

IMPLEMENTATION OF THINK PAIR SHARE (TPS) LEARNING STRATEGIES TO IMPROVE STUDENTS' MATHEMATICAL COMMUNICATION SKILLS ON INTEGER MATERIALS IN CLASS VII SMP NEGERI 1 TIGABINANGA 2014/2015 ACADEMIC YEAR.

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ABSTRACT

The type of research used in this research is classroom action research where action research is research that has the aim of improving the quality of learning in the classroom so that there are improvements in the classroom. The purpose of this study was to improve students' mathematical communication skills in learning integer material through Think Pair Share (TPS) learning strategies. The subjects of this study were class VII students of SMP Negeri 1 Tigabinanga for the academic year 2014/2015 Class VII-1 with a total of 38 students. In accordance with this type of research, this research has several stages which are cycles. Based on the results of the research presented in Chapter IV, conclusions can be drawn that learning by applying the Think Pair Share (TPS) strategy can improve students' mathematical communication skills seen from the increase in the average test results of students in cycle I and cycle II. The results of the student's mathematical communication ability test in the first cycle obtained an average score of 2.51 with a student's mathematical communication ability level of 60.52% or a low category. In the second cycle, the average score of the students' mathematical communication ability test reached 2.91 with the students' mathematical communication ability level of 84.21% or the medium category. This means that the Think Pair Share (TPS) learning strategy can improve students' mathematical communication skills, especially on integer material in class VII SMP Negeri 1 Tigabinanga academic year 2014/2015.

1. INTRODUCTION

Mathematics is a science that has a big role in the development of modern technology and continues to grow from time to time. This very large role has been felt by almost all levels of society in general. The development of science and technology (IPTEK) is very dependent on the development of education and teaching in schools, especially mathematics education, mathematics must be used as one of the subjects taught starting from elementary schools, middle schools to universities as a whole in order to produce human resources. Humans (HR) who are reliable and able to compete globally. For this reason, high order thinking is required, namely thinking logically, critically, and being able to work together and communicate proactively.

Since the application of mathematics is very large, mathematics should be a fun and interesting subject, so that it can increase the desire and enthusiasm of students in learning it. This increased desire and enthusiasm will be able to establish mathematical communication among students, so as to improve students' mathematics learning outcomes and share aspects that need to be developed in the mathematics learning process.

However, the reality that is often found in the field is that there are often criticisms and highlights about the low quality of education by the public aimed at educational institutions, as well as educational teachers, especially mathematics teachers because most student does not pass a math subject every National Examination (UN) which is criticized openly through the print media and electronic media.

This low mathematics learning outcome has also been revealed in the ranking of Trends In Mathematics and Source Study (TIMSS) (2013): "Students' ability in mathematics is ranked 63 out of 65 countries. This shows that the quality of Indonesian education, especially in learning mathematics is still low. So far, Indonesia has not been able to escape from the bottom line. Some mathematicians at school are feared and even hated by students."

Therefore, mathematics education as an internal part of the school curriculum has great potential to play a strategic role in preparing reliable and globally sustainable Human Resources (HR). Based on the results of observations that have been made, there is a fact that students are not able to understand the concept of the material, resulting in a misperception. The next problem is that students are less interested in answering questions from their teacher, students prefer to talk to their friends. Some students who know the answer prefer to be silent, but there are also students who are able to answer questions from the teacher. All of these student actions are facts that show students' interest in the learning process which is still low.

In addition, the researchers also conducted an initial test for class VII-1 students with as many as three questions. Of 38 students there were only 12 people who had good communication skills because they were able to explain, draw, and represent the questions clearly while 26 people were still low because they were unable to explain, describe and represent the problem. This shows that students' mathematical communication skills are still low in solving problems.

To overcome problems in the mathematics learning process in schools, teachers need new breakthroughs in improving students' mathematical communication skills such as by using new learning strategies, wherein this new breakthrough material needs to be packaged properly and more attractively so that students more easily understand the lessons conveyed by the teacher. The teacher, according to Arenawa (2011): "The dominance of the teacher causes students to be passive because students are less able to express their opinions even in solving math problems or problems, students are rarely asked to express their reasons and explain verbally and in writing why they get answers. so that they are less accustomed to concluding the material that has been studied systematically.

Learning mathematics that does not involve students actively will cause students not to be able to use their mathematical communication. One of the lessons that can improve intellectual quality and a better life is meaningful mathematics learning. Students not only learn to know something but also learn to understand the existing problems. The task and role of the teacher are no longer as a provider of information (knowledge transfer), but as a driver of student learning (stimulation learning) so that they can construct their own knowledge through various activities such as problem-solving, reasoning, and communication.

In the process of learning mathematics, there are several cooperative learning strategies that can be used, one of which is the Think Pair Share (TPS) learning strategy. Lyman, F (in Trianto, 2011: 81) states that: "Think Pair Share (TPS) is an effective way to make variations in the atmosphere of class discussion patterns. Assuming that all discussions require arrangements to control the class as a whole, the procedures used in Think Pair Share (TPS) can give students more time to think, respond and help each other. So it can be formulated that Think Pair Share (TPS) is a class discussion pattern that requires students to be more active in thinking and responding and helping each other. Meanwhile, according to Arends (in Ansari, 2009:62): "The Think Pair Share (TPS) learning strategy (exchange ideas in pairs) is an effective cooperative learning structure to improve students' thinking power. This is possible because the procedure has been structured in such a way that it can give students more time to think and respond as a way to encourage student participation.

From the description above, it can be concluded that the Think Pair Share (TPS) learning strategy is a learning strategy that is able to help students find and more easily understand mathematics learning materials because their mathematical communication skills will be more motivated in this learning strategy and also because, with the use of this learning strategy, students will be more open to communicating with their peers. Think Pair Share (TPS) strategy can develop students' thinking and integrate cognitive and social aspects in learning and can provide open opportunities for students to speak and express their own ideas and motivate students to engage in conversation in class.

In accordance with this, the Think Pair Share (TPS) learning strategy is a learning strategy that is able to improve students' mathematical communication skills and is able to improve students' ability to understand the concepts that have been given by the teachers of their field of study, as well as being able to stimulate students' desire to express an opinion in class. Therefore, it is hoped that this learning strategy will be able to improve mathematical communication skills.

A. Definition of Mathematical Communication

A number of experts have defined the understanding, principles, and standards of mathematical communication. NCTM (in Ansari, 2009:9) suggests that Mathematical communication is the development of language and symbols to communicate mathematical ideas so that students can: (1) express and explain their thoughts about mathematical ideas and their relationships, (2) formulate mathematical definitions, and make generalizations obtained through investigations (discoveries), (3) expressing mathematical ideas orally and in writing, (4) reading mathematical discourse with understanding, (5) explaining and asking and expanding questions on the mathematics they have learned, and (6) appreciating the beauty of mathematics and the power of mathematical notation, and its role in developing mathematical ideas."

From the description above, it can be formulated that mathematics is a tool used to develop language and can communicate mathematical ideas orally and in writing. Meanwhile, according to Sudrajat (2009): "Mathematical communication is a delivery of material where a concept of mathematical information is given by a teacher to students or students get it themselves through reading, then at that time there is a transformation of mathematical information from communicators to communicants"

So it can be concluded that the notion of mathematical communication is related to the ability of students' communication skills. Good in delivering material orally and in writing, so that it can express mathematical ideas and ideas.

Based on these evaluation standards, students' mathematical communication skills can be measured and it can be determined whether they have increased or decreased. Greenes and Schulma (in Ansari, 2009: 10) revealed that "Mathematical communication skills can occur when students (1) express mathematical ideas through speech, writing, demonstration, and visually describe them in different types, (2) understand, interpreting, and assessing ideas presented in writing, verbally, or in visual form, (3) constructing, interpreting and connecting various representations of ideas and their relationships.

Based on NCTM (in Ansari, 2009:11) "The emphasis of teaching mathematics on communication skills is beneficial in terms of (1) teachers can take an inventory of students' mathematical thinking through communication; (2) students can communicate their mathematical thoughts in an orderly and clear manner to friends, teachers, and others; (3) teachers can analyze and assess students' mathematical thinking and the strategies used; (4) students can use mathematics to express mathematical ideas appropriately".

So mathematical communication consists of, oral communication (talking) and written communication (writing). Oral (talking) is such as reading, listening, discussion, explaining, and sharing, while writing expresses mathematical ideas in real-world phenomena through graphs, tables, algebraic equations, or in everyday language (written words). But broadly speaking, oral communication is defined as an event of mutual interaction that occurs in a class environment or small group, and there is a transfer of messages containing the mathematics material being studied well between teachers and students and between students themselves. While written communication is the ability or skill of students in using vocabulary, notation, and mathematical structures both in the form of reasoning, connections, and Problem Solving.

So it can be concluded that mathematical communication skills include two things which are the ability of students to use mathematics as a communication tool, and the ability to communicate the mathematics learned. The ability to express mathematical ideas from a text both orally and in writing is an important part of mathematical communication standards that every student needs to have because a student is said to understand the text in a meaningful way, it can be estimated through the ability of students to convey orally or rewrite their mathematical ideas in their own language.

To measure mathematical communication skills, several indicators are needed. Sumarmo (2010) writes that activities classified as mathematical communication include:

1. expressing a situation, picture, diagram, or real object into language, symbols, ideas, or mathematical models;
2. explaining mathematical ideas, situations, and relations orally or in writing;
3. listening, discussing, and writing about mathematics;
4. reading with an understanding of a written mathematical representation;
5. restating a description or paragraph of mathematics in their own language.

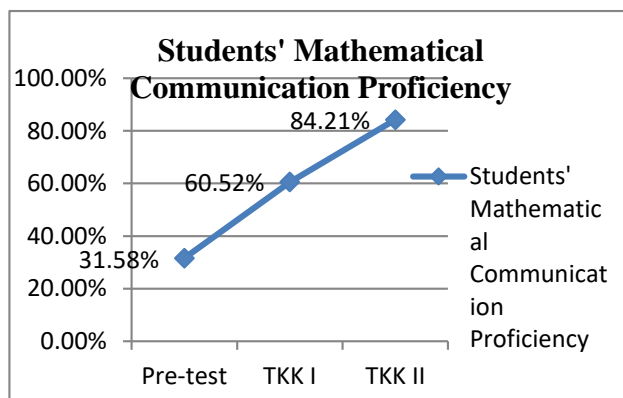
B. Think-Pair-Share (TPS) Learning Strategy

The Think Pair Share (TPS) strategy was first developed by Frank Lyman and colleagues at the University of Maryland. Arends (in Ansari, 2009:65) states that "Think Pair Share (TPS) is an effective way to change the atmosphere of class discussion patterns assuming that all recitations or discussions require arrangements to control the class as a whole, and the procedures used in Think Pair Share (TPS) can give students more time to think, respond, and help each other. From the description above Think Pair Share (TPS) gives students more time to think, respond, and help each other. While the understanding of Think Pair Share (TPS) according to Trianto (2011:81): "Think Pair Share (TPS) or thinking in pairs sharing is a type of cooperative learning designed to influence student interaction". Based on the opinion above, we can conclude that Think Pair Share (TPS) is a learning strategy that allows students to work together in small groups with the stages of thinking, pairing, and sharing. One form of learning strategy that is innovative and able to improve students' mathematical communication skills is the Think Pair Share (TPS) learning strategy. This learning strategy is a strategy that is one part of a cooperative learning strategy and is easy to apply in teaching. This strategy is also an effective way to improve students' thinking power. The Think Pair Share (TPS) strategy or exchange of ideas in pairs is able to increase the ability of students to participate in the teaching and learning process so that students will interact better in class and will be able to express opinions in class. The way students express their opinions is the way for them to understand the material that is being given by the teacher. The form of expressing this opinion can be in the form of questions. Questions will make active students better at understanding the material as well as questions.

3. RESULTS AND DISCUSSION

Based on the results of the study, it can be concluded that there is an increase in students' mathematical communication skills, especially in studying integers through the Think Pair Share (TPS) learning strategy. Before being given action I, the researcher first gave an initial test to students which aimed to determine the student's initial abilities. From the results of the initial test, it was found that the ability of students in solving questions was still very low. From the test, it was obtained that only 12 students (31.58%) of 38 students had good mathematical communication skills (scores) while the other 26 students (68.42%) had not completed and the average grade was 0.99 with a level of proficiency of mathematical communication skills by 31.58%. After giving the action through the Think Pair Share (TPS) learning strategy in the first cycle, the results of the mathematics communication ability test showed that 23 students (60.52%) have achieved learning proficiency and 15 students (39.47%) have not yet proficient. The average score of the class increased to 2.51 with a student's mathematical communication ability level of 60.52%.

In the second cycle which is an improvement in learning that has been given in the first cycle, the results of the second mathematics communication ability test showed that 32 students (84.21%) have achieved learning proficiency and 6 students (15.79%) have not yet proficient. The average score of the class increased to 2.91 with the level of students' mathematical communication skills of 84.21%. If we compare the data from cycle I and cycle II, the average score in cycle I and cycle II has increased. Students who have mathematical communication skills from 23 students in cycle I increased by 9 students in cycle II to 32 students, while students who were not yet proficient decreased from 15 students in cycle I to 6 students in cycle II



The average ability of students to explain mathematical communication is 2.67 to 3.00. The ability to draw increased from 2.42 to 2.79. The representation increased from 2.53 to 2.94. The learning process using the Think Pair Share (TPS) learning strategy is also getting better from cycle I to cycle II. Based on the results of the observation of the learning process which has increased from an average score of 2.80 (good category) in the first cycle to 3.03 (good category) in the second cycle. Researchers realize that they are still weak in implementing learning with the Think Pair Share (TPS) learning strategy. Among them, researchers still have difficulty asking students' attention. This is very influential on the conduciveness of the class and the concentration of student learning. However, the efforts made in accordance with the Think Pair Share (TPS) learning strategy turned out to be able to improve students' mathematical communication skills. These results are also supported by research conducted by Teodora (2011) that there is an increase in mathematical communication skills by applying the TPS type cooperative learning model at SMP St. Thomas 3 Medan in which 34 students (87.17%) of 39 students and the average class score of 84.35 has achieved learning proficiency and is classified as good. Likewise, Meilina (2012) found an increase in mathematical communication at SMP Negeri 3 Medan where 87.5% of students, or 35 of 40 students were able to communicate well in mathematics. From these two studies and research conducted by researchers, it was found that the Think Pair Share (TPS) learning strategy can improve students' mathematical communication skills.

4. CONCLUSION

Based on the results of the research presented in Chapter IV, conclusions can be drawn that learning by applying the Think Pair Share (TPS) strategy can improve students' mathematical communication skills seen from the increase in the average test results of students in cycle I and cycle II. The results of the student's mathematical communication ability test in the first cycle obtained an average score of 2.51 with a student's mathematical communication ability level of 60.52% or low category. In the second cycle, the average score of the students' mathematical communication ability test reached 2.91 with the students' mathematical communication ability level of 84.21% or the medium category. This means that the Think Pair Share (TPS) learning strategy can improve students' mathematical communication skills, especially on integer material in class VII SMP Negeri 1 Tigabinanga T.A 2014/2015.

Therefore, there are some suggestions in order to improve the strategy better as follows:

- It is recommended for teachers to use the Think Pair Share (TPS) learning strategy because it can improve students' mathematical communication skills. One important consideration is the improvement of students' mathematical communication skills in cycle II from research conducted with the Think Pair Share (TPS) learning strategy.
- The headmaster of SMP Negeri 1 Tigabinanga should be able to coordinate the implementation of Think Pair Share (TPS) learning strategies as an alternative in learning activities to improve students' mathematical communication skills.
- There is a need for further research because the results of this study were only conducted in class VII SMP Negeri 1 Tigabinanga T.A 2014/2015 and further researchers who are interested in conducting similar research should pay attention to the weaknesses of this research.

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