements; (c) solving problems which include the ability to understand problems, design, and complete models and interpret the solutions obtained;

Apart from the factors that have been explained, other factors that also have an equally important role in learning mathematics are learning discipline. The discipline of learning will make students have skills on how to study well to obtain good learning outcomes as well. The discipline of learning is very important for students because it will make students have skills about how to learn well so it is a process towards the formation of a good study time. Meanwhile, according to Kompri (2014), learning discipline is a mental attitude that is reflected in the actions or behavior of a person or society in the form of obedience to the rules that have been set.

Based on the results of observations and interviews conducted by researchers with Mr. Angga Siska, S.Pd. as a seventh-grade mathematics teacher at Bangun Rejo State Junior High School, it seems that the quality of learning mathematics and student discipline is very low. This can be seen from the score of the Final Semester Assessment exam, which is on average 50 and below, while the KKM for the school itself is 69. When viewed from the daily habits of students in learning, it shows that the understanding of concepts and discipline is still very low. This is for example with the incident of giving homework and training at school. When students are given assignments at home, most students get good grades even close to perfect from 80 to 100, while forgiving practice questions in class, the value of the results of the exercise is much inversely proportional to where the practice at school gets an average score of 70 and below. In addition, when viewed from the habits of students in learning, many parents provide information that their children at home are more inclined to play games than study.

In addition, the latest PISA results prove that the lack of adequate learning outcomes in primary and secondary education can be seen in the PISA scores and rankings from 2000-2018. Especially the PISA results in mathematics learning which is ranked 72 and 78 with a level of 71%, this proves that the level of student learning in mathematics learning is still below the minimum level (Istiqomah & Indarini: 2021).

So of the efforts that can be done is by choosing a mathematics learning model, where usually learning is dominated by the teacher turning into student-centered learning. So that students can be more active and able to solve their problems mathematically. In addition, a learning model is needed that presents tasks in the form of problems. It is hoped that if there are problems, students will try to find solutions with various kinds of problem-solving processes. Therefore, this encourages researchers to conduct trials using a relevant and innovative learning model to see students' improvement in understanding concepts and students' learning discipline in mathematics. In this case, the researcher uses a problem-based learning (PBL) model. The problem-based learning model is a learning model characterized by real problems as a context for students to learn critical thinking, and problem-solving skills, and gain knowledge (Andriyani, 2019).

RESEARCH METHOD

This research is qualitative research, research on research that is descriptive and tends to use analysis. The population in the study was grade VII students at one of the schools in Musi Rawas Regency for the 2021/2022 academic year. The sample was selected using utilizing employing simple random sampling, which was carried out randomly without regard to the condition of the class and obtained a sample of class VII.1 with as many as 30 students consisting of 15 male students and 15 female students. The cognitive abilities that will be used as variables in this study are conceptual understanding and student learning discipline. The question instrument in this study is the result of testing the validity, reliability and distinguishing power of several experts so that it can be used to conduct the research.

The data obtained is the result of the answers to the student's concept understanding test in the form of a test of description questions related to the material of quadrilaterals.

Furthermore, the data is processed and analyzed based on the value obtained by the student which is then categorized based on the average value and standard deviation. According to Arikunto (2010), the average value and standard deviation of research data can determine data in the high, medium, and low categories. Students who are in the high category are students who score more than the average value added to the standard deviation. Students who are in the low category are students who have scores less than the average value with a standard deviation. While students who are in the medium category are students who get scores that are between the high and low categories. The categories of student abilities according to Arikunto (2010) are presented in Table 1.

Table 1. Ability Level of Understanding Mathematical Concepts

Value Criteria	Category
$X > (\bar{x} + s)$	Tall
$(\bar{x} - s) \leq X \leq (\bar{x} + s)$	Currently
$X < (\bar{x} - s)$	Low

Information:

X = Student score

\bar{x} = Average student score

s = Standard deviation of student scores

RESULTS AND DISCUSSION

Students' concept understanding

After the students answered the questions presented by the researcher, the next step was to analyze and discuss the students' conceptual understanding of ability tests based on the overall ability category of students. Based on the student's answers, the data was obtained from the comparison of the maximum, minimum, and average values. These are analyzed as presented in Table 2.

Table 2. Concept Understanding Test Results

Number of Students	Maximum Score	Minimum Score	Average
30	90	10	37,33

Based on the results of the student's conceptual understanding test in table 2, shows that the minimum score obtained by students is 10 so based on the school's Minimum Completeness Criteria (KKM), which is 75, the student has not met the predetermined KKM standard, while students who get a score of 90 and reach the criteria Minimum completeness is only a few, including students who are smart in class and become class champions. In this test, the average score of class VII.1 students is 37.33. If viewed from the Minimum Completeness Criteria that have been determined, the results of these scores are classified as low.

From these results, it can be said that students' conceptual understanding in solving quadrilateral problems is still low so it is not by following per under Rashid (2016) opinion that students who can understand concepts are students who can work on every problem or form of mathematical problems using the same concept. appropriate. This is illustrated that the ability to understand concepts is one of the basic abilities that a student should have. The following is data on the level of ability to understand concepts of students in class VII.1 Junior high school Bangun Rejo.

Based on the results of the analysis presented in table 3. It shows that the categories of students' conceptual understanding in solving problems related to quadrilateral material are: in the high category of 20% as many as 6 students with student scores of more than 63.42; while

for the medium category, 10 students got 33,33% with scores between 11.24 and 63.42; for the low-value category, which is in the percentage of 46.67% with many students, namely 14 with a value less than 11.24.

Table 3. Students' Concept Understanding Ability Level

Category	Value criteria	Number of student	Percentage
Tall	$X > 63,42$	6	20%
Currently	$11,24 \leq X \leq 62,42$	10	33,33%
Low	$X < 11,24$	14	46,67%

The results presented above, shows that only a few students are in the high category in class VII.1 and have mastered the understanding of the concept of quadrilaterals. This can be seen from the maximum value of students reaching a value of 90. Meanwhile, for the low category, it shows that the ability to understand students' concepts has not been achieved. Then the medium category does not have a significant difference from the low category. So it can be concluded that the ability to understand concepts of Junior high school Bangun Rejo Class VII.1 is still low.

Students' learning discipline

Student learning discipline can be viewed from 3 aspects, namely in terms of time, in terms of place of study, and terms of behavior in terms of learning. Based on the results of the research conducted: (a) the learning discipline of students in terms of the time of class VII.1 learning at the Bangun Rejo State Junior High School in the 2021/2022 academic year is quite good. This can be seen from direct observations in class when students take part in learning and the results of student interviews, where students have gotten used to coming on time or before the bell rings, and on average, class VII.1 student enters class 10 minutes before the bell rings, read prayers, and prepare the class neatly and cleanly, and go home from school at the time set by the school. (b) discipline in terms of place of study, namely the results of observations obtained by researchers that the category is quite good, this can be seen from the tidiness and cleanliness of classrooms, responsibility for maintaining school facilities and infrastructure and classrooms properly. (c) learning discipline in terms of behavior, based on research results that behavior or actions are classified as good categories. This can be seen from the level of student compliance and not against applicable regulations, not being lazy in learning, not telling others arbitrarily, not lying, and so on. Even though there are some students, with behavior that is not pleasant enough, even though the lack of discipline can still be controlled by the teacher well.

According to Tu'u (2004), the importance of the disciplinary function possessed by students is (a) with the discipline that arises because self-awareness will encourage students to succeed in their studies. On the other hand, students who often violate school regulations will hinder the optimization of their potential and achievements. (b) without good discipline, the classroom atmosphere will be less conducive to learning activities. Where the discipline provides support and motivation in the learning process. (c) parents also always hope in school that their children can be educated with good norms and values. So that these expectations can encourage students to make individuals who are orderly, organized, and disciplined. (d) discipline is something that cannot be separated from the word success because discipline is the main way for individuals to achieve success in both the world of education and the world of work.

CONCLUSION

Based on the results of the research and discussion described previously regarding the understanding of the concepts of class VII.1 students on the material of quadrilaterals, it shows

that all indicators of concept understanding have not been fulfilled optimally by all students. The level of conceptual understanding of 3 students in class VII is based on the scores obtained by students as a whole there are 6 students in the high category with a percentage of 20%, 10 students in the medium category with a percentage of 33.33%, and 14 students in the low category with a percentage of 46,67%.

Meanwhile, for the results of student learning discipline in grade VII.1 of Bangun Rejo State Junior High School, it can be categorized well, in terms of sub-problems which are concluded as follows: (1) student learning discipline in terms of study time can be categorized as quite good. This can be seen from direct observations and interviews by several grade VII.1 students, for example, time discipline is seen such as being on time in learning, including coming and going home from school on time, where students come right to school at school hours that have been determined, the average students arrive 10 minutes before the bell rings. Furthermore, students do not leave the classroom during lessons without the permission of the teacher, this is because students are obedient in following school rules, and based on the results of research, students of Junior high school Bangun Rejo complete assignments/homework on time according to the time given by the teacher. (2) the discipline viewed from the place of study, namely the results of the researcher's observations obtained is that the category is quite good, this can be seen from the tidiness and cleanliness of the classrooms, the responsibility to maintain school facilities, and infrastructure properly. (3) while the discipline of action looks obedient and does not oppose applicable regulations, is not lazy in learning, does not tell others, does not like to lie and the behavior of students is quite pleasant, although there is still a lack of discipline but can still be controlled by students. teacher well. Make sure that the conclusion matches the research questions or research goals. Recommendation is also welcome to be put here.

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Based on the results of the study, the suggestions that can be given are as follows: it is hoped that the mathematics subject teachers of class VII.1 Junior high school Bangun Rejo to pay more attention to the mathematics learning process such as understanding mathematical concepts because understanding these concepts is the most basic thing that must be done. Owned by a student. As for the problem of learning discipline in the learning process. It is hoped that students will be more serious and thorough and serious in participating in learning and can be more disciplined in learning.

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