

## **EFFORTS TO IMPROVE MATHEMATICS LEARNING RESULTS IN ALGEBRA MATERIAL USING THE SNOWBALL THROWING COOPERATIVE LEARNING MODEL IN CLASS VII STUDENTS**

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### **ABSTRACT**

Based on the results of observations at Junior High School (SMP) Muhammadiyah 1 Mlati, it was found that students had difficulty understanding math problems, especially about algebraic material, so that students often made mistakes in solving the questions given, which were shown by achieving low scores and many who got scores below 60. This study aims to improve student learning outcomes in solving algebraic problems with the Snowball Throwing type cooperative learning model. This research is a Classroom Action Research (CAR) with the subject, namely students of class VII D SMP Muhammadiyah 1 Mlati with 32 students. The research object is learning mathematics with the Snowball Throwing type cooperative model. This study uses 3 data collection techniques, namely, observation, tests, and interviews. Observation is used as a guide for researchers in carrying out observation activities carried out to obtain data. The test was conducted to collect data and measure students' ability to solve math problems. Interviews were conducted to determine students' condition in the ongoing implementation of learning and their problems. This study obtained mathematics learning using the cooperative learning model type. Snowball Throwing received positive responses from students because students felt helped in learning mathematics to increase student learning outcomes.

**Keywords:** Student learning difficulties, cooperative learning, Snowball Throwing

### **INTRODUCTION**

Education is one of the important things for developing a child and the continuity of national development in the future. This is important considering that education can foster people in developing and improving the quality of life to become good members of society or citizens. In line with this, there is also Law Number 20 of 2003 concerning the National Education System in Chapter II article 3. Yulianti et al. (2019: 38) states that the indicators of a nation's progress in supporting development are determined by education. Through education, humans can face and solve the problems and challenges they face. The quality of education at the primary schools, junior high schools, high schools, and colleges needs to be considered (Iskandar et al., 2019: 200).

Iskandar et al. (2019: 200) argue that Mathematics is one of the subjects in schools that has an important role in developing science and technology as basic science. However, students think mathematics is difficult to understand and becomes a "scourge" or a scary ghost (Suhartini et al., 2016: 100; Sriyanto, 2007: 7). This is because mathematics is abstract (Holisin., 2007: 45; Annisah, 2014: 1). In line with that, Lubis (2018: 253) explains that mathematics learning provided by teachers has been monotonous, not varied, and less attractive.

Based on the information, mathematics subjects are demanding, boring and students do not understand the mathematics subject matter being taught. According to students, mathematics is difficult to understand and an unpleasant lesson. Students are less enthusiastic about participating in learning. To overcome the problems faced, it is necessary to try a learning model that can involve students more actively, physically, and mentally.

Budiyanto (2016) states that the Snowball Throwing type of cooperative learning can provide students with concepts of understanding difficult material that can be used to determine the extent of students' knowledge and abilities in the material. Snowball throwing lessons train students to be more responsive to receiving messages from others and conveying these messages to their friends in a group.

Snowball Throwing is a fun, game-based learning model. Etymologically, Snowball means Snowball, while Throwing means throwing. Huda (2013: 226-227) states that Snowball Throwing is applied by throwing a wad of paper to designate students who must answer questions from the teacher. The Snowball Throwing learning model is the development of the discussion learning model. It is part of the cooperative learning model. In the context of learning. According to Suprijono (2011: 8), Snowball Throwing is a form of presenting learning materials where students are formed into several heterogeneous groups, and then each group is chosen by the group leader to get an assignment from the teacher then each student makes a question that is shaped like a ball then throws a student. Others that each student answers the questions from the balls they get.

In line with this opinion, Huda (2013: 226) states that "the Snowball Throwing learning model aims to train students to be more responsive to receiving messages from other people and conveying these messages to their group mates." It can be concluded that Snowball Throwing learning is that students are formed into groups represented by the group leader to get an assignment from the teacher. Then each student makes a question that is shaped like a ball and then distributed to other students where each student answers the questions from the balls obtained.

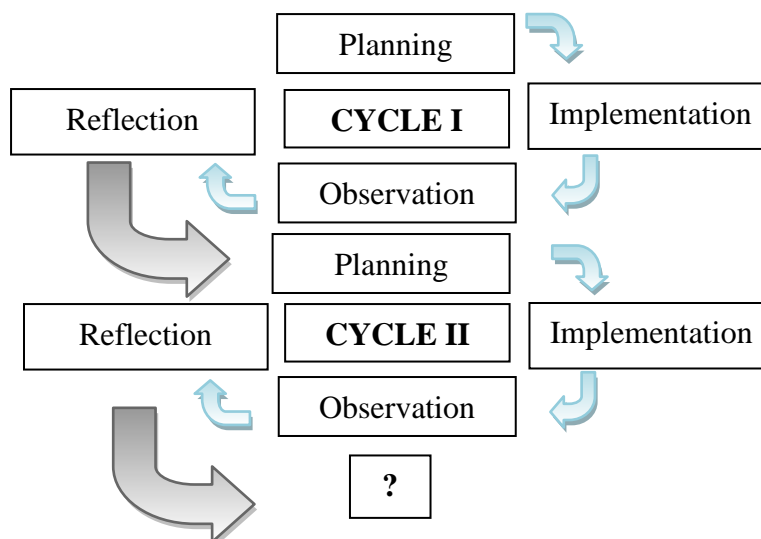
The advantages of the snowball throwing learning model, according to Suprijono (2009: 128), are:

- 1) The learning atmosphere is fun because students like playing by throwing paper balls at other students.
- 2) Students can develop thinking skills because they are allowed to ask questions and give them to other students.
- 3) Make students ready with various possibilities because students do not know what kind of questions their friends make.
- 4) Students are actively involved in learning.
- 5) Educators do not bother creating media because students are directly involved in the practice.
- 6) Learning becomes more effective.
- 7) The three aspects, namely the cognitive, affective, and psychomotor aspects, can be achieved.

Based on the discussion, there is a need for efforts to improve students' mathematics learning outcomes in solving algebraic problems by using the cooperative learning model type Snowball Throwing class VII D students of SMP Muhammadiyah 1 Mlati Odd Semester for the 2019/2020 Academic Year, so that the research carried out has the objective to determine the increase in student learning outcomes in solving algebraic problems using the Snowball Throwing type cooperative learning model in class VII D students of SMP Muhammadiyah 1 Mlati odd semester of the 2019/2020 school year.

## **METHODS**

This type of research is the Classroom Action Research (CAR), which is carried out collaboratively. Arikunto (2008: 17) says that in collaborative research, it is the teacher himself who takes action, while those who are asked to observe the ongoing process of the action are researchers and peers. Arikunto (2017: 210) argues that classroom action research in its implementation is focused on four main parts of the research phase, namely (1) planning, (2) action, (3) observation, and (4) reflection. The four stages of the research are elements that make up a cycle, namely one round of consecutive activities that return to their initial steps. Suharsimi Arikunto (2017: 42) describes classroom action research activities' systematics, as presented in the following scheme.



Source: Arikunto (2017: 42)

**Figure I.** Classroom Action Research Design

The data analysis techniques used were observation sheets, written tests, and interviews. The data obtained from the results of researchers' observations during mathematics learning with the Snowball throwing cooperative learning model's application will be analyzed using descriptive analysis. The data that has been obtained were analyzed by describing student activities that occur when mathematics learning is implemented using the Snowball Throwing type cooperative learning model in the classroom. The written test is used in collecting data, which aims to measure students' ability to solve math problems against the competencies being learned. The increase in student learning outcomes collection from the results of the test comparisons in each area. Conducted firsthand the students' condition and found a general picture of the ongoing learning and class problems. Process Triangulation of data sources is used to check the validity of the data. Triangulation of data sources was carried out by matching the data obtained, namely tests of mathematics questions, results of observation sheets, and interviews, to obtain objectivity in concluding.

**RESULTS AND DISCUSSION**

**Cycle I**

The research data is in the form of researchers' observations to determine students' math learning difficulties. The results of the observation of student learning difficulties in cycle I are as follows

**Table 1.** Observation Results of Students' Mathematics Learning Difficulties in Cycle I

No.	Indicator	Meeting 1	Meeting 2	Average
1	Difficulty in understanding the grouping process	78.12%	65.62%	71.87%
2	Difficulty in calculating operations	84.37%	49.21%	66.79%
3	Difficulty in visual perception and auditory perception	100%	94.89%	97.44%
	<b>Average</b>	87.49%	68.75%	78.12%

Table 1 shows that, on average, the percentage of students' learning difficulties in mathematics in the first cycle shows a high percentage of 78.12%. This value shows that most students still have difficulty learning algebra with the Snowball Throwing cooperative learning model.

The written test was carried out at the second meeting of the first cycle. The written test was conducted to measure the students' difficulty working on the questions after implementing the Snowball Throwing type cooperative learning model. The results of the tests that have been carried out These in table 2, while the percentage of students' abilities in solving algebraic questions can be seen in table 3.

**Table 2.** Summary of Written Test Results for Cycle I

Ability	Average	Lowest score	The highest score
Early	46.09	25	70
Cycle I	60.78	45	90

**Table 3.** Percentage of Score on Each Item in Cycle I

Problem 1	Problem 2	Problem 3	Problem 4	Problem 5
100%	65.6%	57.81%	29.69%	50.78%

The written test, held at the end of the first cycle, was attended by 32 students. The written test shows an increase in the students' initial abilities. The students' average score on the written test 1 was 60.78, with the lowest score of 45 and the highest score of 90. The average score increased from the previous score of 46.09 and then increased to 60.78. The percentage of students who completed or achieved a score of more than or equal to 65 was 43.75%, meaning that of the 32 students who took the test, only 14 students completed it. However, the class average on the written test 1 increased compared to the average student's initial ability score.

Research conducted in cycle I show that the application of the Snowball Throwing type cooperative learning model can reduce the level of difficulty of students, or it can be said that this learning method can improve learning outcomes even though it is not maximized so that there needs to be a reflection to improve and complement existing deficiencies by implementing cycle II actions. . It is hoped that cycle II class action can provide better results than cycle I. The triangulation results in cycle I obtained things about student learning difficulties, namely as follows.

- 1) Students have difficulty learning mathematics, so that students are still less active in groups.
- 2) Students still find it difficult to perform algebraic arithmetic operations.
- 3) Students still find it difficult to understand algebraic formulas and symbols.
- 4) 78.12% of Students still have difficulty learning mathematics; this can be seen in the results of student observations in cycle I.
- 5) Based on the results of the tests carried out at the end of the first cycle, there were still many students who had not fulfilled the Minimum Completeness Criteria (MCC).

## Cycle II

The research data is in the form of researchers' observations to determine students' math learning difficulties. The results of the observation of student learning difficulties in cycle I are as follows

**Table 4.** Observation Results of Student Mathematics Learning Difficulties in Cycle II

No.	Indicator	Meeting 1	Meeting 2	Average
1	Difficulty in understanding the grouping process	43.75%	18.75%	31.25%
2	Difficulty in calculating operations	41.4%	34.37%	37.88%
3	Difficulty in visual perception and auditory perception	81.25%	52.08%	66.66%
	<b>Average</b>	55.46%	36.8%	46.13%

Based on Table 4 shows that, on average, the percentage of student learning difficulties has decreased when compared to the first cycle. The percentage of student learning difficulties in the second cycle fell to 46.13%, indicating that students are increasingly helped by the Snowball Throwing type cooperative learning model.

The written test was carried out at the second meeting of cycle II. This written test was conducted to measure the students' difficulty working on the questions after implementing the Snowball Throwing cooperative learning model. The results of the tests carried out in cycle II can be seen in table 5. In contrast, the percentage of students' abilities in ic questions can be seen in table 6.

**Table 5.** Summary of Cycle II Written Test Results

Ability	Average	Lowest score	The highest score
Cycle I	60.78	45	90
Cycle II	74.38	50	95

**Table 6.** Percentage of Score on Each Item in Cycle II

Problem 1	Problem 2	Problem 3	Problem 4	Problem 5
100%	82.81%	88.28%	36.72%	64.06%

The written test, held at the end of cycle II, was attended by 32 students. It shows that the students' average score increased after the written notes in Cycle II were carried out, which increased to 74.38, which was previously only 60.78. The lowest score and the highest score also increased. The lowest value obtained was 50 (previously 45), and the highest value was 95 (previously 90). These results indicate that the researcher's learning model, namely the Snowball Throwing learning model, effectively improves student learning outcomes.

Students have followed the Snowball Throwing type cooperative learning, which was carried out in cycle II well. Based on the results of the triangulation cycle II, the following points were obtained:

- 1) Learning the Snowball Throwing method in cycle II helps students overcome algebraic learning difficulties to increase learning outcomes.
- 2) Learning with mathematics using the Snowball Throwing method makes it easier for students to understand material lessons.
- 3) Students have no difficulty in performing algebraic arithmetic operations.
- 4) At the end of the second cycle, the test results showed 83.2% of students had met the MCC.

Thus, the Snowball Throwing type of cooperative learning method helps students reduce learning difficulties to improve student learning outcomes.

## CONCLUSION

Based on the research conducted, it can be concluded that the Snowball Throwing type cooperative learning model can be used to improve the learning outcomes of class VII D students of SMP Muhammadiyah 1 Mlati odd semester of the 2019/2020 school year. This is due to learning methods. Snowball Throwing cooperative type attracts attention, enthusiasm, participation, and students' activeness in following the existing learning process. The increase in learning outcomes is due to high interest, strengthening a person's memory of what they learn.

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