AN EFFORT TO INCREASE INTEREST IN MATHEMATICAL LEARNING BY USING DISCOVERY LEARNING MODELS ON STUDENTS CLASS VIII

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ABSTRACT

This research was conducted because the problem encountered at State Junior High School 3 (SMP N 3) Prambanan Sleman was the low interest in students' learning mathematics, as seen from the Middle Semester Deuteronomy results. This problem involves students who pay less attention to the learning process and students' feelings towards monotonous learning. Thus, this study aims to increase students' interest in learning mathematics using the discovery learning model. This type of research is Classroom Action Research (CAR). The research setting used in this study was the classroom setting in mathematics learning activities carried out in class VIII B in the second semester of SMP N 3 Prambanan Sleman in the 2018/2019 academic year. Data collection techniques used in this study were observation, questionnaires, and interviews. Analysis of the data used in the analysis of observational data, analysis of student questionnaire response data, and student and teacher interviews analysis. The results of this study indicate that 1) students' interest in learning increases from cycle I to cycle II with the average value of the results of the questionnaire cycle I was 66.08 increased to 70.11 in cycle II; 2) the increase in participation in learning the first cycle was 56.25% increased to 72.92% in the second cycle; 3) the results of the interviews seen more and more students increased interest in learning mathematics. Hoping that using the learning discovery learning model will increase students' interest in learning mathematics.

Keywords: Discovery learning model, interest in learning mathematics.

INTRODUCTION

Today, many people talk about education; many things are discussed, such as educational issues, educational development, or education. The development of science and technology certainly makes education also develop. Positive developments in the world of education will affect the progress of a nation. This is because the progress of a nation lies in the quality of education itself, so it is hoped that an educator can create quality and competent human resources. Seeing the very important role of education, an educator or in this case a teacher is needed. Roles and duties in the delivery of education are determinants of the success and failure of learning. The quality of learning can be seen from two aspects, namely in terms of process and results. Ahmad Susanto (2013) states that one of the things that is considered in the process is a high enthusiasm for learning or interest in learning. Gagne (Winataputra et al., 2008) states that learning is a change in human character or capabilities that takes place continuously and is not solely caused by the growth process, which means that learning is a change in ability that lasts longer and does not come from the growth process.

Bell-Gredler (Winataputra et al., 2008) states that humans can carry out the learning process to obtain various competencies, skills, and attitudes. These competencies, skills, and attitudes are acquired gradually and continuously from infancy to old age through a lifelong learning process. The learning process is carried out in the form of involvement in informal education, participation in formal education, and non-formal education. Makmun Khairani (Yuniantika, 2018) argues that learning is a psychological process in the interaction between subjects and their environment and produces changes in knowledge, understanding, skills, attitudes and habits that are relatively constant or remain good through experience, training. or exercise. So it can be concluded that learning lasts a lifetime, and when acquiring new knowledge, this knowledge must be linked to existing knowledge to become complete knowledge. Improving the quality of learning cannot be separated from the learning process strategy,

especially in mathematics learning. Learning (Winataputra, 2008) is an activity carried out to initiate, facilitate and increase the intensity and quality of student learning. Learning (Alizamar, 2016) is an activity that creates an atmosphere and conditions that stimulate and direct learning activities so that students acquire knowledge, skills, values, and attitudes that can bring about changes in behavior and change in self-awareness as a person. So it can be concluded that learning is a communication activity carried out by students to acquire knowledge, skills, and behavior change.

Mathematics learning (Muhamad, 2016) is a teacher carrying out a teaching and learning process which consists of two aspects, namely learning by students and teaching. Learning mathematics is not just a transfer of knowledge from the teacher to students, but a process that is conditioned or attempted by the teacher so that students are active in various ways to construct or build their knowledge. Ahmad Susanto (Yuniantika, 2018) argues that mathematics learning is a teaching and learning process built by teachers to develop students' creative thinking which can improve the ability to construct new knowledge to improve mastery of mathematics material well. Therefore, it can be concluded that what is meant by learning mathematics is a learning process that develops students' creative thinking in constructing numbers and formulas, as well as how to solve problems in real life.

Based on the results of the interview, students were less interested in learning mathematics because of the difficulty in solving math problems. This difficulty occurs because students do not understand the concept of material taught by the teacher. Another thing that causes students to be less interested in learning mathematics is the monotonous delivery of material. Based on the results of observations, the learning model used by the teacher is the lecture model. The use of the lecture model is less effective because not all students pay attention to the teacher's explanation and are busy with their activities. Students who ignore the teacher's explanation tend to cause other students not to concentrate on the mathematics learning process.

The views of students about mathematics are essential things that must be considered by teachers. The notion of mathematics is a difficult material that is very inherent, so it is hoped that teachers will have new methods that can increase student interest in learning mathematics. Guilford (Lestari and Yudhanegara, 2015) explained that interest in learning is an impetus from within psychic students in learning something with full awareness, calm, and discipline, causing individuals to be active and happy to do it. Simultaneously the term result is student learning outcomes that can be seen through the midterm and final semester exams. Meanwhile, according to Slameto (Irwanti, 2018) interest is a preference and a sense of interest in something or activity without anyone asking. So it can be concluded that interest is an encouragement from students that creates a sense of love and interest in something that will cause students to carry out an activity without coercion.

Mathematics is one of the subjects that requires the right strategy in its delivery so that students can understand well the concepts to be taught. Therefore we need a learning model that can increase interest in learning mathematics. The learning model that will be used is discovery learning model. Discovery learning model is a learning model designed to discover concepts and principles through mental processes (Lestari and Yudhanegara, 2015). Cucu Suhana (2014) argues that the discovery learning model is a series of learning activities that involve all the maximum abilities of students to seek and investigate systematically, critically, and logically to find changes in their knowledge, attitudes, and skills. Meanwhile, according to Kistian (Sappaile, 2018) the discovery learning model is a learning model based on a cognitive approach where teachers create a learning atmosphere for their own learning.

Based on the understanding of the discovery learning model above, it can be concluded that the discovery learning model is a learning model that involves students actively to create a comfortable learning atmosphere for students so that students can find their knowledge. Syah (Abdullah, 2017) revealed that the steps of the discovery learning model are stimulation, problem statement, data collection, data processing, verification, and generalization. The descriptions of the steps for the discovery learning model are as follows: 1. Stimulation, is the first step in the discovery learning model in which the teacher provides a stimulus or stimulus to a material; 2. Problem statement, the stage where

students are directed to identify as many problems as possible that are relevant to the subject matter. One of them is selected and formulated in the form of a hypothesis (quick answers to problems); 3. Data collection, is the stage where students collect information from various learning sources to prove the hypothesis that has been made. Data collection can be done by reading literature, observing objects, interviewing informants, field trips, conducting own trials, and so on; 4. Data processing, the stage where students process the data and information that has been obtained and then interpreted; 5. Verification, the stage of proving the hypothesis. Students carry out careful examinations to prove whether the hypothesis has been established with alternative findings at the verification stage, then related to data processing; 6. Generalization, the last stage of the discovery learning model. Students and teachers draw conclusions that can be used as general principles and applied to all the same events or problems by paying attention to the results of verification.

Among the materials studied in class VIII, the research materials were flat side space and statistics. The material was chosen because many students still have difficulty completing the flat space of the building and the statistical side room. One of the causes of this difficulty is the lack of mastery of the flat-sided building concept as well as statistics and inaccuracies in solving problems. This study aims to describe the process of learning mathematics by using the discovery learning model in class VIII students of SMP N 3 Prambanan Sleman, and using the discovery learning model can increase the interest in learning mathematics of grade VIII students at SMP N 3 Prambanan Sleman.

METHODS

This type of research is Classroom Action Research (CAR). The object in this research is the discovery learning model in mathematics learning. This research will be conducted at SMP N 3 Prambanan, Sleman Regency. This study's implementation time is in the second semester of the 2018/2019 academic year, namely in March 2019. The study was conducted in 2 cycles, with each cycle consisting of 2 meetings. Cycle I was conducted on 12-13 March 2019, and cycle II was carried out on 26-27 March 2019. Each cycle's research procedure consisted of 4 stages: planning, implementing actions, observing, and reflecting. Data collection techniques in this study used observation, questionnaires, and interviews. Observations are made by observing and recording during the learning process in class without disrupting the course of learning. Besides, observations were made to determine the students' initial interest. The questionnaire is useful for knowing students' interest in learning mathematics at the end of each learning cycle in positive and negative statements. Interviews were conducted with several students and mathematics teachers to reveal data that was difficult to find or find with observations and questionnaires. This study's instruments were observation sheets, questionnaires, and interviews arranged based on indicators of students' interest in learning mathematics.

This research's data analysis technique is descriptive analysis—data analysis of observations by describing students' interest in learning mathematics during the learning process. Questionnaire data analysis results to determine the criteria for students' interest in learning mathematics after learning using the discovery learning models that are seen at the end of each cycle. Analyze the results of interviews to find out things that cannot be explained by the results of observations and questionnaires. Furthermore, if the data obtained from observations and questionnaires will be analyzed to be seen, the criteria for students' interest in learning mathematics. After the data from observations and questionnaires are analyzed, triangulation charts will be made, where the results of the interview describe the reasons for each indicator of interest in learning mathematics. Indicators of this study's success can be seen from the increase in the percentage of students 'interest in learning mathematics seen from cycle I to the next cycle and an increase in the average results of students' interest in learning mathematics questionnaires from 1 to the next cycle.

RESULTS AND DISCUSSION

In this research, observations were carried out during the learning process to determine students' interest in learning mathematics. In conducting observations, researchers use instruments in the

form of observation guidelines that contain indicators of students' interest in learning mathematics. Observation data will be calculated for each cycle, so the following results are obtained:

Table 1. Observation Results of Student Interest in Mathematics Learning

No.	Aspects Observed	Percentage (%)		Description
		Cycle I	Cycle II	
1.	Feeling happy	59,38%	71,88%	Increase
2.	Student interest	57,29%	68,75%	Increase
3.	Student involvement	54,17%	73,96%	Increase
4.	Diligent in learning and doing math assignments	54,17%	77,08%	Increase
Average		56,25%	72,92%	Increase

From the observation data of students 'learning interest above, it can be seen that the average percentage of students' interest in learning mathematics has increased from 56.25% in the first cycle to 72.92% in the second cycle. Simultaneously, the results of students' interest in learning mathematics questionnaire show that the average questionnaire results increased from cycle I by 66.08 to 70.11 in cycle II.

Table 2. Results of Questionnaire Interest in Student Learning Mathematics

No.	Aspects Observed	Percentage (%)		Description
		Cycle I	**Cycle II**	
1.	Feeling happy	67	70	Increase
2.	Student interest	62,8	69	Increase
3.	Student involvement	77,5	76,75	Decrease
4.	Diligent in learning and doing math assignments	57	64,67	Increase
Average		66,08	70,11	Increase

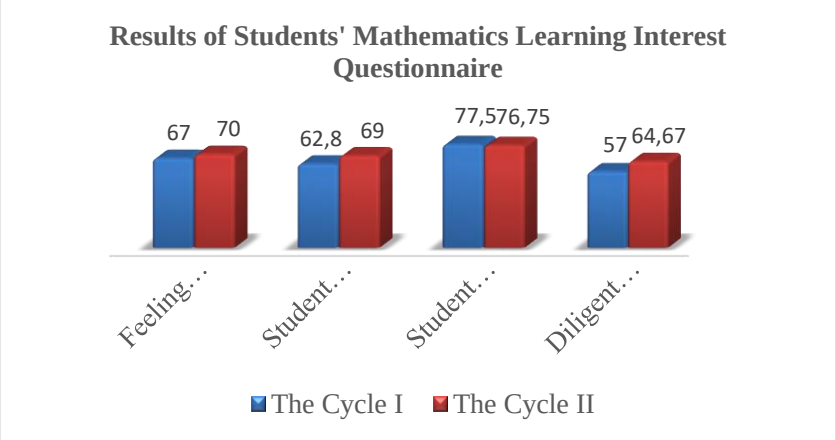

Figure 1. Results of Questionnaire Interest in Student Learning Mathematics

The elaboration of each aspect of participants 'interest in learning mathematics during the learning process is as follows: 1. Feelings of Fun, based on observations in the first cycle, students' happy feelings were 59.38%. There are still some students who do not like math and do not understand the material presented during the learning process. However, there was an increase in the first meeting to the second meeting. In the second cycle, the percentage of happy feelings' observations reached 71.88%, meaning that more students liked and understood the material delivered during the learning process. Based on the results of the questionnaire showed an increase from the first cycle of 67 to 70 in the second cycle, which means that students are in right enough criteria; 2. Student Interest, based on observations in the first cycle, the percentage of student interest was 57.29%. This is indicated by the fact that many students are still less eager to follow mathematics learning and do not listen to the material delivered during the mathematics learning process.

Nevertheless, there was an increase in students' learning interest in attracting students from the first meeting to the second meeting in this cycle. Students' attractiveness reached 68.75% in cycle II,

which means an increase in students' interest in learning mathematics. Based on the results of student interest in learning questionnaires, which showed an in re students' from cycle I of cycle II, it was included in the criteria quite well, 3. Involvement of Students, based on observations in the first cycle, students' involvement by 54.17%. Some students lack the courage to think during the learning process and do not dare to work on problems in front of the class because they are ashamed and afraid of being wrong. However, there was still an increase in the first cycle to the second meeting. In the second cycle, the involvement of students by 73.96%. This means students dare to argue by asking or answering when given questions and dare to work on problems in front of the class. Based on the results of student interest in learning mathematics questionnaires, there was a decrease in student involvement from cycle I by 77.5 to 76.75 in cycle II, which included the criteria quite well; 4. Diligent in Learning and Working on Mathematics Tasks, based on observations in the first cycle, the active learning and math assignments are 54.17%. This is since some students cannot choose the practice questions because they like them and only do the assignments given by the teacher and only do the same type that the teacher gave. However, there is an increase in students' learning interest in the diligent aspect of learning and doing math assignments at the first meeting to the second meeting of this cycle I. In cycle II, diligently learning and doing math assignments of 77.08% means that students can choose their practice questions and practice questions other than learning resources that are not the same type as the teacher. Based on the results of students' interest in learning mathematics, it can be seen that an increase in the diligent aspects of canned doing assignments, mathematics in cycle I amounted to 57 to 64.67 in cycle II and included in the criteria quite well.

In addition to the observation and questionnaire data, interview results also describe things that cannot be obtained from observations and questionnaires. The results of interviews with students showed that the first cycle students' interest was in the criteria sufficient because 1. Students lack an understanding of the material; 2. Students have difficulty using the formula; 3. Students are not familiar with the discovery learning model; 4. Learners feel bored with the learning process because too many practice questions are given; 5. Learners feel ashamed and do not dare to think because they are afraid of being wrong, afraid of being laughed at by friends if they answer wrongly, and confused about which formula to use; 6. Students do not work on the exercise questions because they find it difficult if the practice questions are different from those given by the teacher, only do simple questions, or do the questions when given homework or assignments.

From the results of the first cycle interview, researchers tried to take action to increase students' interest in learning mathematics. So that in cycle II there is an increase in students' interest in learning mathematics as follows: 1. Students have started to like mathematics material because they already understand the material being studied; 2. Students can already use the formula because they want to take advantage of existing learning resources; 3. Students already feel comfortable with the discovery learning model; 4. Students do not get bored because they can do practice questions; 5. Learners are not ashamed and dare to think because if they are wrong, they will be guided and directed; 6. Learners have begun to work out exercises questions, both simple and different from those previously taught; 7. Students who initially only work on the problem when given the task have started working on simple practice questions.

In addition to the results of observations and questionnaires that have increased. The increase in students' learning interest is also caused by the achievement of the discovery learning model's steps because the achievement of the learning steps means that the student can understand the material being studied. According to Hendriana (2017), understanding the material learned is one aspect of interest in learning, so that when students understand the material being studied, the interest in learning mathematics also increases.

The elaboration of the achievement of each step of the discovery learning model as follows: 1. Stimulation, students are given an apperception about the material to be studied by researchers, and students respond well to the questions given by researchers about the material to be studied; 2. The problem statement, researchers, provides an example of daily problems related to the material being

studied, and students are asked to identify the problem from the problem. Students respond and discuss well when asked to identify problems; 3. Data collection, at the first meeting of the first cycle, students still rely on the notes ever given by the teacher and do not look for other learning resources. However, at the next meeting, students could utilize existing learning resources such as mathematics textbooks, student worksheets provided by schools, and researchers; 4. Data processing, at the first meeting of the cycle, I students have difficulty determining the formula to solve a problem. The data processing becomes longer and is problematic when researchers' types of questions are different from those given by teachers or textbooks. At the next meeting, students are increasingly able to solve the questions given by researchers whether they are of the type studied or not; 5. Verification, at the first meeting of cycle 1, students are still shy when asked to write the board's answer for fear of being wrong, so researchers must appoint one. When other students are asked to respond, only a few students respond. However, at the second meeting of the cycle I began to dare to write the answer on the blackboard without being appointed and, when asked to respond to students, also dare to think whether it agreed with the answers of friends and corrected; 6. Generalization (concluding) initially, when asked to conclude, students a little confusion. However, with the direction of researchers, students can make conclusions.

The results of the data described above show an increase in students' interest in learning mathematics from cycle I to cycle II. Therefore, it can be concluded that the use of discovery learning models can increase students' interest in learning mathematics. This class action research still has limitations, including 1. Limitations of the research time used are only four meetings. So that in this study only discussed material to build flat side space and statistics; 2. The researchers' limitations include limited time, energy, thoughts, and researchers' knowledge of discovery learning models.

CONCLUSION

Based on the data exposure, research results, and discussion, it can be concluded that the use of discovery learning models in learning activities can help increase the mathematics learning interest of students in class VIII B. This is evident from :

1. The achievement of each step of the discovery learning model indicated by students' responses at every step of learning always increases at each meeting—students who are initially silent when asked dare to respond to the questions given. Students who initially were embarrassed to be actively involved in learning became bolder. Students are also increasingly able to utilize existing learning resources to find as much information as possible from the material to be learned. Also, students are more skilled at solving mathematical problems. Students are also more skilled at making conclusions from the settlement of problems that have been made based on the results of the evidence. So that the use of discovery learning models can help increase students' interest in learning mathematics;
2. The results of observations made at each stage of learning that has increased. The first cycle with a learning interest of 56.25% increases in the second cycle to 72.92%. Besides that, based on the questionnaire results in the first cycle, it reached an average of 66.08. In the second cycle an average of 70.11 showed an increase in students' interest in learning that was quite significant, so it can be concluded that the discovery has a learning model The used to improve student interest in learning.

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