



IMPROVING STUDENT LEARNING RESULTS THROUGH THE APPLICATION OF THE QUANTUM TEACHING MODEL

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Abstract

Improving Student Mathematics Learning Outcomes through the Application of the Quantum Teaching Model. This study aims to improve the mathematics learning outcomes of students using the TANDUR type Quantum Teaching learning model with the assisted discussion method of Student Worksheets (LKS). This study is a classroom action research conducted in two cycles. The subject of this study were all students of class VIII.9 SMP Negeri 1 Maros totaling 38 students. Data sources came from students and teachers. Data collection techniques used observation, documentation and tests. The analysis technique used in this study was quantitative analysis techniques. The results showed that the application of the TANDUR type Quantum Teaching method can improve student learning outcomes. in learning Mathematics in class VIII.9 1 Public High School Maros. In addition there is an increase in student activity and teacher performance.

Keywords: Quantum teaching, learning outcomes, mathematics

A. Introduction

Education is a conscious effort made so that students or students can achieve certain goals. For students to achieve educational goals that have been determined, it takes a vehicle that can be described as a vehicle (Soedjaji, 2000). In this case the learning process of mathematics as one vehicle to achieve the stated goals.

Mathematics as one of the lessons in education is known as a lesson that is not too easily understood and followed by students. In fact, some students feel afraid of mathematics, so learning is not happy, especially understanding and mastering it. Many factors cause students' low ability to solve Mathematics problems, including lack of understanding of materials,

inappropriate use of methods, less attractive media or less varied teaching and learning processes. If the teacher is less creative in choosing learning strategies / methods, surely the teaching and learning activities that take place will become monotonous and less varied.

Based on information from the junior high school math teacher. 1 Maros, student achievement in class VIII.9 mathematics is not as expected. This is because students still have many difficulties in solving questions. Information from class VIII.9 SMP Neg. 1 Maros that some of them do not like Mathematics because they think that Mathematics is a difficult thing, complicated with a dizzying count. They consider that mathematics is difficult to learn because of how to teach teachers who only provide material descriptions (lectures) so that it causes saturation in the students themselves as a result they become dislike of mathematics, so their mathematics learning outcomes are low. Judging from the daily test scores of class VIII.9 students of the 2013/2014 class the lowest value is 20.00 and the highest value is 70.00. Only a few students who achieved the Minimum Completion Criteria (KKM) score of 70.00 were still low. With these reasons, it is very important for the teacher to understand the characteristics of the material, students and the learning methodology in the learning process, especially related to the selection of modern learning models.

According to Rohani (2004), managing teaching more effectively, dynamically, efficiently, and positively is the main task and responsibility of a teacher / instructor characterized by active awareness and involvement between two teaching subjects, the teacher as the initial initiator and the director and mentor, are currently students as those who experience and are actively involved in gaining changes in teaching. Thus the learning process will be more varied, innovative, and constructive in reconstructing knowledge insights and their implementation so as to increase student activity and creativity. Thus, students' views on mathematics as a difficult and frightening lesson can be refuted. In addition, understanding a clear concept will help students to be more enthusiastic in following the lessons delivered by the teacher, so that in the end students are able to re-express the concepts they have received. To overcome this, researchers took steps, namely by improving the mathematical learning model.

The model to be used is the Quantum Teaching learning model with Student Worksheet Assisted Discussion Method (LKS), where the Quantum Teaching used is the TANDUR type Quantum Teaching, because this type is a Quantum Teaching learning design framework that can help students grow their interest by providing an explanation material taught for his life.

B. Literature Review

In Husamah (2013) it was stated that one learning model that allows students to learn optimally is the TANDUR type Quantum Teaching learning model. Framework for learning Quantum Teaching known as TANDUR (Grow, Natural, Name, Demonstrate, Repeat, Celebrate). Grow interest satisfactorily "What are the Benefits of My Heart" (AMBAK), and take advantage of student life (Husamah, 2013). Experience or create or bring a common experience that can be understood by all students. Bring students to learn in a real atmosphere so that students are able to experience concrete experiences (Mahfudz, 2013). Name it by providing keywords, concepts, models, formulas, strategies; an "input" (Bobbi, 2013). Demonstrate by providing opportunities for students to show that they know. Repeat in the form of showing students how to repeat the material and emphasizing, "I Know and Indeed Know It". Celebrate by giving recognition for completion, participation, and acquisition of skills and knowledge (Husamah, 2013).

In Susanti (2016) it was revealed that the Quantum Teaching learning model aims to create a more interesting learning atmosphere, stimulate and provide student learning experience so that it is more meaningful, especially in its application in junior high school that requires teaching that can bring students in pleasant interactions. Interactions and learning processes that are created will have a major influence on the effectiveness and enthusiasm of learning in students.

The Quantum Teaching model can be supported by a method of discussion in learning, allowing students to listen to each other, argue, and work together. Discussion is the exchange of information, opinions, and elements of experience that are carried out regularly with the intention to get the same understanding of something or to prepare and resolve joint decisions. In discussions everyone is expected to contribute. In order for the discussion to run smoothly and conducive during learning, a worksheet made by the teacher is needed which is intentionally designed to guide students in a teaching and learning process to improve their learning achievement or known as Student Worksheet (LKS). students, assignments easily identified by the teacher, mathematically correct and the tasks clearly formulated. Teachers use

this worksheet also to understand the order of the organization and its development: "student sheets allow us to understand the whole sequence and to see the content and purpose" (Jana et al., 2010). Thus, in addition to being a teaching material that facilitates students to understand the material provided, student worksheets (LKS) can also facilitate the implementation of teacher teaching to students.

C. Methodology

This research was conducted at SMP Neg. 1 Maros in the second semester of the 2014/2015 academic year. The subjects of this study were teachers and students of class VIII.9, with 38 students.

The data sources of this study are teachers and students of class VIII.9 SMP Neg. 1 Maros. The type of data in this study is quantitative data in the form of test results and qualitative data in the form of data on student activity taken from observation sheets and data on the implementation of teacher learning.

Student ability data collection is taken from the test results, data on student activity are taken from the observation sheet, data on the implementation of learning by the teacher are taken from the observation sheet. The instruments used in this study are documentation, observation sheets, and tests.

This research is a classroom action research conducted in two cycles, each cycle carried out according to the objectives to be achieved. Both cycles are a series of interrelated activities, meaning that the implementation of the second cycle is a continuation of the first cycle by correcting errors and shortcomings in the first cycle, Cycle I is held for 3 meetings, 2 meetings are used as teaching learning processes and 1 meeting is used as a test Cycle I and Cycle II were also held for 3 meetings, where 2 meetings were used as a teaching and learning process and one meeting was used as a cycle II test.

The implementation of the first cycle of research starts from the planning stage, namely teachers and researchers collaboratively identify problems, determine the material to be taught, plan the making of learning plans as a guide in teaching and learning activities, compile student worksheets and observation sheets of student activities in quantum teaching learning with discussion method, designing the formation of heterogeneous small groups, designing competency test questions as a means to find out the level of success of students in mastering the subject matter presented. Implementation of Action by conducting Quantum Teaching type TANDUR carried out by steps (1) Grow, teacher foster student interest in the material being taught so that students know the benefits in their lives, (2) Natural, students are guided by given LKS to experience themselves, and students get experience by discussing in study groups, (3) Name, t ahap this student can get the concept from the material that is taught, (4) Demonstration, teacher gives opportunity to one of group to convey result of LKS in front of class by demonstrating / explaining result of discussion, (5) Repeat, at this stage teacher explains again about the material taught earlier, (6) Celebrate, celebrate if students can do the exercises by giving applause, so students will be more enthusiastic in learning.

The next stage is observation carried out by researchers as collaborators by observing students and teachers. Observations of students are conducted by researchers by observing communication between students in learning, observing teacher and student communication, observing students' activeness in discussions to solve problems. Observation of research teachers by observing the teacher in managing quantumteaching learning using the discussion method.

After the action and observation are carried out, the results of observations and evaluations are analyzed to guide the implementation of the second cycle. This action is referred to as reflection.

The stages in cycle II are the same at the stage of cycle I, namely: planning (planning), implementation of action (action), observation (observation) and reflection (reflection). By making improvements according to the results of reflection on cycle I.

The indicators of the success of this class action research include the percentage of student learning outcomes on average 70%, the activity and cooperation of students in learning as much as 70% and the implementation of learning by teachers in a good category with an achievement of at least 76%.

D. Findings and Discussion

1. Findings

The results of the observations on student activity were 61.44%, which means that the level of student activity was quite good but less than the success percentage of 70%.

In the teaching process the teacher gets a score of 16 with a percentage of 66.67%, so overall that the teacher in the teaching process includes a fairly good category. For the percentage of each score on score 1 or score less, the teacher gets 0%, for score 2 or score is good enough the teacher gets a percentage of 25%, for score 3 or score for both teacher gets 25% and for score 4 or very good, teacher got 16.67%. Because the percentage as a whole has not been in accordance with the indicators of success, the observation of the performance of teacher teachers is carried out again in cycle II.

Cycle I evaluation test results that students who get a value of ≥ 70 or complete learning there are 23 students and those who do not complete learning there are 15 students with an average score of 66.84 percent of the number of students who complete learning 60.53%. So, classical learning completeness has not been achieved because it is not in line with the expected success of 70%. Therefore, activities in the cycle need to be repeated so that student learning outcomes increase. The results of observations and reflections on the first cycle can be used as a basis for planning and implementing the second cycle.

After carrying out observations on the actions taken, the results of the reflection of the first cycle, among others, that student activity is not fully evenly distributed throughout the class. That is, there are still some students who have not been able to work on the questions that have been given. In order for students to better understand the material, it is better that in the learning process the teacher provides explanations related to daily life and tells students to study at home before learning is carried out. In addition, most students are still afraid to ask the teacher if they encounter difficulties. To overcome this, teachers are encouraged to motivate students to dare to ask questions and provide opportunities for students to ask questions.

The result of another reflection found was that some students were still reluctant to display the results of their work. To overcome this, the teacher is encouraged to give encouragement to the courage of courage so that all students dare to display the results of their work. In addition, the performance of teachers in the first cycle has not had a good impact on students, so that in the second cycle is expected to be better.

Basically this learning process has been going pretty well but needs improvement in the next learning, namely in the second cycle so that the shortcomings in the previous cycle can be improved.

Cycle II was held 2 meetings, where the first meeting was held on Friday, February 13, 2015 and at the second meeting held on Tuesday, February 17, 2015.

The results of the observations on student activity obtained a percentage of 71.44%, which means the level of student activity is good so that it can be said to be successful the percentage of success is 70%. This shows there is an increase of 10% when compared to the percentage of student activity in the first cycle, which is 61.44%. In detail can be seen in table 1.

Table 1. Percentage of Student Activity in Cycle I and Cycle II

Criteria	Cycle I		Cycle II	
	Total students	Percentage	Total students	Percentage
Very good	1	2,63	11	28,95
Well	10	26,31	14	36,84
Pretty good	11	28,95	11	28,95
Not good	16	42,10	2	5,26
Failed	0	0	0	0
total	38	100	38	100
Success (70%)	Not successful (61,44)		Succeeded (71,44)	

Increasing student activeness during the teaching and learning process has fulfilled the success indicators of the first cycle which initially reached 61.44%, increasing to 71.44% in cycle II. Increased activity of students because in learning activities students are involved directly so students become more active in the learning presented and the teacher only acts as a facilitator and guides students if needed so students are encouraged to think for themselves to be able to find general principles based on the problems given by the teacher. With the involvement of students directly in learning activities, the new knowledge gained by students will stick and last longer.

In the teaching process the teacher scores 19 with a percentage of 79.17%, so overall that the teacher in the teaching process is in the good category. For the percentage of each score on score 1 or score less, the teacher gets 0%, for score 2 or score is good enough the teacher gets a percentage of 0%, for score 3 or the score for both teachers gets a percentage of 62.5% and for

percentage score 4 or very well, the teacher gets 16.67%. Overall, the teacher in the teaching process is included in the good category, so that the teacher's activities in the second cycle have met the indicators of success. The following comparison of teacher activities is presented in table 2.

Table 2. Comparison of Teacher Activities in Cycle I and Cycle II

Cycle	Score obtained	Percentage	Category
Cycle I	24	66,67	Teachers' Ability to Teach is Good
Cycle II	19	79,17	Ability to Teach Good Teachers

2. Discussion

Based on the results of the study, quantum teaching models were obtained with the LKS-assisted discussion method that could improve students' mathematics learning outcomes. This is indicated by the increase in teacher performance in the circle material learning process by applying the quantum teaching model with the LKS-assisted discussion method from the first cycle to the second cycle of 66.67%, increasing to 79.17%. In teaching, the teacher is good in his performance, because the teacher can provide examples of solving problems related to daily life, and the material conveyed can be understood by students, the questions given are in accordance with the indicator of success that is 76% and in concluding all material. The teacher can create a more active learning atmosphere for students. This is because in student learning is involved and if there are students who experience difficulties the teacher always guides him. In addition, the teacher can master the class well and is more able to motivate students to learn.

Cycle II evaluation test results that students who get a score of ≥ 70 or complete learning there are 28 students and those who do not complete learning there are 10 students with an average score of 70.39 percent of the number of students who complete 73.68%. so that it has met the indicator of success, namely 70% of students who complete study. The percentage of completeness of student learning outcomes each cycle can be seen in table 3 below.

Table 3. Recapitulation of Percentage of Completion of Student Learning Outcomes each cycle

Value	Cycle			
	Cycle I		Cycle II	
	Total students	Percentage	Total students	Percentage
> 70	23	60,53	28	73,68
< 70	15	39,47	10	26,31
Completeness (70%)	Not completed (66,84)		Complete (70,39)	

The results of the evaluation cycle I test students who got a score of ≥ 70 or completed learning there were 23 students and those who did not complete the study there were 15 students with an average score of 66.84 the percentage of students who finished learning 60.53%. So classical learning completeness has not been achieved because it is not in line with the expected success of 70%. While the results of the cycle II evaluation test that students who got a score of ≥ 70 or completed learning there were 28 students and those who did not complete the study there were 10 students with an average score of 70.39 the percentage of students who finished learning 73.68%. so that it has met the indicator of success, namely 70% of students who complete study.

After carrying out observations on the actions taken, the results of reflection of the second cycle include that student activity has increased compared to the first cycle, because students have been motivated to learn actively and the teacher has provided guidance well. Teacher performance has also increased, can be seen from its ability to guide students, motivate students and manage classes. In addition, students' responses in the application of quantum teaching learning with discussion methods are very good, this can be seen from the courage of students in solving problems in front of the class and in expressing opinions.

Broadly speaking, the implementation of the quantum teaching learning model with assisted discussion methods Student Worksheets (LKS) in cycle II was successful.

Quantum teaching learning with LKS-assisted discussion method can be applied because it can increase learning outcomes and can develop students' creativity in learning mathematics, and can help students to find and raise problems so that the instructional goals where students as the subject of education can be realized in carrying out tasks and obligations as students. In

addition, the role of the teacher as a facilitator and at the same time as a companion in the learning process can be realized.

E. Conclusion

Based on the results of the study it can be concluded that learning by applying the quantum teaching model with the LKS-assisted discussion method can increase student activity, teacher performance, and cognitive abilities of students in understanding mathematics in class VIII.9 Semester II of Maros 1 Middle School in 2014 / 2015. This is indicated by the increased activity of students in teaching and learning which initially obtained a percentage of 61.44% with sufficient assessment qualifications and in the second cycle increased to 71.44% with good assessment qualifications, increased results of students' cognitive abilities in the material circle shows the number of students who complete in the first cycle as many as 23 students with an average score of 66.84 percent 60.53% with assessment qualifications have not achieved success that is 70%, and students who complete the second cycle increase to 28 students with an average score 70.39 percent, 73.68%, and the increase in teacher performance in quantum teaching learning with discussion method assisted by LKS on mathematics subjects in the first cycle obtained a percentage of 66.67% with quite good assessment qualifications, and in the second cycle it increased to 79.17% with good assessment qualifications.

Based on the implementation of classroom action research on class VIII.9 Maros 1 Public Middle School 2014/2015 Academic Year, the researcher proposes suggestions that teachers should apply quantum teaching models with discussion methods assisted by LKS on mathematics so that students can improve cognitive abilities, increase student activity, increase motivation student learning, train students to work together in discussions with friends in terms of solving questions so that they can improve teacher performance in learning activities.

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