

Improving Learning Outcomes of Mathematics Students In Polynomial Topic Through The Reciprocal Teaching Approach In Class XI IA1 SMAN 2 Kendari

F Hali^{1*}, A M Ramlan², and Farman³

^{1,2,&3} universitas Sembilanbelas November Kolaka, Sulawesi Tenggara, Indonesia

*E-mail: fitriyanihali@gmail.com

Abstrack. The learning outcomes of students of class XI IA1 are still relatively low, especially in polynomial topic. In polynomial topic there are still many students who have difficulty determining the remainder of the division of terms by quadratic form using the residual theorem and the difficulty of determining the roots of a many-term equation. So the purpose of this research is to improve student mathematics learning outcomes in polynomial topic through the Reciprocal Teaching approach in Class XI IA1. The subjects in this study were all students of class XI IA1 of SMA Negeri 2 Kendari. The instrument used was a learning achievement test in the form of an initial test, a first cycle test, and a second cycle test, as well as an observation sheet for teachers and students for the conditions of action. The results showed that students' mathematics learning outcomes increased based on the results of each test given. The results of the first cycle test showed that of 39 students, 24 students scored above the KKM. In the second cycle test, there were 31 students who were able to get a grade above the KKM. Based on work indicators, it was concluded that student mathematics learning outcomes in polynomial topic could be improved through the Reciprocal Teaching approach in Class XI IA1 SMA Negeri 2 Kendari.

1. Introduction

Mathematical learning outcomes of class XI IA1 students on many tribes topic is still low. Many students find it difficult to determine the remainder of a tribal division by the quadratic form using the residual theorem and students have difficulty determining the roots of a multi-term equation.

The problem of mathematics learning outcomes that are still low, especially in ethnic topic, is due to the lack of student independence in learning and the lack of active student involvement in learning. In addition, the learning approach used does not support student independence and student activity. Therefore we need a learning approach that can enable students to learn independently and actively in the learning process in order to improve student mathematics learning outcomes, especially in many tribal topic. The learning approach that is an alternative solution is the reciprocal teaching approach.

The Reciprocal Teaching approach requires students to learn independently using four strategies, namely reading, studying, summarizing, and making questions along with their answers about the topic that will be taught by the teacher in class. Learning activities using this Reciprocal Teaching approach, provide opportunities for students to understand mathematical concepts, especially many tribal topic independently. So that with this Reciprocal Teaching approach can improve student mathematics learning outcomes on many tribal topic.

2. Literature Review

2.1 Learning Outcomes and Mathematics

According to the KBBI the results have several meanings: 1) Something that is held by the business, 2) income; acquisition; fruit. While learning is a change in behavior or response caused by experience [1]. Learning outcomes are abilities obtained by individuals after the learning process takes place, which can provide changes in behavior both knowledge, understanding, attitudes and student skills so that it becomes better than before [2]. Learning outcomes are one indicator of the learning process. Learning outcomes are changes in behavior that are obtained by students after experiencing learning activities [3]. One indicator of whether or not a learning process is achieved is to look at the learning outcomes achieved by students.

Mathematics is a universal science that underlies the development of modern technology, has an important role in various scientific disciplines and advances human thinking [4]. Another opinion states mathematics is a universal science that underlies the development of modern technology [5].

2.2 Reciprocal Teaching

Brown states that in learning using the reciprocal teaching approach, students are taught four specific independent understanding strategies, namely: (a) students learn the topic assigned by the teacher independently, then summarize / summarize the topic, (b) students make questions related to the topic which he summarized and completed it. With this question it is expected to be able to reveal the mastery of the topic in question, (c) students are able to re-explain the contents of the topic to other parties, (d) students can predict the possibility of developing the topic being learned at that time. On the other hand the teacher still provides support, feedback, and stimulation when students learn the topic independently. The reciprocal teaching approach is done in groups so that students can work together and exchange opinions in learning [5]. Reciprocal Teaching. pdf, one of the characteristics of the reciprocal teaching model includes students being teachers and learning using four stages, namely questioning, predicting, clarifying, and summarizing [6].

Reciprocal teaching can promote student independence with a variety of student activities in their reception so that it can improve student learning outcomes [7]. Palinscar and Brown suggested that in implementing a reciprocal teaching approach, students should be formed in several small heterogeneous groups [8].

3. Research Methods.

This type of research is a classroom action research (CAR), namely the existence of certain actions to improve teaching and learning in the classroom. This research was conducted in SMA Negeri 2 Kendari with the subjects of the study were students of class XI IA1, amounting to 39 students consisting of 7 male students and 32 female students.

This class action research was conducted in two cycles with two meetings in cycle I and three meetings in cycle II. Each cycle in this study includes the procedure: (1) planning; (2) implementing actions; (3) observation and evaluation; (4) reflection. Retrieval of data about the learning process on many tribal topic with reciprocal teaching approach using observation sheets including teacher and student observation sheets. Data about learning outcomes is taken using tests, while data about self-reflection is taken using journals.

The success of this research is seen from two aspects, namely in terms of process and results. In terms of processes, actions are categorized as successful if at least 80% of the action implementation process is in accordance with the learning scenario. While in terms of results, the action is said to be successful if at least 75% of students get a value of ≥ 65 (Minimum completeness criteria value).

4. Analysis Results and Discussion

4.1. Analysis Results

a. Implement Teacher Actions using the Reciprocal Teaching Approach in Each Cycle

Table 1. Recapitulation of the implementation of teacher actions using the reciprocal teaching approach in each cycle

Cycle	Meeting I (%)	Meeting II (%)	Meeting III(%)	Rata-rata (%)
I	66,67	83,33	-	75
II	91,67	91,67	90,91	91, 42

Based on table 1 shows that the first cycle consisting of two meetings, the first meeting of the teacher's actions only reached 66.67%. The teacher applies the reciprocal teaching approach to only 8 actions out of 12 observed. In meeting II there has been an increase in the implementation of teacher actions in implementing the reciprocal teaching approach, the teacher has already carried out 10 actions out of 12 observed actions. So that the second meeting the percentage of teacher action implementation was 83.33%. If averaged the percentage of actions taken by teachers meeting I and II in the first cycle, then the percentage of actions obtained by 75%.

In cycle II which consisted of three meetings, meetings I and II, the teacher's actions had reached 91.67%. The teacher adopts a reciprocal teaching approach that fulfills 11 actions out of 12 observed actions. In meeting III, the teacher's actions were observed while the remaining 11 actions were due to the last meeting in the learning of many tribal topic. the implementation of the teacher's actions in implementing the reciprocal teaching approach, the teacher did not take 1 action out of the 11 observed actions. So that the third meeting the percentage of the implementation of teacher actions amounted to 90.91%. If averaged the percentage of actions taken by teachers meeting I, II, and III in cycle II, the percentage of actions obtained was 91.42%.

b. Student Mathematics Learning Outcomes in Each Cycle

Table 2. Recapitulation of mathematical learning outcomes of students in each cycle

Description	Cycle Test I	Cycle Test II
Average	68, 40	71,72
Classical learning mastery	61,54%	79, 49%

Table 2 shows the completeness of students' mathematics learning outcomes in cycle I and cycle II. In the first cycle, students only achieved an average of 68.40 learning outcomes on many tribal topic, basic competencies using a lot division algorithm. Classical completeness cycle I was 61.54% (only 24 students who completed 39 students).

In the second cycle, the average student mathematics learning outcomes of 71.72 in the topic of many tribes, the basic competence of the residual theorem, factor theorem, and completion of many terms. The classical completeness of cycle II was 79.49 (students who completed as many as 31 students from 39 students).

4.2 Discussion

Based on the results of observation of the implementation of actions from cycle I to cycle II has increased, namely from the average implementation of the first cycle of action by 75% to 91, 42% in cycle II. This percentage also meets the indicator of success. While in terms of results, the completeness of students' mathematical learning outcomes classically on many tribes topic also increased from the first cycle test to the second cycle that is from 61.54% to 79, 49%. The percentage of students' mastery learning has also met the indicators of success. Completeness of student learning is supported by student activity in the learning process which generally shows improvement. Many students are enthusiastic in asking questions about topic they don't understand, solving problems on the board, answering teacher questions, and being active in discussions. Most students are already

skilled at making summaries and questions and their solutions and are able to solve problems individually. Thus increasing understanding and mastery of student concepts about many tribal topic and obtained better student learning outcomes in mathematics.

Based on the description above, student mathematics learning outcomes in many tribal topic have reached the specified performance indicators. Likewise, the completeness of the implementation of learning by the teacher has reached performance indicators in terms of the process. So that mathematics learning using the reciprocal teaching approach can improve student mathematics learning outcomes on many tribal topic.

5. Conclusion

The conclusion in this study is the results of student mathematics learning in many tribes topic can be improved through the reciprocal teaching approach in class XI IA1 SMA Negeri 2 Kendari.

Referensi

- [1] Tim Penyusun Pusat Bahasa (Mendikbud) *Kamus Besar Bahasa Indonesia* (Jakarta: Balai Pustaka)
- [2] Purwanto M N 2002 *Psikologi Pendidikan* (Bandung: Remaja Rosda Karya)
- [3] Anni C T 2004 *Psikologi Belajar* (Semarang: IKIP Semarang Press, 2004)
- [4] Muslimin, Indaryanti, Susanti E 2017 *Pembelajaran Matematika dengan Model Reciprocal Teaching untuk Melatih Kecakapan Akademik siswa Kelas VIII SMP J. Pend. Matematika*, Vo. 11 No. 1.
- [5] Vahlia I, Sudarman S W 2015 *Penerapan Model Pembelajaran Berbalik (Reciprocal Teaching) Ditinjau dari Aktivitas dan Hasil Belajar Siswa J. Aksioma* Vol. 4, No. 1
- [6] Supartini 2005 *Upaya Peningkatan Hasil Belajar Melalui Implementasi Model Pembelajaran Berbalik (Reciprocal Teaching) Pokok Bahasan Luas dan Keliling Pada Siswa Kelas V SD Pogalan III Kecamatan Pakis Kabupaten Magelang Tahun Pelajaran 2004/2005* (Universitas Negeri Semarang: Semarang)
- [7] Rachmayani D 2014 *Penerapan Pembelajaran Reciprocal Teaching Untuk Meningkatkan Kemampuan Komunikasi Matematis Dan Kemandirian Belajar Matematika Siswa J. UNSIKA* Vol. 2, No. 1
- [8] Palincsar 1986 "Reciprocal Teaching". [www. mbs -sd.org / buletin _ fasilitator / Ed _ 3_ Reciprocal Teaching. pdf](http://www.mbs-sd.org/buletin_fasilitator/Ed_3_Reciprocal_Teaching.pdf).
- [9] Wicaksono A 2009 *Model Pembelajaran Reciprocal Teaching*. (<http://agungprudent.wordpress.com>)