ATLANTIS PRESS

Advances in Social Science, Education and Humanities Research, volume 178

1st International Conference of Innovation in Education (ICoIE 2018)

Implementation of Think Talk Write (TTW) Strategy to Improve Understanding of Concept and Communication of Mathematics

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***Abstract*—This study discusses about the students lack of understanding in recognizing procedures in formulating a settlement strategy and difficulty in stating events or problems in the language or symbol of Mathematics. One of the efforts to overcome this problem is to use a Think Talk Write strategy in learning. The purpose of this study is to describe the improvement of students understanding toward mathematical concepts and students' mathematical communication skills by using Think Talk Write (TTW) learning strategies. This research was a class action research (CAR) which is carried out in two cycles. Subjects in this study were fourth grade students totaling 32 people at SDN 145 Pekanbaru. The research data was obtained from observing student activities and understanding concepts and students' mathematical communication skills. The results showed that TTW strategies can improve students' understanding about concepts and mathematical communication skills.**

Keywords—Think Talk Write strategy, concept comprehension, math communication skills

I. INTRODUCTION

Mathematics has an abstract nature which consists of facts, operations or relationships, concepts and principles [1]. In learning mathematics, it requires understanding of concepts. Before understanding a concept in mathematics, it is necessary to understand other related concepts. In other words, to understand a new concept, it requires understanding the previous concept. Therefore, how important it is to understand a simple concept because of the simple understanding of concepts that departs from a complex understanding of concepts. In fact, students' understanding of mathematics tends still low. Although many students learn mathematics, even the simplest parts, they still do not understand [2][3]. It means that students still have a low understanding. In curriculum of 2006, understanding and communication are ability that needs to be possessed and developed for students. Through mathematical communication, students can organize and consolidate their mathematical thinking both orally and writing in learning process. Finally mathematical communication can bring students to a deep understanding of the mathematical concepts that have been learned.

There are two important reasons why communication in mathematics learning needs to be developed. First, mathematics is not just a tool for thinking, a tool for finding patterns, solving problems or drawing conclusions, but also mathematics is an invaluable tool for communicating ideas clearly, precisely and concisely. Second, mathematics learning is a social activity and also as a vehicle for interaction between students and students and students with teachers [4].

In fact, students' mathematical communication skills are not as expected. This is shown by several researchs that stated students' mathematical communication skills are still lack or low, both in communicating orally or writing because students are not accustomed to express opinions / ideas in learning [5][6][7].

The difficulty of students in understanding mathematics will certainly affect their ability to communicate mathematical ideas. The ability of mathematical understanding is one aspect that can affect mathematical communication skills [4]. We can understand that students will not be able to communicate mathematical ideas, without being able to understand these mathematical ideas. Therefore, it is certain that the communication skills of a student will be high if the ability to understand mathematics is high. The low ability of students' mathematical understanding and communication will affect the low learning achievement of students in school. A student who is unable to understand a mathematical idea, it will be difficult for him to communicate the idea both verbally and in writing. The inability of students to communicate ideas will make students not being able to work on problems that have an impact on student achievement.

Based on the researcher experience in teaching fourth grade students at SD Negeri 145 Pekanbaru, where some students have difficulty in defining concepts it was seen from the ability of students to write concepts, identify concepts, explain the characteristics of concepts, form a settlement strategy, perform simple calculations, change another form that is related to integer material and use symbols to make concepts.

Then, related to communication skills, the students were seen having difficulties in expressing events or problems in the language or symbol of Mathematics, explaining ideas such as situations, symbols, pictures, and diagrams orally and in writing, (representation), and discussion and writing about Mathematics, as well as lack of understanding of students in forming algebraic equations or Mathematical models to do a complete and correct calculation.

Low the understanding and communication skills of students are very likely due to the use of inappropriate learning models. Therefore a learning model is needed that can improve students' mathematical understanding and communication. One model of learning that is believed to be effective in improving mathematical understanding and communication skills is the Think Talk Write strategy. TTW strategy is a learning strategy through the stages of thinking (think), talking (writing) and writing (writing). This strategy was first introduced by Surya (2017:82) "Think Talk Write strategy builds in time for thought and reflection and for the organization of ideas and testing of ideas before students are expected to write. TTW strategy builds thinking, reflects, and organizes ideas. It also explore students idea before writing[8]. Thinking activity can be seen from the process of reading a mathematical text or a mathematical story then making notes about what has been read. In making or writing notes students distinguish and unify ideas presented in reading texts, then translate into their own language.

The strategy of Think Talk Write has several advantages. They are (1) developing meaningful solutions in order to understand teaching material. (2) by giving open questions can develop students' critical and creative thinking skills. (3) interacting and discussing with groups will involve students actively in learning. (4) familiarizing students to think and communicate with friends, teachers, and even with themselves[9].

Based on the background described above, the purpose of this study was to determine the improvement of students' mathematical understanding and communication skills taught with think talk writing learning strategies in grade IV SD 145 Pekanbaru.

II. RESEARCH METHOD

Based on the problems and objectives to be achieved, this study is a classroom action research (CAR). CAR is the way teachers find out what is best in their own classroom situation, so as to allow informed decisions about teaching [10]. This research was carried out in class IV SD Negeri 145 Pekanbaru. Researchers chose SD Negeri 145 Pekanbaru. The number of students in the fourth grade of SD Negeri 145 Pekanbaru in the 2017/2018 school year is 32 people consisting of 17 male students and 15 female students. This research was carried out in the second semester of the 2017/2018 school year at 145 Pekanbaru Public Elementary School in the 2017/2018 academic year.

The research was conducted by referring to the design of the CAR design by Arikunto (2011:18) which proposed four stages: planning, implementing actions, observing or observing, and reflecting [11]. In research, researchers used several instruments to collect data, are: Field recording in the form of observational data on the learning process of concept understanding and commuication skills of fourth grade students of SD Negeri 145 Pekanbaru with Think Talk Write learning strategies.

Observations were made to observe teacher activities and student activities in learning concept understanding and communication skills of grade IV students of SD *Negeri* 145 Pekanbaru. Tests are used to reinforce observation data that occur in the classroom, especially in the mastery of learning material from students. This is done to obtain accurate data on the understanding of concepts and communication skills of grade IV students of SD *Negeri* 145 Pekanbaru. Indicators of success in the learning process are measured by using the percentage of minimum completeness criteria indicators of success in understanding the concepts and mathematical communication skills to be achieved are 75 and KKM in Mathematics is 75. KKM each subject is determined by each school by observing student. Students categorized as teachers have achieved the indicator of success when learning Mathematics is equal to or more than 75 (≥75). Students who obtain learning outcomes ▪ 75 will be grouped as students not completing their learning.

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III. RESEARCH RESULT AND DISCUSSION

A. DATA

Observation is done for each meeting, which is filling observation sheet of student activity in learning mathematics through think talk write strategy. At the end of each cycle, it is given a test result of learning in the form of Deuteronomy to measure the ability of students. The results of observations of researchers in the cycle I described as follows:

This observation data is obtained through student activity observation sheet, and used to see the process and the student progress that happened during the learning process. The results of the observer analysis of the students' activities in the learning can be seen in Table 1

Table 1. STUDENTS ACTIVITY IN MATHEMATICS LEARNING IN CYCLE I

Activity	*Confluence 1*	*Confluence 2*
Listen, pay attention, respond	71,88	78,1
Ask the teacher / friend questions	18,75	31,27
Reading LKS	62,5	71,88
Make small notes	37,5	46,88
Interaction among fellow students in group (discussion) / express opinions	59,38	68,75
Work together and share the tasks in groups	65,63	81,25
Write down the solution and calculation of LKS	18,75	37,5
Average	47,77	59,38
Total students	29	29,00

In cycle I, the student activity has started well but never reached the target that researcher expect that is 75%. It is caused by learning strategy of think talk write is new to students. The tests at the end of cycle I and cycle II are filled in where the field is a short field. As far as the test results will be seen the average and the percentage of mastery of students in learning Mathematics using thinking talk write strategy. Based on the results of the test cycle I can be seen in table 2.

Table 2. RECAPITULATION OF RESULT OF UNDERSTANDING OF CYCLE CONCEPT I

Description	Quantity
Total students	32
Number of completed students	16
Number of unfinished students	16
percentage of completeness	50%
Average value	71.38

The table 2 showed that the percentage of students' concept comprehension as a whole is still low and the average comprehension test of the whole concept has not reached the established MCC.

Table 3. RECAPITULATION OF VALUES OF MATHEMATICALCOMMUNICATION CYCLE ABILITY TEST RESULTS I

Description	Quantity
Total students	32
Number of completed students	1
Number of unfinished students	31
percentage of completeness	3.125%
Average value	34.83

From table 3, it can be seen that the percentage of students 'Communication Mathematics Ability as a whole is still very low and the average test result of students' Communication Mathematics Ability as a whole has not reached the established MCC.

The results of the observer's analysis of the learning activities showed that the learning that the researchers carried out still not going. well and felt the implementation of learning has not been maximized. For more details, described as follows:

The observation data is obtained through student activity observation sheet and used to see the process and the development of student activities that happened during the learning process. The results of the analysis can be seen in Table 4.

Table 4. RECAPITULATION OF VALUE TEST RESULT UNDERSTANDING CONCEPT CYCLE II

Description	Quantity
Total students	32
Number of completed students	22
Number of unfinished students	10
percentage of completeness	68.75%
Average value	79.38

In the target of learning completeness determined by the researcher on the indicator of the success of learning completeness in the classical that is 75% of the number of students. While the completeness of learning in cycle II has reached the target of learning mastery is 75% of the target set.

Table 5. RECAPITULATION OF VALUES OF TEST RESULTS ABILITY OF MATHEMATICAL COMMUNICATION CYCLE II

Description	Quantity
Total students	32
Number of completed students	24
Number of unfinished students	8
percentage of completeness	75%
Average value	83.28

In the target of learning completeness determined by the researcher on the indicator of the success of learning completeness in the classical that is 75% of the number of students, while the completeness of learning in cycle II has not reached the target of learning mastery is 75% of the target set.

B. Discussion

The first stage in the TTW learning strategy is think. Think is the stage where students are given problems in the form of LKS. Individually, students solve the problems given by making small notes containing their ideas. At the first meeting in cycle I some students did not understood what they should write their ideas on a small note because the students who first perform the learning process with this method and he did not understood how to write down the ideas. In the second cycle I, students have started to perform better activities. Students have begun to be able to make notes on ideas and ideas, regardless of whether the answer is wrong or true. Likewise at the next meeting in cycle II.

During the talk stage where the discussion is held, the students are divided into 6 groups of five students. The division of groups based on the results of daily test 1 semester 1 grade IV students are intended to determine the level of academic ability possessed students, so expected in each group of its members heterogeneous. The group is permanent, that is, during the learning process takes place, the students are in the fixed group. After the students do the discussion activity then the students do the writing activity (write stage), that is write down the result of their discussion. Student writing activities are influenced by group discussion activities. Students who follow the discussion well tend to write answers to the results of the discussion better than students who do not follow the discussion well, because students who do less good discussion activities tend to only cheat the work of his friend.

Table 6. RESULTS OF CYCLE TESTS I AND II

Category	Cycle I	Cycle II	Cycle I	Cycle II
Completed	16	24	1	22
Not Complete	16	8	31	10

By applying the TTW learning strategy each student can freely discuss with their group mates, thereby they can better understand the concept with its sabaiknya. Communication or dialogue between students and teachers can improve understanding. This can happen because when students are given the opportunity to speak or dialogue, as well as construct ideas to be expressed through dialogue[12].

Then, communicating in a discussion can help collaboration and improve learning activities in the classroom. This may happen because when students are given the opportunity to communicate in mathematics as well as they think how to express it in writing. Therefore, communication skills can accelerate students' ability to express their ideas through writing[12].

IV. CONCLUSION

Based on the results above it can be concluded that, the application of Think Talk Write (TTW) can improve the fourth grade mathematics communication skills of SD Negeri 145 Pekanbaru 2017/2018 Academic Year by 7.7% and improve understanding of the mathematics concepts of grade IV students in SD Negeri 145 Pekanbaru 2017/2018 Academic Year by 39.4%.

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