

The Effectiveness of Mathematics Learning using Learning Start With A Questions Model in Improving Mathematics Learning Ability

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Abstract — Problem formulation in this research is 1). Whether the learning model “learning start with a questions” can improve the effectiveness of mathematics learning in the seventh grade of Junior High School Muhammadiyah 57. 2). Whether by using the learning model “learning start with a questions can improve the students math learning ability of junior high school class in the cognitive domain. This study aims are 1). To know whether the learning model learning start with a questions can improve the effectiveness of mathematics learning in class VII junior high school. 2). To find out whether by using learning model learning start with a questions can improve students math learning ability junior high school class in the cognitive domain. By using the gain test, the percentage of the effectiveness of learning model of learning start with a question is 77%, in the experiment class, while the control class is obtained large percentage effectiveness (9%). Based on the details of the results above, it can be concluded that learning mathematics using the learning model Learning Start With A Questions for students of junior high school effective on the material set in the Cognitive Student Area.

Keywords: *learning starts with a question, mathematics learning.*

I. INTRODUCTION

Mathematics is one branch of science that has an important role in the development of science and technology that is as forming rasoinal mindset and attitude-forming logical, critical care, and discipline. Mathematics as well as one of the basic sciences, both applied aspects as well as aspects of reasoning has an important role in the effort mastery of science and technology. This causes the math required to be taught from primary school education, secondary education, go to college. The fact that there are difficulties for students to understand math so that student learning outcomes is still much below the minimum completeness criteria.[1] Such conditions require the attention of various parties, especially the teachers should be able to apply active learning during the learning process.

In connection with the study of mathematics, there are many things that lead to poor learning ability of students, one of which is a lack of understanding of students while learning.[2] Therefore, to improve the ability to learn, it is not enough just to hear and see it, it takes the interaction between teachers and learners, and among learners, such as asking questions, discuss, and maybe even teach fellow. And from the observation can also be seen, that students just do the

activity listened and recorded, which resulted in students can tend to get bored when the only activity that in a long time, no feedback from learners and no questions asked of participants learners.

Many factors affect to cause of the low or lack of student mathematics understading, one model used by the teacher.[3] For example, in learning oriented to the traditional approach puts learners in the learning process as a listener, contrary role of the teacher in the learning is very dominant.

Therefore, the study of mathematics requires a model that can enhance students' learning ability to stimulate students active in asking. The learning model Learning Start with a question is active learning that begins with a question, where students are directly involved in the learning process.[4] At the start with a model of Learning these questions required students active in asking the teacher gives the students the opportunity to read the material to be learned and share their thoughts or ideas with others in a group.

The statement from the researchers to conclude that the difficulty of students in a lesson and work on the problems not because students are not intelligent or less capable, but the lack of skills of students to ask and ineffectiveness active learning methods are used by theacher. Based on background of the problem, identify the problem, then problem in this research are: 1) is the learning models start with a questions can improve the effectiveness of mathematics in class VII Junior high school Terrain? 2.) Does using learning models start with a questions can improve the ability to learn math grade students of Junior high school Terrain in the cognitive domains?

II. METHODOLOGY

This type of research is experimental research, by comparing the ability of mathematics learning by using a model of learning start with a questions in the experimental class and did not use the model of learning start with a questions or by conventional methods in the control class that is done by giving a pre-test for knowing the initial ability of students and post test to determine the ability of the student's final.[5]

TABLE 1. RESEARCH DESIGN

Category	Pre test	Treatment	Pos test
Eksperimen	X ₁	Learning start with a question	X ₁
Control	X ₂	Conventional	X ₂

Information :

X1 = the ability to learn math using LSQ learning model in the experimental class.

X2 = the ability to learn math using conventional methods in the control class.

The population in this study were all students of class VII Junior high school. The sample was composed of two classes, with the details of class VII-A with 39 students as control class and class VII-B with 34 students as an experimental class.[6] Tests given to students describing the test shaped totaling 10 questions consisting of the initial test (pre-test) and final test (post-test) with each 5 items / test.

III. RESULT

Stages in this study were first tested for the research instrument, ie the validity of the test questions.

TABLE 2. VALIDITY RESULTS

Item	Question number	validity score	Information
1	1	0,956342648	Valid
2	2	0,412236357	Valid
3	3	0,851531532	Valid
4	4	0,418479646	Valid
5	5	0,933877439	Valid
6	6	0,763725355	Valid
7	7	0,724967386	Valid
8	8	0,760197874	Valid
9	9	0,573204957	Valid
10	10	0,786030737	Valid

Its validity by looking at the results of the calculation, it can be seen that the above matter is Valid.

Having obtained the value of mathematics learning pengelolaan data can be performed to find the average value and standard deviation of variables. For more see clearly can be seen from the following table and data.

TABLE 3. THE FOLLOWING IS A SUMMARY DESCRIPTION OF EACH CLASS.

basic stats	Eksperimen		Control	
	Pre-test	Post-test	Pre-test	Post-test
N	34	34	39	39
Mean	57,29	84,2	71,69	76,5
standard deviation	29,9	10,7	14,6	14,9

A. Normality test

Normality test is intended to determine whether the obtained data distribution norms or not. To determine the normality test X1 and X2 variables used chi square formula at significant level with the criteria $\alpha=0,05$ $\chi^2_{count} < \chi^2_{table}$ the normal distribution of data.[6]

TABLE 4. NORMALITY TEST

Class	χ^2_{count}	χ^2_{table}	information
Eksperimen			
1. Pre-test	9,678735515	12,592	Normal
2. Post-test	7,216100597	11,07	Normal
Control			
1. Pre-test	11,58780328	12,592	Normal
2. Post-test	6,322880858	12,592	Normal

From the table above it can be seen that χ^2_{count} The second sample is less than χ^2_{table} , This shows that both the normal distribution of the data used, because fulfilling the criteria count $\chi^2_{count} < \chi^2_{table}$

B. Homogeneity test

After learning that the sample comes from a population that is normally distributed, the next step is to test the homogeneity. Homogeneity test is used to determine whether the samples have the same variance. Homogeneity test in this study using a significant tarap $\alpha=0,05$ [7].

TABLE 5. HOMOGENEITY TEST

Pre-test	Variants	Information
Eksperimen	715,8431373	Greatest
Control	237,4199	Smallest

Based on the above table, by comparing the largest variant with the smallest variant, then obtained $F_{count} > F_{table}$, then the data sample pre-test experimental and control is not homogeneous.

TABLE 6. HOMOGENEITY TEST

Post-test	Varian	keterangan
Eksperimen	80,32888	Smallest
Kontrol	246,41425	Greatest

Based on the above table, by comparing the largest variant with the smallest variant, then obtained $F_{count} > F_{table}$, then the data sample Post-test experimental and control is not homogeneous.

C. Gain Test

To determine students' mathematics learning outcome. Gain Test calculations can be obtained from the pre-test and post-test value of each class is experimental class and control class, As the following table:

TABLE 7. GAIN TEST

Class	Calculation of Gain Test	Criteria
Eksperimen	0,767	High
Control	0,088	Low

Gain of Test table above, to calculate the value of gain is pretty, can be sought from operations perhingan value Post-test and pre-test at each grade. Then the value obtained for the Class Experiment Gain Control of 0.767 and 0.088. Based on the test criteria for a class experiment Gain Gain High has the following criteria, while for Class Low Control has the following criteria.

IV. CONCLUSION

Based on the results of research and discussion, we can conclude that through Model *start learning with a questions* can improve the ability of students in the subject of mathematics Association 57 students of class VII Junior High School. It can be seen from the average value of completeness and activeness of students in mathematics implementing Learning Model *start learning with a questions* which increased until it reaches an indicator of success.

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