

IMPROVING THE MATHEMATICS LEARNING PROCESS OF JUNIOR HIGH SCHOOL STUDENTS IN PEKANBARU WITH THE APPLICATION OF THE TALKING STICK TYPE COOPERATIVE LEARNING

Safitri Lestari^{1*)}, Alzaber²⁾

^{1,2}*Mathematical Education, Islamic University of Riau*

^{1*)}safitriramadani@student.uir.ac.id

²⁾alzaber@edu.uir.ac.id

Received: 23-08-2022; **Accepted:** 27-09-2022; **Published:** 31-10-2022

Abstract. Research applying the talking stick cooperative learning model aims to improve the learning process and student learning outcomes in mathematics. The research subjects were students of SMPN 26 Pekanbaru, a total of 40 students. This research is a Classroom Action Research (CAR) with two cycles. The data collection instruments consist of observation sheets, questionnaire sheets, and learning outcomes test sheets. The data analysis technique used in this research is descriptive data analysis with observation sheets, questionnaire sheets, and analysis of learning outcomes. The results of teacher and student activities at each meeting showed an increase in the mathematics learning process of SMPN 26 Pekanbaru students starting from the first meeting in the first cycle to the last meeting in the second cycle. This can be seen from the number of students who completed the primary score, namely 14 students from 40 students or 35%, increasing on the first daily test to 22 students from 40 or 55%. Student learning outcomes after the learning process in the second cycle increased to 33 students or 83% in the second daily test.

Keywords: *Cooperative, Learning Process, Classroom Action Research (CAR), Talking Stick*

1. INTRODUCTION

The development and progress of a nation is strongly influenced by the quality of education. Education is basically a process that can help humans develop themselves, so they are able to deal with all the changes and problems they face [1]. Education that is less than optimal is generally caused by less effective teaching and learning activities that occur in schools [2]. Education has a strategic position in the framework of improvement which can be seen from two things, namely: the quality of processes and products, according to [3] an education is said to be of quality if the teaching and learning process (PBM) can take place effectively and students experience a meaningful learning process. Education is called quality if students show a high level of mastery of learning tasks according to the goals and objectives of education. One of the goals of education is for students to understand mathematics.

Mathematics as a field of study taught in formal educational institutions is an important part of efforts to improve the quality of education. Mathematics is a subject that plays a very important role in education. According to [4] which states that by learning mathematics, we will learn to reason critically, creatively, and actively which people really need in solving various problems. This is in line with the goals of learning mathematics, namely obtaining high learning outcomes, developing student character, increasing intellectual abilities, especially high-level students and forming students' abilities to solve a problem systematically. The goal of learning mathematics can be realized if it fulfills one of the important factors to make it run smoothly, the factor that influences this is a good learning process. A good learning process can be created by a teacher by creating quality learning conditions in order to make students interested and feel happy in participating in learning mathematics which at the end of the learning process can improve student learning outcomes in mathematics. The author is interested in conducting this research at SMPN 26 Pekanbaru, because the learning process at this school does not meet the criteria for an effective learning process.

Based on the results of the interviews and observations that the researchers conducted, the identification of the problems in this study were as follows: (1) In the section on conveying the teacher's apperception, it was not quite right; (2) When giving material the teacher only writes on the blackboard asking students to take notes; (3) Active students and student involvement in answering or asking questions to the teacher during the learning process have not been seen; (4) There are still many students who do not dare to ask questions or express opinions during the learning process; (5) Lack of interaction between teachers and students during the learning process; (6) Lack of guidance from the teacher in the learning process; (7) Low student learning outcomes.

By looking at the problems that the authors wrote above, it is necessary to change the learning process by changing the learning process into an active and fun learning process. The active learning process is characterized by the involvement of students comprehensively both physically, mentally and emotionally, for this reason skills are needed for a teacher in teaching subject matter, especially in mathematics [5]. One way that can be applied to improve the process of learning mathematics in the classroom is for the teacher to apply the Talking Stick cooperative learning model. According to the researchers this method is suitable to be applied because the talking stick learning method gives the teacher the

opportunity to explain the material in general first, after that with the teacher's guidance students are asked to discuss solving the problems given by the teacher before the teacher starts Talking Stick learning and after Talking Stick starts students are required to express his opinion [6].

According to [7] revealed the Talking Stick method as follows: The Talking Stick method is a learning process carried out with the help of a stick which has a function as a tool to determine which students will answer questions and this method aims to encourage students to be more courageous in expressing opinions. The Talking Stick learning method in the teaching and learning process in the classroom is oriented towards creating learning conditions through stick games that will be rolled from one student to another with musical accompaniment. Based on the explanation above, the researcher is interested in conducting research on "The Application of the Talking Stick Type Cooperative Learning Model to Improve the Mathematics Learning Process for Class VIII-9 Students of SMP Negeri 26 Pekanbaru".

2. RESEARCH METHOD

The form of research that will be used by researchers in this study is Classroom Action Research (CAR). The classroom action research party that plays a role in it is the teacher, trying to consciously develop skills in detecting and solving problems that occur in classroom learning through meaningful actions that are calculated to solve problems or improve situations and then carefully observe their implementation to measure the level of success [8]. The action taken in this study was the application of the Talking Stick cooperative learning model to improve the mathematics learning process for class VIII-9 students of SMP Negeri 26 Pekanbaru even semester of the 2019/2020 academic year which was conducted from 25 February 2020 to 1 April 2020.

This classroom action research will be carried out in at least two cycles. In the first cycle with four meetings, action will be taken by applying the Talking Stick cooperative learning model. Furthermore, in the second cycle with the same meeting, namely four meetings, action was carried out based on the reflection results of the first cycle. Classroom action research requires planning cycles consisting of four iterative activities. According to [9] class action planning usually includes four stages, namely: (1) Plan; (2) Actions; (3)

Observation; and (4) Reflection. The classroom action research cycle model based on the opinion [10] describes the four steps of CAR as follows:

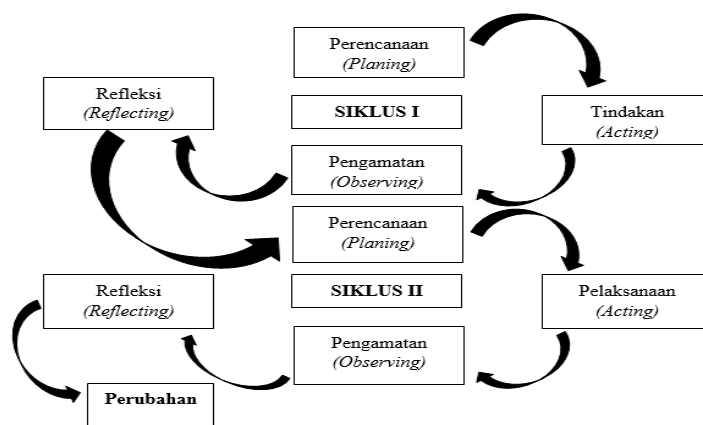


Figure 1. Model of PTK Implementation Stages

The data collection instruments in this study were in the form of observation sheets of teacher activity and student activity, student response questionnaire sheets to the process of learning mathematics and tests of students' mathematics learning outcomes. This student learning achievement test is used to measure student achievement after studying the material provided. In this study the authors used observation sheets of teacher and student activities at each meeting during the learning process in cycle I and cycle II. Student response questionnaire sheets were given before the action, then after the action in cycle I and after the action in cycle II. Tests for learning outcomes are carried out at the end of cycle I and cycle II which are called daily one and two daily tests, where the test questions given are related to the material being studied after the implementation of the Talking Stick cooperative learning model.

Data analysis techniques were carried out in two forms, namely qualitative data analysis and quantitative data analysis. According to [11] in classroom action research there are two types of data that can be concluded, namely qualitative data and quantitative data. Qualitative data were obtained from observation sheets of teacher and student activities. Quantitative data were obtained from student response questionnaire sheets to the learning process and obtained from the results of students' mathematics learning outcomes tests. Data on mathematics learning outcomes serves to see the achievement of student learning outcomes in accordance with the KKM that has been set, namely 77.

3. RESULTS AND DISCUSSION

A. RESULTS

The results of data analysis on the teacher activity observation sheets and student activity observation sheets in cycle I show that learning activities have not gone well, not even in accordance with the planned learning steps while in cycle II learning activities have gone well and are in accordance with the activities planned learning. At the first, second and third meetings in cycle I, it was seen that the activities of teachers and students in implementing the Talking Stick cooperative learning model had not been carried out properly, there were still several steps of the Talking Stick type cooperative learning that had not been carried out as in the cooperative phase 1, deficiencies were visible from the initial activities teachers who have not conveyed learning objectives and apperceptions properly. Cooperative Phase 4 has also not been implemented, namely teachers who do not guide students during study group discussions so that many students do not care about working on worksheets and teachers who cannot master the class during the Talking Stick relay and manage time well. Changes in the learning process using Talking Stick saw changes in the third meeting. At the third meeting the teacher was able to arrange the time for carrying out the Talking Stick and the students had begun to be orderly in carrying out the Talking Stick relay.

At the fourth, fifth and sixth meetings in cycle II, it was seen that the activities of teachers and students had been carried out well and there was an increase in the learning process with Talking Stick because students felt motivated by giving awards at the end of each meeting in phase 6, namely giving awards. The activities and learning steps are in accordance with the plans that have been prepared, all the cooperative learning steps of the Talking Stick type are already included in the learning process. Such as the delivery of apperception and learning objectives have been conveyed. The teacher is able to manage time and manage the class well and the teacher understands the Talking Stick process well. This shows that there is an increase in the process of learning mathematics with the application of the Talking Stick cooperative learning model.

The improvement in students' mathematics learning outcomes can be seen based on the percentage of students who complete the basic scores, UH I and UH II. Achievement can be calculated based on individual completeness and percentage of classical completeness. The number of students who complete and the percentage of completeness can be seen in Table 1:

Table 1. Number of Students Who Completed the Basic Score, UH I and UH II

Description	Base Score	UH I	UH II
Number of students who achieve KKM	14	22	33
The number of students who do not reach the KKM	26	18	7
Percentage of classical completeness (%)	35%	55%	83%

Based on Table 1, the number of students who achieved the KKM at the time before the action was taken was less than the students who achieved the KKM after the action was carried out in cycle I and cycle II. The number of students who completed and reached KKM after the first daily repetition action in cycle I increased by 8 students with the percentage of classical completeness also increasing by 20%. Furthermore, students who completed and achieved KKM in cycle II after doing the second daily test experienced an increase of 11 students with a percentage of classical completeness which increased by 28%. Based on the analysis above, it can be concluded that the number of students who have completed and achieved the KKM has increased from the basic score to the first daily tests and the second daily tests. This is in accordance with what was stated [12], namely the percentage of classical completeness before the action, in cycle I and in cycle II was compared. If there is an increase, it can be said that the action was successful.

Improvements in student mathematics learning outcomes that have increased can also be seen by using the average learning outcomes. The average student mathematics learning outcomes can be seen in Table 2 below:

Table 2. Average Student Mathematics Learning Outcomes on Basic Scores, UH I and UH II

Value	Base Score	UH 1	UH 2
Average	61,7	70,8	80,5

Based on Table 2 above, it can be seen that the average score of students' mathematics learning outcomes has increased from the basic score to the first daily test and the second daily test. The increase in students' mathematics learning outcomes increased so that there was an improvement in the basic score to the first daily test in cycle I there was an increase of 9.1. Then in the second daily repetition in cycle II there was also an increase of 9.8.

The increase in the process of learning mathematics was also seen from the score of the student's response questionnaire to the process of learning mathematics before and after the actions of cycle I and cycle II. Based on the results of calculating the percentage scores of student response questionnaires to the learning process before and after the action in cycle I and cycle II, the following results are obtained:

Table 3. Student Response Questionnaire Score Data on Students' Mathematics Learning Process Before and After the Action

Questionnaire Data	Total Students	Questionnaire Score Total	Number of Items	Max Score	(%)	Criteria
Pre-Action Data	40	4539	38	6080	74,7	Strong
Data After Cycle I	40	4717	38	6080	77,6	Strong
Data After Cycle II	40	4955	38	6080	81,5	Very Strong

Based on Table 3 above, it can be seen that the score of the student response questionnaire to the students' mathematics learning process has increased from before being applied to cycle I and cycle II. The increase in the score of the student response questionnaire to the students' mathematics learning process increased so that the score before being applied to cycle I increased by 2.9%. Then in cycle II there was also an increase of 3.9%. It can be seen that from the score before taking the action until after the action in cycle II there was an increase in the percentage of 6.8%. So it can be concluded that the student's response to the process of learning mathematics as a whole experienced an increase after cycle I and cycle II.

B. DISCUSSION

The improvement in the learning process observed by the researcher can be seen through the teacher activity observation sheets and student activity observation sheets, which occurred during the second cycle which was held three times, the fourth, fifth and sixth meetings in implementing the Talking Stick cooperative learning model went very well. where the teacher has carried out the learning steps according to the lesson plan and the teacher has understood the steps of the Talking Stick cooperative learning model in the learning carried out. Then the student activities have progressed in participating in the learning process, students have paid attention to the teacher's explanation of the material, students have followed the Talking Stick process well, students have been able to interact and be active in group learning and students have dared to express opinions and ask questions, thus making students more active when the learning process takes place, this results in student mathematics learning outcomes and student responses to the mathematics learning process increasing.

This can be seen from the achievement of the KKM which has increased in the first and second daily tests of the basic score, where in the daily test one student achieves the KKM as many as 22 students with a classical completeness percentage of 55% of students who complete the basic score of 14 students. with a classical completeness percentage of 35%. Then the number of students who completed the second daily test and reached the

KKM increased by 33 students with a classical completeness percentage of 83%. The increase was also seen from the average student mathematics learning outcomes. The average basic score of students' mathematics learning outcomes was 61.7 then on daily tests one score increased to 70.8 which caused the average student mathematics learning outcomes to increase from a basic score of 9.1. Then in the two daily tests the students' mathematics learning outcomes increased to 80.5 which caused the average student learning outcomes to increase from the first daily test as much as 9.7.

The increase was also seen from the overall data analysis of student response questionnaires to the learning process prior to the application of the Talking Stick type cooperative model. It was seen that the average percentage of student responses to the mathematics learning process was 74.7% with the "Strong" criterion. After the action was taken in cycle I, the average percentage of student responses to the mathematics learning process increased to 77.6% with the "Strong" criteria and after cycle II the percentage of student responses to the learning process increased to 81.5% with the "Very Strong" criteria. ". That is, if seen based on the average percentage of student responses to the mathematics learning process, it has increased in each cycle.

Based on [13] learning success is very closely related to the learning outcomes obtained by students after carrying out the learning process. This is also seen in the findings of this study that the improvement of the learning process resulted in increased student learning outcomes. A good learning process will get good learning outcomes too. Thus it can be concluded that the Talking Stick cooperative learning model is a learning variation that can be applied to improve the student learning process in mathematics. So, this action analysis supports the hypothesis put forward, namely the application of the Talking Stick type cooperative learning model can improve the learning process and mathematics learning outcomes for class VIII-9 SMPN 26 Pekanbaru in the 2019/2020 school year on the subject matter of flat sided shapes.

4. CONCLUSION

Based on the results of data processing, analysis and discussion, it was concluded that there was an increase in the mathematics learning process starting from before the action took place until after the action was carried out in cycle I and cycle II. This shows that applying the talking stick type of cooperative learning model can improve the mathematics learning process for class VIII-9 students of SMPN 26 Pekanbaru.

REFERENCES

- [1] U. Rosyidah, "Pengaruh Model Pembelajaran Kooperatif Tipe Jigsaw terhadap Hasil Belajar Matematika Siswa Kelas VIII SMP Negeri 6 Metro," *J. SAP*, vol. 1, no. 2, p. 115, 2016.
- [2] S. Danim and Khairil, *Profesi Kependidikan*. Bandung: Alfabeta, 2010.
- [3] Sudjana, *Cara Belajar Siswa Aktif dalam Proses Belajar Mengajar*. Bandung: Sinar Baru Algesindo, 2000.
- [4] N. A. Mukrimatin, M. Murtono, and S. Wanabuliandari, "Pemahaman Konsep Matematika Siswa Kelas V SD Negeri Rau Kedung Jepara Pada Materi Perkalian Pecahan," *ANARGYA J. Ilm. Pendidik. Mat.*, vol. 1, no. 1, pp. 67–71, 2018.
- [5] A. Amir, "Penggunaan Media Gambar dalam Pembelajaran Matematika," *J. Eksara*, vol. 2, no. 1, p. 34, 2016.
- [6] Agus Suprijono, *Cooperative Learning Teori & Aplikasi PAIKEM*. Yogyakarta: Pustaka Belajar, 2010.
- [7] F. Huda, "Penerapan model pembelajaran talking stick dalam upaya peningkatan hasil belajar pokok bahasan pancasila sebagai dasar negara republik Indonesia kelas VI tahun pelajaran 2017/2018," *J. PTK dan Pendidik.*, vol. 3, no. 2, 2018.
- [8] Kunandar, *Penilaian Autentik (Penilaian Hasil Belajar Peserta Didik Berdasarkan Kurikulum 2013)*. Jakarta: PT Raja Grafindo Persada, 2014.
- [9] Mulyasa, *Praktik Penelitian Tindakan Kelas*. Bandung: PT Remaja Rosdakarya, 2013.
- [10] W. Kusumah and D. Dwitagama, "Mengenal penelitian tindakan kelas," *Jakarta PT Indeks*, 2010.
- [11] S. Arikunto, Suhardjono, and Supardi, *Penelitian Tindakan Kelas*. Jakarta: Bumi Aksara, 2012.
- [12] S. Rezeki, "Analisis Data dalam Penelitian Tindakan Kelas ditampilkan pada Seminar Pendidikan Matematika Guru SD/SMP/SMA se-RIAU 2009," *Pekanbaru FKIP UIR*, 2009.
- [13] A. Syarifuddin, "Penerapan model pembelajaran cooperative belajar dan faktor-faktor yang mempengaruhinya," *Ta'dib J. Pendidik. Islam*, vol. 16, no. 01, pp. 113–136, 2011.