THE EFFORT TO INCREASE THE LEARNING RESPONSIBILITY OF MATHEMATICS USING RECIPROCAL TEACHING MODEL IN STUDENT CLASS X

Annisa Rafiqa Noor Abdillah[a], Sunaryo[b]
Program Studi Pendidikan Matematika Universitas Ahmad Dahlan
Jalan Ring Road Selatan, Tamanan, Banguntapan, Bantul Yogyakarta
[a]noor.abdillah@yahoo.com, [b]Sunaryo_jogja@yahoo.com

ABSTRACT

Teacher-centered learning results in students being less responsible for learning. Therefore, there is a need for individual efforts to improve the student's learning responsibility. This study aims to improve the Responsibility of learning mathematics by using the Reciprocal Teaching model on the students of class X OA Semester Even Vocational High School (SMK) Yudha Karya Magelang academic year 2014/2015. This research is a research type of Classroom Action Research (CAR). Subjects in this study were students of class X OA, even semester SMK Yudha Karya Magelang academic year 2014/2015.
In comparison, the object under study in this research is applying the Reciprocal Teaching model on the students of class X OA Semester Even SMK Yudha Karya Magelang academic year 2014/2015. The study was conducted two cycles from three planned cycles. Data were collected by observation method, questionnaire, repeat test. Data analysis used is descriptive qualitative. The results showed that the Reciprocal Teaching model on the students of class X OA Semester Even SMK Yudha Karya Magelang academic year 2014/2015 increase the Responsibility of learning. This is evident from the observation result of students' learning responsibility every cycle has increased: the percentage of success of students' learning in cycle I equal to 52,08% (Enough). In cycle II, this increased to 80,03% (Very Good). The percentage of students who completed each cycle also increased the cycle I obtained by 37.93%. The second cycle increased to 68.97% in the second cycle.
Keywords: Responsibility, Reciprocal Teaching, Mathematics.

INTRODUCTION

Education has a vital role in building a smart, peaceful, open, and democratic society. Education is an essential requirement for every individual. Therefore education reform must always be done to improve the quality of education. According to Law No. 20 of 2003 concerning the national education system, education is a conscious and planned effort to create an atmosphere of learning and learning process so that students actively develop their potential to have religious, spiritual strength, self-control, personality, intelligence, noble character, and the skills needed by them, society, nation, and state.

Meaningful learning that can activate students is learning based on impressive learning experiences. In learning mathematics, students must be actively involved in the learning process. This is in line with the view of Sudjatmiko (2003: 4), which states that learning activities enable students to socialize by respecting differences (opinions, attitudes, achievement abilities) and practice to work together to communicate ideas, creations, and findings to teachers and other students. So it takes the Responsibility of students in learning, both alone and with their friends, to develop their potential in learning mathematics.

Mathematics is one of the subjects that will always be found at all education levels, ranging from elementary, junior high, high school / vocational school, even to college. Mathematics has a vital role because, in addition to providing the ability to count, it also provides a reason for calculation purposes. However, more than that, mathematics has been widely used to develop various sciences and knowledge. This was confirmed by R. Soedjadi (2000: 183), namely mathematics as one of the basic sciences. Both its applied aspects and its reasoning aspects have a vital role in mastering science and technology.

Mathematics subjects are given to students to equip their ability to think logically, critically, creatively, and innovatively. Also, every student must have an attitude of Responsibility because Responsibility is needed to equip students to live in the future. The teacher's role is vital in realizing the attitude of student responsibility, by explaining the attitude of Responsibility in a language that is easily understood by students, and accompanied by examples or direct practice such as students must be timely in the following learning, students must focus on teaching and learning activities, students must do the assignments given by the teacher and so on. Student responsibility is needed during the learning process. Students are expected to take Responsibility seriously when carrying out their duties and roles as a generation of the nation while continually improving students' quality through education at school.

The weak attitude of Responsibility occurs due to a lack of knowledge, understanding, and willingness to carry out the attitudes, behaviors, and character of students' responsibilities. Students must be active in order with the object or material learned (Sugihartono et al., 2007: 109). It takes the teacher's role to strive to realize learning by growing learning responsibilities from within students to orderly in group learning and play an active role in developing their knowledge. Lack of learning responsibility is the student's response to the stimulation of learning provided by the teacher. Suppose the teacher has tried to provide intense stimulation, but the response is still weak. In that case, conditions are needed to increase the response or stimulation. The Reciprocal Teaching method in mathematics learning can improve responses in student responsibility in mathematics learning.

Reciprocal teaching is one of the learning models implemented to achieve learning objectives appropriately through independent learning. Students can present it in front of the class. This is consistent with Palincsar's (1986) opinion that in Reciprocal Teaching, four strategies are used, namely making questions (question generating), clarifying terms that are difficult to understand (clarifying), predicting further material (predicting), and summarizing (summarizing).

According to Paulina Pannen (in Amin Suyitno, 2006: 34), through this learning model, students can develop a willingness to learn independently, students can develop their knowledge, and the teacher acts as a facilitator, mediator, and manager in the learning process. In this learning, active activities with knowledge are built by the students themselves. They are responsible for learning. The knowledge built by them can be genuinely understood and will last a long time in memory, and is not easily forgotten by students.

The objectives to be achieved in this study are as follows: To find out the increased Responsibility of learning mathematics using the Reciprocal Teaching model in class X OA students in the even semester of SMK Yudha Karya Magelang 2014/2015 academic year.

METHODS

This research is a type of classroom action research. This class action plan is planned for two cycles. This classroom action research using the Reciprocal Teaching model, which prioritizes increasing students' mathematics learning responsibilities. Data collection techniques used in this study were the method of observation, questionnaires, and daily tests. Simultaneously, this study's data collection instruments used observation sheets, questionnaire sheets, and daily tests.

RESULTS AND DISCUSSION

The data collection was carried out at SMK Yudha Karya Magelang in the even semester of the 2014/2015 academic year on January 6, 2015, until January 22, 2015. SMK Yudha Karya Magelang has six classrooms X automotive majors, namely XOA, XOB, XOC, XOD, XOE, XOF. The implementation of this action was carried out in class XOA with a total of 29 students.

This study's data collection process was carried out by organizing mathematical learning activities using the Reciprocal Teaching model. Learning activities are carried out according to the mathematics schedule of the XOA class, with 90 minutes allocated for each meeting.

The results of classroom action research consisting of the cycle I and cycle II regarding mathematics learning using the Reciprocal Teaching model show increased student responsibility in

learning mathematics. This can be seen from the analysis of student responsibility observations in cycle I and cycle II, which have increased. The results of student test repairs in each cycle also increased.

Students' mathematics learning responsibilities on each indicator were obtained in the first cycle, namely, Responsibility for behavior 51.34%, Responsibility for actions 52.23%, and Responsibility for work 52.68%. Then the percentage of Responsibility for success in the first cycle was 52.08%. This first cycle reached sufficient criteria by the qualification results of the percentage score of student responsibility observation.

The complete data of the results of observations of student learning responsibilities in the first cycle is stated in table 1 below:

Table 1. Analysis of Observation Results of Learning Responsibilities of Students in Cycle I

No	Indicator	Score (Meeting I)	Score (Meeting II)	Total Score	Percentage
1	Responsibility for behavior	50	65	115	51,34%
2	Responsibility for actions	54	63	117	52,23%
3	Job responsibilities	50	68	118	52,68%
	Average Percentage			52,08%	

After correcting the cycle's deficiencies, I, students' mathematics learning using the Reciprocal Teaching model, has increased in cycle II. This can be seen from the increasing percentage of student responsibility on the observation sheet each cycle. Responsibility for behavior 80.60%, Responsibility for actions 80.60%, Responsibility for work 78.88%. Then obtained the percentage of success of Responsibility in the first cycle of 80.03%. By the qualification results of the percentage score of observation of student responsibility, this second cycle reaches Very Good's criteria.

The complete data of observations of students' learning responsibilities in Cycle II is stated in table 2 below:

Table 2. Analyzing Results of Observation of Learning Responsibility of Students in Cycle II

No	Indicator	Score (Meeting I)	Score (Meeting II)	Total Score	Percentage
1	Responsibility for behavior	87	100	187	80,60 %
2	Responsibility for actions	88	99	187	80,60 %
3	Job responsibilities	86	97	183	78,88 %
	Average Percentage			80,03 %	

Implementing mathematics learning using the Reciprocal Teaching method can already be used in further learning that can be used by mathematics teachers in schools. This can be seen from the obstacles in cycle I activities that have begun to decrease cycle II. There was also an increase in the percentage of research success> 60%. The percentage analysis of the results of observations of student responsibilities in cycle I and cycle II activities can be seen in Table 3 below.

Table 3. Analysis of Observation Results of learning responsibilities of Students Cycle I and II

No	Indicator	Percentage of Activity		Information
		Cycle I	Cycle II	
1	Responsibility for behavior	51,34%	80,60%	Increase
2	Responsibility for actions	52,23%	80,60%	Increase
3	Job responsibilities	52,68%	78,88%	Increase

More details can be seen in Figure 1.

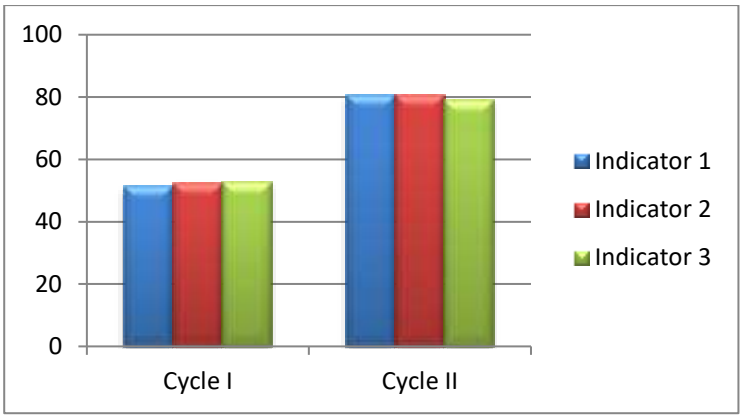

Figure 1. Presentation Results in Graph Observation of Learning Responsibilities of Students Cycle I and Cycle II

Increased student responsibility is also followed by an increase in the percentage of research success and increased student learning achievement tests in each cycle. Increasing the percentage of research success from cycle I and cycle II can be seen in the following Table 4.

Table 4. Percentage of Research Success

Cycle	Percentage (%)
I	37,93%
II	68,97%

The research success percentage increased each cycle, namely 37.93% in the first cycle and 68.97% in the second cycle. An increase in the percentage in each cycle, but new research was stopped in the second cycle. In that cycle, the percentage has reached > 60%, which means that students' learning responsibilities have reached Good's criteria.

For more details, the percentage of research success will be displayed in the following graph:

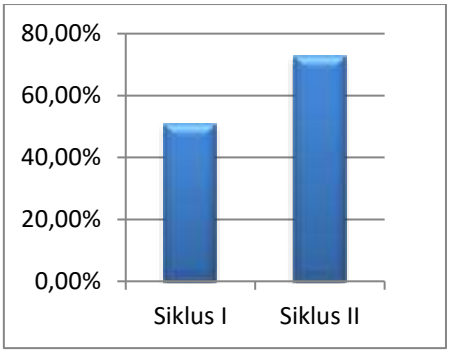

Figure 2. Graph of Percentage of Research Success

In addition to the results of the daily test also increased in each cycle. This can be seen in Table 5 below:

Table 5. Improved Learning Outcomes of Test Cycle I and Cycle II

Evaluation result	Activity		Information
	Cycle I	Cycle II	
The highest score	82,00	96,00	Increase
Lowest score	0	55,00	Increase
Average value	65,21	75,07	Increase
The number of students who are complete	11	20	Increase
Percentage of students who completed	37,93%	68,97%	Increase

More details will be presented in the Figure 3.

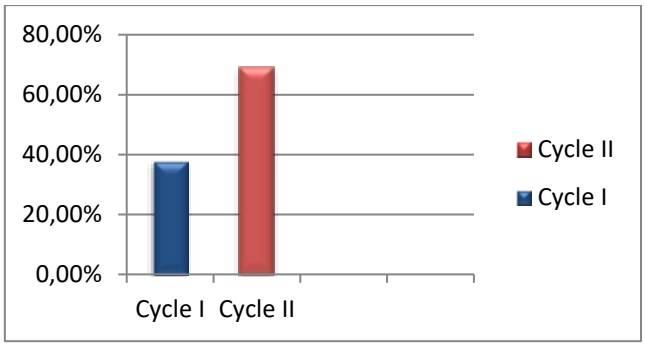

Figure 3. Graph of Percentage of Students Completed

Overall, it can be concluded that learning mathematics using the Reciprocal Teaching method can be used to increase the Responsibility of learning mathematics in XOA students in the even semester of SMK Yudha Karya Magelang in the 2014/2015 academic year and received positive responses from students and teachers. Thus the hypothesis of this research is accepted.

CONCLUSION

Based on the results of research and discussion that has been described previously, it can be concluded from this study that: By using Reciprocal Teaching-learning, it is proven that it can increase the Responsibility of learning mathematics in class X OA students at SMK Yudha Karya Magelang in the subject matter of equations and quadratic functions. By experiencing an increase in the percentage of mathematics learning responsibilities that is 52.08% or sufficient criteria in the first cycle activities, it increased to 80.03% or excellent criteria in the second cycle. So it can be concluded that in this second cycle, students learning responsibilities have reached the criteria very well.

REFERENCES

Abdurrahman, Mulyono. 2009. *Pendidikan Bagi Anak Berkesulitan Belajar*. Jakarta: Rineka Cipta.

Suherman, Erman, Dkk. 2003.*Strategi Pembelajaran Matematika Kotemporer*. Jakarta: Universitas Pendidikan Indonesia.

Trianto. 2007. *Model-model Pembelajaran Inovatif Berorientasi Konstruktivistik.* Jakarta: Prestasi Pustaka.

Zuriah, Nurul. 2008. *Pendidikan Moral Dan Budi Pekerti Dalam Prospektif Perubahan*. Jakarta: Bumi Aksara.