

# Improved Learning Outcomes of Flat-Sided Building Materials Using the Numbered Heads Together Cooperative Learning Model for Class VIII.1 Students of SMPN 1 Sawahlunto Semester II of the 2019/2020 Academic Year

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**Abstract:-** The background of this research is the low learning outcomes of mathematics in class VIII.1 SMPN 1 Sawahlunto. The purpose of this study was to determine the increase in mathematics learning outcomes through the cooperative learning model Type Numbered Heads Together in class VIII.1 students totaling 30 people, consisting of 15 girls and 15 boys. This type of research is a classroom action research conducted in class VIII.1 SMPN 1 Sawahlunto. The technique used in data analysis is a test. The research was carried out in two cycles. Each cycle consists of planning, implementing, observing and reflecting. The results showed that the application of the numbered heads together learning model could improve student learning outcomes. In the first cycle, obtained an average of 72.00 learning outcomes, while in the second cycle, the average obtained is 79.33. Classical completeness in the first cycle is 50%, while in the second cycle the classical completeness is 80%.

**Keywords:-** Learning Outcomes, Learning Models, Numbered Heads Together.

## I. INTRODUCTION

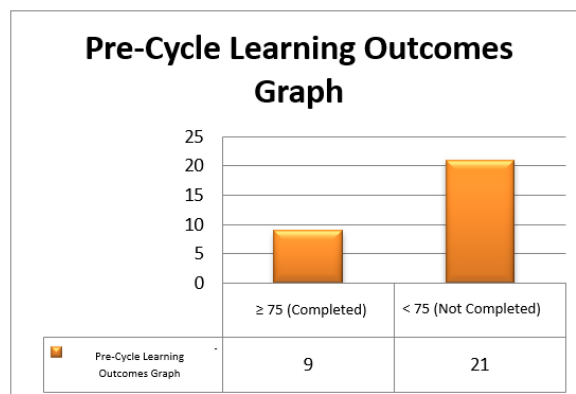
Creating effective and fun learning is the duty and responsibility of the teacher in overcoming student learning difficulties in understanding and mastering mathematical concepts. Teachers must be able to master and develop interesting learning and use the right model so that learning outcomes are achieved optimally.

Based on the BSNP Education Unit Level Curriculum, one of the objectives of learning mathematics is to communicate ideas with symbols, tables, diagrams, or other media to clarify situations or problems. In learning mathematics which is abstract in nature, it is necessary to have media that can help students so that abstract problems can become real / concrete. Therefore we need a learning model in the learning process in understanding the concept of Flat Side Building (BRSD) so that the learning outcomes achieved are very satisfying and more meaningful.

This material includes material with a high level of difficulty due to various factors, including students having difficulty imagining objects in a concrete manner. Based on the data from students' daily tests, of the 30 students there were only 9 students who achieved learning completeness (KKM = 75) with a percentage of 30%, 21 students scored less than the KKM (Minimum Completeness Criteria) with a percentage of 70%. For more details, this condition can be seen in the table and graph below.

**Table 1.** Pre-Cycle Study Result Data

No	Value	Amount	Percentage
1	$\geq 75$	9	30%
2	$< 75$	21	70%
	<b>Total</b>	<b>30</b>	<b>100%</b>



**Graph 1** Pre-Cycle Learning Outcomes

Learning objectives achieved can be seen from student learning outcomes. Low learning outcomes are related to low learning activities which can be due to conventional learning, teachers are used as the only learning source, limited time for teachers to guide all students during the learning process, lack of student interest in trying to complete their tasks, the teacher is used as a source of information on the completion of student work, if there are obstacles in completing work / assignments, students are more likely to talk to friends next door or just wait for the teacher to come to the student's table and students do not try

to solve the problems they find themselves in completing their assignments.

The implementation of learning will take place well, of course it must be supported by students as the main element in learning, a sense of need for knowledge as a source of encouragement and appropriate and pleasant learning situations so that learning activities occur. The implementation of learning is the result of the integration of several components that have their own functions in order to achieve the goals. The main characteristic of learning activities is the interaction that occurs between students and their learning environment, both with teachers, friends, tools, learning media and other learning resources.

Updates in the teaching and learning process are needed so that learning takes place more interestingly so that students can be more involved in learning activities and improve student learning outcomes. Updates that can be used by teachers are to use learning models that have never been used before. The use of the right learning model can encourage the growth of student pleasure in a lesson, so that it will increase motivation in doing assignments and make it easy for students to understand the lesson so that students can achieve good learning outcomes.

Selection of learning models that are in accordance with the material and in accordance with the conditions of students and learning objectives will make the teaching and learning process optimal. Choosing the right learning model by the teacher is expected to make students more active in seeking and building knowledge about a science.

One learning model that can improve student activity and learning outcomes is the numbered heads together learning model. The numbered heads together learning model is a learning model by assigning a number to each group member and then only designating a student who represents the group by calling the student number without first telling who will represent the group, which aims to make all students and be responsible individually or in groups. Therefore, the authors feel the need to conduct research on "Improving Learning Outcomes of Flat-Side Building Material Using the Numbered Heads Together Cooperative Learning Model for Class VIII.1 Students of SMPN 1 Sawahlunto Semester II of the 2019/2020 Academic Year."

#### ➤ *Numbered Heads Together Cooperative Learning Model*

Meaningful learning should be able to encourage students to be able to develop their knowledge and skills. This can be done through the application of cooperative learning models. according to Slavin (2007: 4), cooperative learning is a learning model that divides students into heterogeneous small groups with 4-6 members.

Etin Suratin (2007: 4) the definition of cooperative learning is an attitude or behavior that is manifested in activities of working together or helping between others in a group and members of two or more people in an effort to achieve group success.

Cooperative learning is learning that is carried out by suppressing student activity in groups. The implementation of cooperative learning will encourage open interaction in the learning group. According to Made Wena (2009: 189), the basic principle of cooperative learning is that students form small groups and teach each other to achieve common goals. Thus students are able to be a source of learning for other friends.

Isjoni (2016: 62-63), cooperative learning emphasizes group collaboration to achieve common goals. Cultivation of cooperative skills is essential. These skills include respecting other people's opinions, encouraging participation, courage to ask questions, encouraging friends to ask questions, taking turns and sharing tasks.

Based on some of the above definitions, it can be concluded that cooperative learning is an activity carried out together or in groups of 4-6 people, by paying attention to the basic principles of cooperation so that common goals are achieved. The success of learning from groups depends on the abilities and activities of members groups, both individually and in groups.

#### ➤ *Elements of Cooperative Learners*

Cooperative learning has elements that are interrelated. According to Made Wena (2009: 190-191) the elements of cooperative learning are:

##### *1. Positive Interdependence*

Teachers are required to be able to create a learning atmosphere that encourages students to need each other to achieve learning goals.

##### *2. Face to face interaction*

In cooperative learning, all group members interact directly for discussion. Group members respect each other's differences, take advantage of their strengths, and fill in each other's shortcomings so that it will enrich knowledge among group members.

##### *3. Individual Accountability*

In completing group assignments, each member has a task with a burden on his own responsibility. Each student must be responsible for the maximum assignment of learning materials, because group learning outcomes are based on the average value of group members. Thus, it is hoped that it will be able to foster responsibility for each individual.

##### *4. Interpersonal Relationship Skills*

Good communication between group members will determine the success of the group. Each member of the group needs to learn to listen to the opinions of other members and respect their opinions. The opinions of group members are accommodated and then discussed together.

These learning elements are a fundamental right in the implementation of cooperative learning. If these elements can be implemented, the learning will run optimally.

➤ *Definition of Cooperative Learning type Numbered Heads Together (NHT)*

Numbered Heads Together Cooperative Learning is a type of cooperative learning that emphasizes special structures designed to influence student interaction patterns in order to increase academic mastery. This type was developed by Kagen (2000: 12) which involves students in studying the material covered in a lesson and checking their understanding of the content of the lesson. Kagen stated that this technique provides opportunities for students to share ideas with each other and consider the most appropriate answers. Apart from that, this technique also encourages students to increase their cooperation.

According to Muslim Ibrahim (2000: 24), teachers use a four-step structure of cooperative learning type Numbered Heads Together as follows:

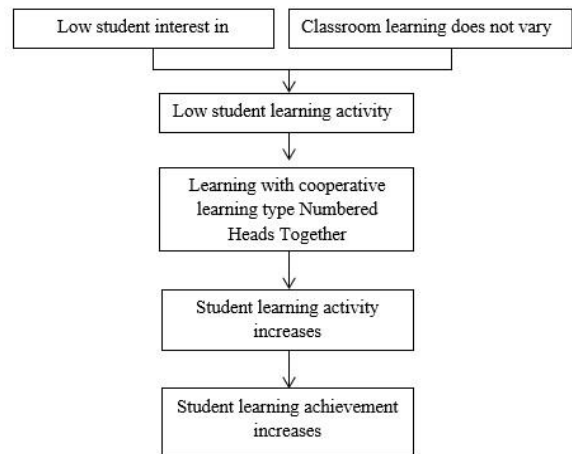
- Step 1: The teacher divides the students into groups of 3-5 people, and each member of the group is given a number between 1 and 5.
- Step 2: The teacher asks students a question. Questions can vary from specific to general
- Step 3: Students pool their opinions on the answer to the question, and make sure each member of the team knows the answer.
- Step 4: The teacher calls a specific number, then the student whose number matches raises their hand and tries to answer the questions for the whole class.

➤ *Framework for thinking*

In the conventional learning model the teacher plays a more active role in the classroom. Learning activities are often centered on teacher activities. This makes students passive, bored in following lessons and makes student activities less effective such as asking questions, expressing opinions, discussing, communicating, and so on. These learning problems will have an impact on poor learning outcomes for students, so that this problem needs to be found a solution.

The expected learning process, the teacher should act as a facilitator, while students are more active in participating in learning to construct their own knowledge. Teachers need to solve problems, namely by creating an optimal learning atmosphere by implementing various student-centered learning models (student center), so students will be more active in following lessons.

Based on the above conditions, it is necessary to solve the problem by applying the Numbered Heads Together cooperative learning model. After taking these actions, it is expected that student learning activities will increase, which is accompanied by an increase in student learning outcomes. The frame of mind is shown in the following scheme.



**Picture 1**

*Chart of Thinking Framework Implementation of Numbered Heads Together Cooperative Learning Model*

**II. RESEARCH METHOD**

The research was carried out at SMPN 1 Sawahlunto, Lembah Segar District, Sawahlunto City. This research was conducted in class VIII.1 SMPN 1 Sawahlunto. The time used in this classroom action research is for 3 months, from mid-January to mid-April, semester II of the 2019/2020 academic year. The subjects of this study were students of class VIII.1 SMPN 1 Sawahlunto for the 2019/2020 academic year, totaling 30 people. Consisting of 15 boy and 15 girl.

The data obtained from this study are primary data. Primary data is data obtained directly from research subjects, namely data from class VIII.1 SMPN 1 Sawahlunto in the form of evaluation results, student activity data in the implementation of learning, and teacher performance data during the implementation of learning.

Data collection techniques based on the form of data to be obtained. The research data were collected using the following techniques:

1. The test

The tests carried out are the initial test and the test at the end of each cycle. The test is conducted to obtain information about the improvement of student learning outcomes after taking action. In addition, the test is also needed for the purposes of analysis and formulating the results of reflection for further action, while the data collection tool used is in the form of items related to the BRSD material.

2. Non Test

The non-test technique used in this study is an observation sheet, which aims to observe teacher and student activities during learning activities. This is done to determine the consistency between the plan and the implementation of the action, as well as to assess the extent to which actions can produce the desired changes. The tool used is the observation sheet.

Student activity data is processed using a quantitative approach in the form of a percentage, with the formula:

$$P = F / N \times 100\% \tag{1}$$

Information :

P = the percentage of active students

F = The number of students who are active in learning

N = Total number of students.

After knowing the percentage of student activity, then the data is interpreted into the guidelines for interpreting learning activities as follows:

**Table 2: Interpretation of student learning activities**

No	Score	Interpretation
1	81% - 100%	Very Good (VG)
2	61% - 80%	Good (G)
3	41% - 60%	Enough (E)
4	21% - 40%	Less (L)
5	0 % - 20	Very Less (VL)

Analysis of the data used for learning outcomes, by comparing the test scores of the initial conditions, with the test scores according to cycle I and cycle II. As for how to analyze the test results or final score of each student, it is used with the following formula:

$$X = (\text{score obtained}) / (\text{Total score}) \times 100 \tag{2}$$

Based on the learning outcome data, the analysis was continued by grouping students into the value intervals and predicates set by SMPN 1 Sawahlunto, the one KKM model for all subjects. The KKM set is 75. Therefore the value interval and the predicate also have one measure. The value and predicate intervals are determined by the formula:

$$(\text{Maximum Value-KKM Value}) / 3 = (100-75) / 3 = 8.3$$

So the length of the interval is 8 or 9, then entered into the predicate values A (very good), B (good), C (enough), and D (poor). Based on the results of the interval determined by the predicate as in the table below:

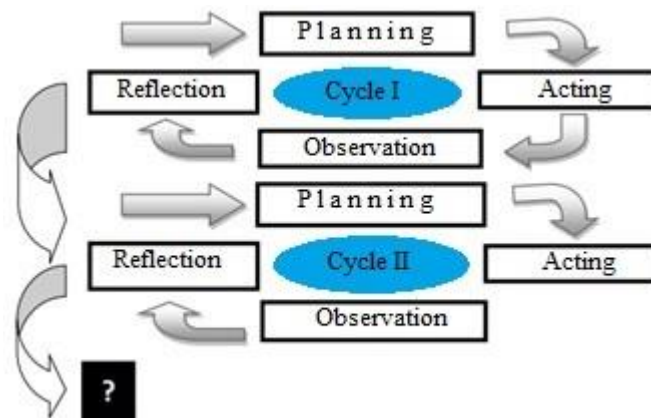
**Table 3. Value Inteval and Predicate**

No	Value Interval	Predicate	Information
1	93 -100	A	Very good
2	84 - 92	B	Good
3	75 - 83	C	Enough
4	< 75	D	Less

The indicator of the success of this action is 80% of the total number of students achieving complete learning outcomes or reaching the predetermined KKM, which is 75 and student activities are at least Good.

The research procedure is the activity steps carried out during the research. This classroom action research is planned to be carried out in 2 (two) cycles, each cycle consisting of four components, (1) planning, (2) action, (3)

observation, (4) reflection. For more details, there are in the image below.



**Picture 2.**

*Classroom Action Research Design Model Kemmis & Mc Taggart*

This research is a Classroom Action Research (CAR) in the field of Mathematics with regard to the improvement or enhancement of the learning process in class VIII.1 SMP Negeri Sawahlunto by using the Numbered Heads Together cooperative learning model.

This research activity was carried out in two cycles (Cycle I and II). Each meeting was held 2 times with the following stages: Cycle I consists of planning, implementing, observing, and reflecting. Then continued with cycle II with the same stages as cycle I. At face to face in class, the stages carried out are implementation and observation. The planning and reflection stages are carried out outside the face-to-face meeting schedule. The study duration was planned for three months.

**First Cycle**

*1. Action Planning (Planning)*

Activities carried out at the action planning stage are:

- Choosing basic competencies, indicators and materials.
- Make a learning cycle implementation plan according to the Numbered Heads Together learning model.
- Make student activity observation sheets and activities.
- Compiling test questions.
- Contacting the parties needed for the implementation of the research, including the principal and fellow professionals as observers and observers.
- Determine the time for implementing the learning.

*2. Acting*

- Preliminary activities begin with motivation and perceptions in accordance with the learning scenario in the lesson plan.
- At the research implementation stage, the mathematics learning process was carried out using the Numbered Heads Together learning model.
- The closing activity, under the guidance of the teacher, students conclude to reflect on learning activities and carry out tests.



### 3. Observation (Observation)

The observation stage was carried out by the observer to observe the learning process carried out by students and teachers using the Numbered Heads Together learning model with a plan that had been made. Observations are made using the observation sheet that has been compiled by the researcher.

In this study, the observed aspects consisted of: (a) Observation of student activities. (b). Observation of teacher activities

### 4. Reflection (Reflection)

Reflection is carried out after the learning activity is carried out. In this activity, the author and colleagues observe the observation sheets and the learning outcomes carried out, then carry out a discussion about the shortcomings and the implementation of the learning that has been done, to make improvements to learning activities. The results of reflection are used as input for corrective action in the next cycle.

#### ➤ Second Cycle

##### 1. Action Planning (Planning)

Based on the results of reflection in cycle I, the researcher prepared an action plan in cycle II which was outlined in the lesson plan. Action planning is directed at improving mathematics learning outcomes using the Numbered Heads Together learning model.

##### 2. Acting

The implementation of actions carried out in cycle II includes preliminary activities, core activities, and closing activities. Each activity carried out is the same as the implementation of the action in cycle I, but the implementation is further enhanced according to the results of the reflections in cycle I

##### 3. Observation (Observation)

The observation stage was carried out by the observer to observe the learning process carried out by the teacher

using the Numbered Heads Together learning model in accordance with the planning that had been made. Observations are made during the learning process. Observation activities are carried out with the intention of actions that occur during implementation in class to be recorded, either those that have been planned or according to those that occur outside of planning. Observations were made regarding student activities as well as teacher activities using observation sheets that had been prepared the same as cycle I. Observations were made by the observer based on the observation sheets provided. The observations made include observing the appearance of students and observing the appearance of the teacher.

##### 4. Reflection (Reflection)

At this stage, researchers and observers analyze, interpret and conclude the results and impacts of actions based on data from observations and student performances and observations of teacher performance as supporting data that they have done well and correctly learning using peer tutor methods and student learning outcomes as marker of the success of the action taken.

The data is arranged in a logical, sequential, and orderly manner so that it is meaningful. Learning data starting from the pre-cycle, cycle I and II were compared, then analyzed whether there was an increase in learning outcomes.

## III.RESULTS

### Cycle I Results

Observations made include observations of student activities and observations of the teacher's appearance. The following describes the results of each observation.

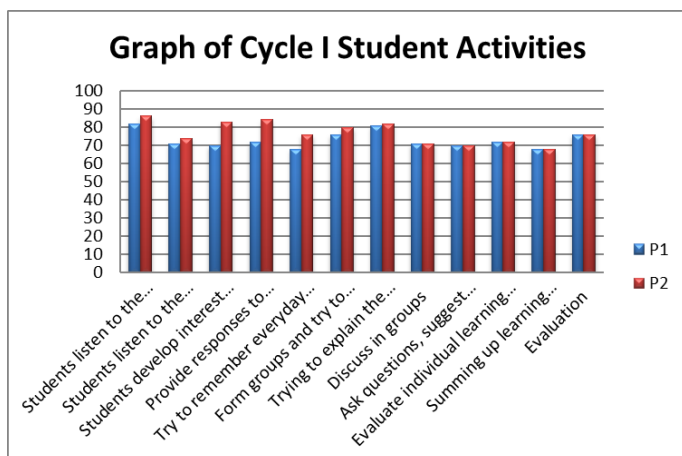
#### a) Results of Observation of Student Activities

The results of observations of student activities in meeting I and meeting II in cycle I can be seen in the table and graph below.

**Table 4 Results of Observation of Cycle I Student Activities**

No.	Activities	Cycle I		Average	Percentage	Category
		P1	P2			
1	Students listen to the teacher's explanation about the learning objectives	82	86	84	70.00	B
2	Students listen to the teacher's explanation about the learning model used	71	74	72.5	60.42	C
3	Students develop interest or curiosity about the topic discussed	70	83	76.5	63.75	B
4	Provide responses to teacher questions	72	84	78	65.00	B
5	Try to remember everyday experiences and relate to the learning topics discussed	68	76	72	60.00	C
6	Form groups and try to work in groups	76	80	78	65.00	B
7	Trying to explain the concepts found	81	82	81.5	67.92	B
8	Discuss in groups	71	71	71	59.17	C
9	Ask questions, suggest solutions, make decisions, conduct experiments, and observe.	70	70	70	58.33	C
10	Evaluate individual learning progress by asking open-ended questions and looking for answers using observations,	72	72	72	60.00	C

	evidence, explanations, obtained previously					
<b>11</b>	Summing up learning outcomes	68	68	68	56.67	C
<b>12</b>	Evaluation	76	76	76	63.33	B



Based on the table and graph of the results of the observation of student activities in the implementation of mathematics learning using the Heads Numbered Together model, it is known that of the 12 indicators observed, 6 indicators are sufficient category, 6 indicators are good category. Aspects that are categorized sufficient should need to be improved in the next cycle.

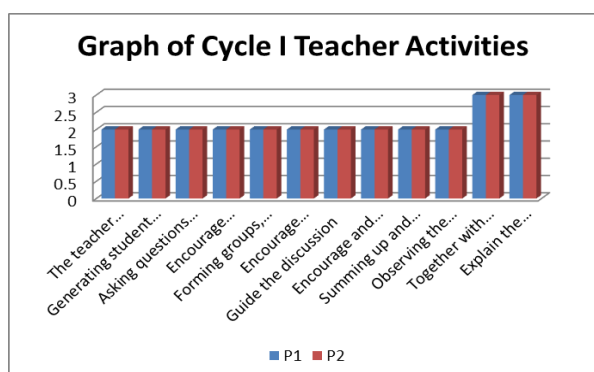
**b) Results of Teacher Appearance Observation**

The results of observing the teacher's performance at meetings I and II in cycle I can be seen in the table and graph below.

**Graph 2** Graph of Student Activity Recapitulation in Cycle

**Table 5.** Observation Results of Cycle I Teachers

No	Activities	Cycle I	
		P1	P2
1	The teacher explains the learning objectives and the learning model used	2	2
2	Generating student interest and curiosity	2	2
3	Asking questions about factual processes in everyday life related to the topic discussed	2	2
4	Encourage students to remember their daily experiences and show how they relate to the learning topic being discussed	2	2
5	Forming groups, provides the opportunity to work together with small groups independently	2	2
6	Encourage students to explain concepts in their own sentences	2	2
7	Guide the discussion	2	2
8	Encourage and facilitate students to apply concepts / skills in new / other settings	2	2
9	Summing up and evaluating learning	2	2
10	Observing the knowledge or understanding of students in terms of applying new concepts	2	2
11	Together with students conclude learning outcomes	3	3
12	Explain the learning objectives of the next meeting and evaluation	3	3
	<b>Total score</b>	<b>26</b>	<b>28</b>
	<b>Percentage</b>	<b>54.17</b>	<b>58.33</b>
	<b>Average</b>	<b>56,25</b>	
	<b>Category</b>	<b>C</b>	



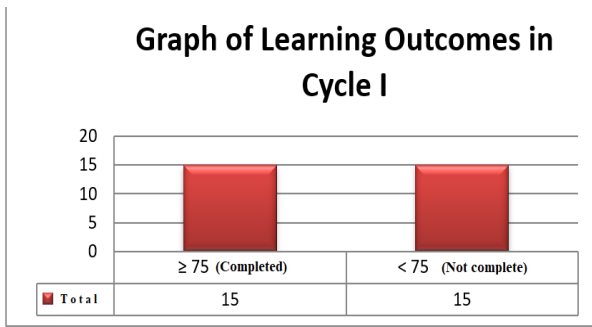
**Graph 3** Graph of Teacher Appearance Recapitulation in Cycle I

**c). Evaluation Results Cycle I**

After observing the implementation of the action in cycle I, an assessment of the students was carried out. The results of the evaluation or assessment show that of the 30 students of class VIII.1 SMP Negeri 1 Sawahlunto who participated in the evaluation, there were 15 people (50%) who got the same or more score than the KKM ( $\geq 75$ ), and 15 people (50%) got the grade. under the KKM. The following shows the results of the assessment in the form of a range of values in table 6 and graph 4. below.

**Table 6.** Data on Learning Outcomes of Cycle I

No	Score	Total	Percentage
1.	$\geq 75$	15	50%
2.	$< 75$	15	50%
		<b>30</b>	<b>100%</b>



**Graph 4. Learning Outcomes in Cycle I**

➤ *Reflection Cycle I*

At the end of the implementation, observations and tests in cycle I, researchers and observers reflect. The results of reflection are used as input and improvement in planning learning activities in cycle II.

Based on the results of observations of learning activities by observers during cycle I and evaluation or learning outcomes test at the end of the cycle, the results of the reflection are as follows: (a). Not all of the plans for

learning activities carried out in cycle I were in accordance with the Heads Numbered Together learning model. (b). Based on the test results at the end of the cycle, 50% of students had not reached the KKM, still far from the expected target of completing 80% classically.

Based on the results of reflection in cycle I, it is necessary to make some improvements in cycle II, namely: (a). In the initial activities of implementing learning, the teacher needs to explain again about the Heads Numbered Together learning model to students. (b). Explain the implementation of the evaluation to students.

➤ *Cycle II Results*

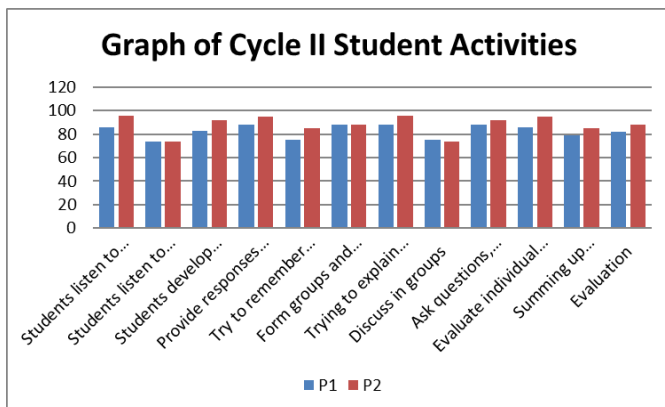
Observations made include monitoring student activities and observing teacher performance. The following describes the results of each observation.

**a) Student Activity Observer Results**

The results of observing student activities in meetings 1 and 2 in cycle II can be seen in the tables and graphs below.

**Table.7 Results of Observation of Cycle II Student Activities**

No.	Activities	Cycle I		Average	Percentage	Category
		P1	P2			
1	Students listen to the teacher's explanation about the learning objectives	86	96	91	75.83	B
2	Students listen to the teacher's explanation about the learning model used	74	74	74	61.67	B
3	Students develop interest or curiosity about the topic discussed	83	92	87.5	72.92	B
4	Provide responses to teacher questions	88	95	91.5	76.25	B
5	Try to remember everyday experiences and relate to the learning topics discussed	75	85	80	66.67	B
6	Form groups and try to work in groups	88	88	88	73.33	B
7	Trying to explain the concepts found	88	96	92	76.67	B
8	Discuss in groups	75	74	74.5	62.08	B
9	Ask questions, suggest solutions, make decisions, conduct experiments, and observe.	88	92	90	75.00	B
10	Evaluate individual learning progress by asking open-ended questions and looking for answers using observations, evidence, explanations, obtained previously	86	95	90.5	75.42	B
11	Summing up learning outcomes	79	85	82	68.33	B
12	Evaluation	82	88	85	70.93	B



**Graph 5. Observation of Student Activities in Cycle II**

**b). Teacher Appearance Observer Results**

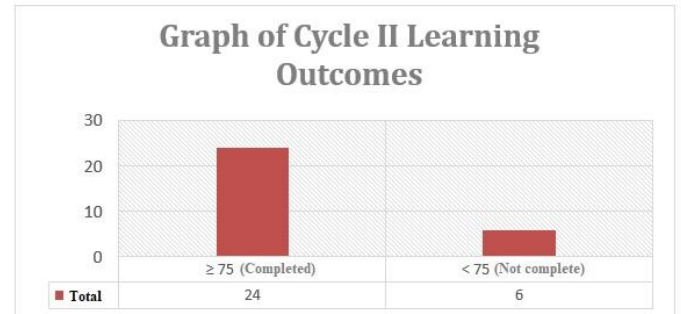
**Table 8. Graph of Cycle II Teacher Activities**

No	Activities	Cycle I	
		P1	P2
1	The teacher explains the learning objectives and the learning model used	3	4
2	Generating student interest and curiosity	3	3
3	Asking questions about factual processes in everyday life related to the topic discussed	2	3

4	Encourage students to remember their daily experiences and show how they relate to the learning topic being discussed	2	3
5	Forming groups, provides the opportunity to work together with small groups independently	3	3
6	Encourage students to explain concepts in their own sentences	2	2
7	Guide the discussion	3	3
8	Encourage and facilitate students to apply concepts / skills in new / other settings	2	2
9	Summing up and evaluating learning	3	3
10	Observing the knowledge or understanding of students in terms of applying new concepts	2	3
11	Together with students conclude learning outcomes	3	3
12	Explain the learning objectives of the next meeting and evaluation	3	3
<b>Total score</b>		<b>31</b>	<b>35</b>
<b>Percentage</b>		<b>64,5</b>	<b>72,9</b>
		<b>8</b>	<b>2</b>
<b>Average</b>		<b>68.75</b>	
<b>Category</b>		<b>B</b>	

**Table 9. Data on Learning Outcomes in Cycle II**

No	Score	Total	Percentage
1.	≥ 75	24	80%
2.	< 75	6	20%
		<b>30</b>	<b>100%</b>

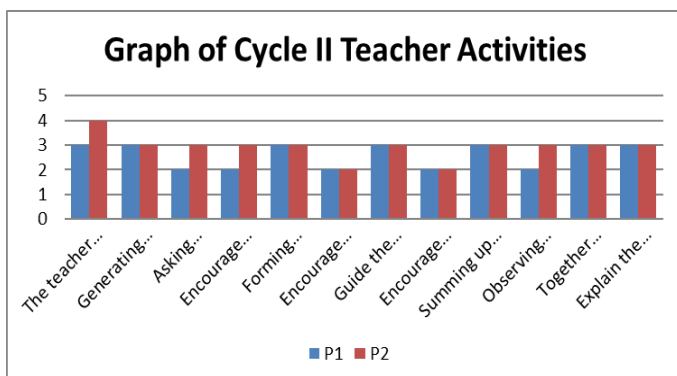


**Graph 7. Student Learning Outcomes in Cycle II**

#### IV. DISCUSSION

##### 1. Student Activities / Student Activities

Student activities carried out in the implementation of learning, between cycle I and cycle II, there are several differences. Differences in student activity can be seen from the following graphs regarding the recapitulation of student activities in cycle I and cycle II.



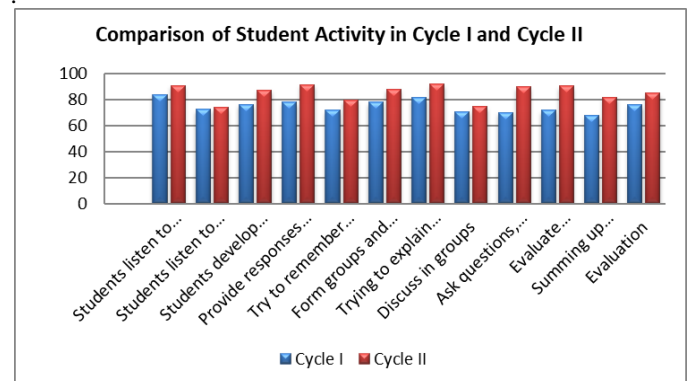
**Graph 6. Teacher Activities Cycle II**

Based on the observations of the teacher's performance in cycle II, it is known that the qualifications of the activities are good.

##### c). Results of Cycle II Evaluation

After observing the implementation of the action in cycle II, an assessment of the students was carried out. The results of the evaluation or assessment show that of the 30 students in class VIII.1 SMP Negeri 1 Sawahlunto who participated in the evaluation, there were 24 people (80.00%) who achieved grades equal to or more than the KKM (≥ 75), and 6 people (20%) get a score below the KKM.

The following shows the results of the assessment in the form of a range of values in 9 below



**Graph 8: Recapitulation of Student Activities in Cycle I and Cycle II**

Based on the graph above, it can be concluded that from the observed aspects, some aspects of qualification were sufficient in cycle I, after several changes in action were made in cycle II, several aspects of qualification had improved and overall students were actively involved in learning with good qualifications.

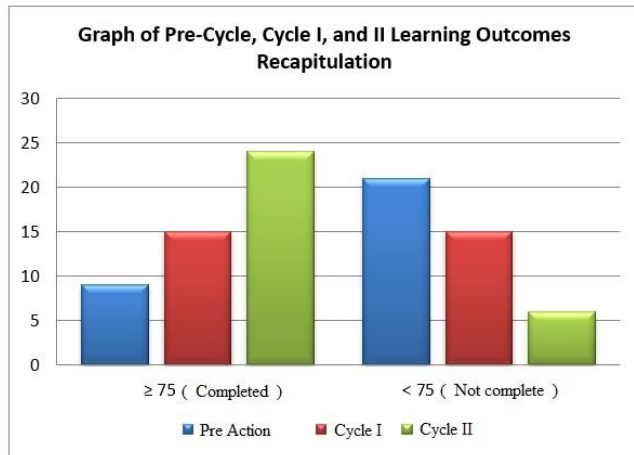
##### ➤ Learning outcomes

Based on the results of tests conducted on students, starting from pre-cycle, cycle I and ending with cycle II, it shows that there is a tendency to increase student learning outcomes, this can be seen from table 10. recapitulation of differences in student learning outcomes below.



**Table 10.** Recapitulation of Differences in Pre-Cycle, Cycle I, and II Learning Outcomes

No		Pre action	Cycle I	Cycle II
1	≥ 75	9	15	24
2	< 75	21	15	6
	<b>Total</b>	<b>30</b>	<b>30</b>	<b>30</b>



**Graph 9.** Recapitulation of Pre-Cycle, Cycle I, and II Learning Outcomes

From tables and graphs of differences in learning outcomes, starting from pre-cycle, cycle I and cycle II, there is an increase in learning outcomes. In the pre-cycle, out of 30 students of class VIII.1, 9 students achieved the KKM score, the highest score was 90 and the lowest score was 60, with an average of 68.33, classical completeness 30%. In the first cycle, students who achieved the minimum score of achieving the KKM were 15 people, the highest score was 90 and the lowest score was 40, with an average classical completeness of 50%. In the second cycle, students who achieved the KKM score were 24 people, the highest score was 100 and the lowest score was 60, with an average of 79.33, classical completeness of 80%. From the description of the results above, it can be concluded that learning mathematics using the Numbered Heads Together learning model can improve student learning outcomes.

The research findings that have been described above are used as a starting point in conducting further studies on why the Numbered Heads Together learning model can improve the mathematics learning outcomes of grade VIII.1 students of SMP Negeri 1 Sawahlunto.

The results of hypothesis testing show that the Numbered Heads Together learning model can improve mathematics learning outcomes in class VIII.1 SMP Negeri 1 Sawahlunto Semester II Academic Year 2019/2020. and 50% classical completeness, while in the second cycle an average of 79.33 was obtained with 80% classical completeness. In addition to increasing learning outcomes, this is accompanied by an increase in student learning activities. In cycle I, of the 12 observed indicators, 6 indicators received sufficient qualifications and 6 indicators

received good qualifications, overall the qualifications of student learning activities were sufficient. In cycle II, student learning activities have increased with good qualifications. Based on the results of the action obtained, it proves that the Numbered Heads Together learning model can increase student learning activities.

## V. CONCLUSION

Based on the results of data analysis on the implementation of Classroom Action Research (PTK) that the researcher has carried out in cycle I and cycle II in class VIII.1 SMP Negeri 1 Sawahlunto even semester of the 2019/2020 school year in mathematics through the Numbered Heads Together learning model, it can be concluded that that:

- 1). There was an increase in student learning outcomes from cycle I to cycle II. In the first cycle obtained an average learning outcome of 72.00 with a percentage of 50% completeness. In the second cycle, an average of 79.33 was obtained with a percentage of 80% completeness. When compared between cycle I and cycle II there was an increase in the percentage of completeness by 30%.
- 2). Student learning activities from cycle I to cycle II also increased. Student learning activities in cycle I, of the 12 observed indicators, 6 indicators of sufficient qualification and 6 indicators of good qualifications, but in cycle II, all observed indicators are well qualified.
- 3). The teacher's appearance, in cycle I with sufficient qualification, there was an increase in cycle II who overall were well qualified.

Overall the results of this classroom action research indicate that the results of learning mathematics using the Numbered Heads Together learning model are higher than those before using the Numbered Heads Together learning model. Therefore it is necessary to recommend using the Numbered Heads Together learning model not only in mathematics subjects, but also in other learning, as well as the need to select and apply various learning models in accordance with the differences in student character so that the application of the learning model runs effectively from the results. student learning can be improved.

Suggestions that can be given include: (1). Mathematics teachers should be more active in utilizing learning models that can make students active in learning, so that learning is more meaningful. (2). For schools, the Numbered Heads Together learning model can be considered as a learning model that can be applied in learning at school. (3). Students are expected to be active in learning activities so that learning outcomes can be maximized.

**REFERENCES**

- [1]. Agustina, D. R., & Deswita, H. (2017). Pengaruh Model Pembelajaran Kooperatif Tipe Numbered Heads Together (Nht) Terhadap Hasil Belajar Matematika Siswa Kelas Viii Smp Negeri 1 Rambah Samo. *Jurnal Ilmiah Mahasiswa FKIP Prodi Matematika*, 2(2).
- [2]. Arsyad, Azhar. 2006. *Media Pembelajaran*. Jakarta : Rineka Cipta
- [3]. Gora, Winastwan dan Sunarto. 2010. *Pakematik Strategi Pembelajaran Inovatif Berbasis TIK*. Jakarta : PT Elex Media Komputindo. Hartono.
- [4]. Gulo, W. 2002. *Metode Penelitian*. Jakarta : PT Grasindo
- [5]. Hakim, Thursan. 2005. *Belajar Secara Efektif* . Jakarta : Puspa Suara.
- [6]. Hapsari, A. E. (2017). Penerapan Model Pembelajaran Kooperatif Tipe Numbered Heads Together Berbantuan Media Interaktif Untuk Meningkatkan Aktivitas dan Prestasi Belajar Siswa. *Scholaria: Jurnal Pendidikan dan Kebudayaan*, 7(1), 1-9.
- [7]. Isjoni. 2016. *Cooperatif Learning*. Bandung : Alfabeta
- [8]. Leasa, M., & Corebima, A. D. (2017, January). The effect of numbered heads together (NHT) cooperative learning model on the cognitive achievement of students with different academic ability. In *Journal of Physics: Conference Series* (Vol. 795, No. 1, p. 012071). IOP Publishing.
- [9]. Made Wena. 2009. *Strategi Pembelajaran Inovatif Kontemporer Suatu Tinjauan Konseptual Operasional*. Jakarta : Bumi Aksara
- [10]. Maman, M., & Rajab, A. A. (2016). The Implementation of Cooperative Learning Model" Number Heads Together"(" NHT") in Improving the Students' Ability in Reading Comprehension. *International Journal of Evaluation and Research in Education*, 5(2), 174-180.
- [11]. Martinis Yaman. 2007. *Kiat Membelajarkan Siswa* . Jakarta : Gaung Persada Press dan Center
- [12]. Nana Sudjana. 2006. *Penilaian Hasil Proses Belajar Mengajar*. Bandung: PT Rosdakarya Offset
- [13]. Nur, M. I., & Salam, M. (2017). Pengaruh Penerapan Model Pembelajaran Kooperatif Tipe Numbered Heads Together (NHT) Terhadap Hasil Belajar Matematika Siswa Kelas Vii Smp Negeri 1 Tongkuno. *Jurnal Penelitian Pendidikan Matematika*, 4(1), 99-112.
- [14]. Razak, F. (2016). The effect of cooperative learning on mathematics learning outcomes viewed from students' learning motivation. *JRAMathEdu (Journal of Research and Advances in Mathematics Education)*, 1(1), 49-55.
- [15]. Slameto. 2010. *Belajar dan Faktor-Faktor yang Mempengaruhinya*. Jakarta : PT. Rineka Cipta
- [16]. Slavin. Robert E. 2007. *Cooperative Learning Teori, Riset dan Praktik* . Bandung: Nusa Media
- [17]. Solihatin, Etin dan Raharjo. 2007. *Cooperative Learning Analisis Model Pembelajaran IPS*. Jakarta : Bumi aksara