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**IMPROVING SELF CONFIDENCE OF STUDENTS IN MATHEMATICS LEARNING
USING THINK PAIR SHARE (TPS) COOPERATIVE MODEL WITH WORKED
EXAMPLE ASSISTED**

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Abstract

This study aims to increase the confidence of VII B grade students of SMP Negeri 14 Yogyakarta in learning mathematics through a cooperative learning model of Think Pair Share (TPS) type assisted by working examples. This research is a Classroom Action Research conducted in two cycles. The subjects of this study were students of class VII B of SMP Negeri 14 Yogyakarta in the 2017/2018 academic year consisting of 34 students. The results showed that the students' self-confidence scores in learning mathematics in the first cycle reached 82.36% in the minimally high category. Because these results have not reached the desired target, then proceed with the second cycle. In cycle II, the students' self-confidence scores in learning mathematics reached 88.24% in the minimally high category. It showed that there is an increase in student confidence in learning mathematics through a cooperative learning model type Think Pair Share (TPS) aided by working examples.

Keywords: Confidence, Cooperative, Think Pair Share, Worked Example

Introduction

Mathematics is a subject that is always in the curriculum of primary education to secondary education. In Permendikbud No. 22 of 2016 concerning Basic and Secondary Education Content Standards, it is explained that the development of affective attitudes, namely self-confidence becomes one of the goals of learning mathematics in the classroom.

The importance of confidence for students' success in learning mathematics was revealed by Askew & William (Orton, 2004: 11) according to him, the confidence of students can affect their success in mathematics. Besides, Hannula, Majjala & Pehkonen (2004: 17) also revealed that mathematics learning is also influenced by students' beliefs related to their beliefs in mathematics, especially student self-confidence. Thus, students' confidence in learning mathematics plays an essential role in their success in learning mathematics. Therefore, teachers need to foster student confidence in learning mathematics so that learning objectives can be achieved.

Based on interviews conducted by researchers with mathematics teachers at SMP Negeri 14 Yogyakarta, it was found that students' self-confidence was still low. It is indicated by students who often feel doubt about the work they have done. Only a few students dared to present their work in front of the class. Students feel scared when told to come forward to the class, offering their work even though the results of the work are correct. Besides, students lack the courage to ask questions and express their ideas while learning. These facts show that students' confidence in learning mathematics is still low.

One of the factors influences student confidence in the process of learning mathematics in class. Therefore, learning is needed that can facilitate students to develop student confidence in learning mathematics. One alternative learning that can increase student confidence is the cooperative learning think pair share model (TPS). Cooperative learning is a teaching system that allows students to work together with fellow students on structured tasks (Lie, 2008: 12). While the think pair share (TPS) model is cooperative learning consisting of the stages of thinking, pairing, and sharing.

This learning model can awaken student activity in the learning process and encourage students to express their ideas. In The Literacy and Numeracy Secretariat (2010: 7), it is mentioned that the thinking stage can improve students' responses when facing a mathematical problem, the pair stage can train students to express their opinions, and the sharing stage provides opportunities for students to be able to express their opinions in front of the class. Therefore, it is hoped that this learning model can improve students' self-confidence.

In addition to the learning model, the use of worked examples also makes it possible to increase student confidence. Research by Jin et al. (2011: 105) shows that students who learn with worked examples will be more confident than students who do not. It is because when the steps and logic of problem-solving have become clear, they feel confident about their ability to learn the material and solve the problem.

A worked example is a way to solve a problem then proceed with a practice on some problems that have similar characteristics. A teacher who applies worked example strategies must be able to provide examples of problem-solving that students can follow or emulate. Statements about the problem, along with steps towards a final solution, are included in the worked example (Sweller, Ayres, & Kalyuga, 2011: 99).

Cooperative learning model type Think Pair Share (TPS) is believed to be able to increase student confidence in learning mathematics. Therefore, researchers collaborating with teachers need to research efforts to improve student confidence using cooperative learning models of Think Pair Share (TPS) aided working examples.

Method

This type of research is Classroom Action Research (CAR). This study aims to increase student confidence using Think Pair Share (TPS) type cooperative learning models aided by Worked Example. This study uses a model developed by Kemmis and Taggart (in Burns, 2010: 7), where each cycle consists of 4 stages, namely planning (plan), action (act), observation (observe), and reflection (reflect).

The study was conducted in Yogyakarta 14 Public Middle School, with research subjects in class VII B of SMP Negeri 14 Yogyakarta totaling 34 students. Data collection techniques in this study were test and non-test. The instruments used in this study include (1) student confidence questionnaire to measure student confidence (2) learning achievement test questions to measure student achievement (3) observation sheet of learning activities to measure the implementation of teacher and student activities in learning with Work Pair Example (TPS) type cooperative learning models.

The data analysis technique used in this research is descriptive analysis. Giving questionnaires at the end of cycle one and the next cycle is done to find out whether there is an increase in student confidence. The number of items used is 20 items consisting of positive and negative statements. The scale model used is a Likert scale model. The measured aspects of confidence include beliefs about one's abilities, having a positive outlook, and self-reliance. Scoring for self-confidence questionnaire ranges from 20 to 100.

To determine the category of measurement results used classifications determined by the average ideal (M_i) and the ideal standard deviation (S_{di}). Based on the calculations, the category of students' confidence in this study can be seen in Table 1.

Table 1. Categories of Student Self Confidence

Score Interval	Category
$80 < X \leq 100$	Very High
$66,7 < X \leq 80$	High
$53,3 < X \leq 66,7$	Medium
$40 < X \leq 53,3$	Low
$20 < X \leq 40$	Very Low

To measure the completeness of student learning using the following formula:

$$KB = \frac{P}{N} \times 100\%$$

Information:

KB: Mastery Learning

P: Many students have scored ≥ 75

N: lots of students overall

Indicators of success from this class action research are as follows.

1. The percentage of students' self-confidence questionnaire results in mathematics $\geq 85\%$ with a high minimum category.
2. Percentage of mastery learning students who meet the KKM $\geq 75\%$.
3. Student activities and teacher activities $\geq 85\%$.

Result and Discussion

Result

1. Cycle I

Cycle I took place in two meetings. Each meeting lasts 2×40 minutes. While the evaluation lasted for 90 minutes and was carried out after the second meeting. The implementation of classroom action research in the first cycle and the second cycle includes several stages, namely planning, action, observation, and reflection. The planning phase in the first cycle consists of the preparation of lesson plans, worksheets, learning achievement test questions, student self-confidence questionnaires, and teacher and student activity observation sheets.

a. The first meeting

Learning activities begin with a preliminary activity that is opening the lesson with greetings. Then the teacher conveys the topic or material to be studied, namely closed sentences and open sentences, the concept of one variable linear equations, and the completion of one variable linear equations. Researchers convey apperception by reminding the previous material relating to the material to be conveyed, conveying learning objectives, and motivation.

The core activity began with organizing 34 students into 17 groups, each consisting of 2 people. Then the teacher distributes the work sample worksheets to all students. At the thinking stage, students are individually asked to do worksheets by paying attention to the examples presented first, then formulating answers and making small notes in the form of things students know and things students don't know yet. However, at this stage, some students confirm their answers by asking the teacher the truth. In the pair stage, students discuss with their partners about the formulation of solutions and small notes that have been made previously and write down the final answer LKS. The teacher monitors the course of group discussions. At the sharing stage,

several groups were asked to submit the results of the discussion, students from other groups gave responses. Then the teacher and students discuss the correct solution.

The learning activity closes by facilitating students to conclude essential points about the material being studied, informing about the material to be learned at the next meeting, and ending the learning activity by saying hello.

b. Second meeting

Learning activities begin with a preliminary activity that is opening the lesson with greetings. Then the teacher conveys the topic or material to be learned that is changing a real problem into a mathematical model in the form of a one-variable linear equation and solving a mathematical model of a real problem related to a one-variable linear equation. The teacher conveys apperception by reminding the previous material that is the completion of a one-variable linear equation, conveying the learning objectives and motivation.

The core activity begins by asking students to join their partner beforehand. Then the teacher distributes the work sample worksheets to all students. At the thinking stage, students individually work on the worksheet by paying attention to the examples first, then formulating answers and making small notes in the form of things that students know and things that students don't know yet. Next, entering the pair stage, students are asked to discuss with their partners about the formulation of answers and small notes that have been made previously and write the final answer LKS. Then in the sharing stage, the teacher asks several groups to present the results of the discussion. The other group of students gives responses. The teacher and students together discuss the correct solution.

The learning activity closes by facilitating students to gather important points about the material being taught, informing about the material to be learned at the next meeting, and ending the learning activities by saying hello.

The third meeting of the researchers evaluated was by providing a test of learning achievement in the material of one variable linear equations and student questionnaire confidence. The following table presents the results of the analysis of student achievement tests in cycle I.

Table 2 Data on Student Achievement Test Results Cycle I

The Number of Students	Highest Score	Lowest Score	Average	Completeness	Percentage
34	100	40	72,64	18 students	52,94%

In Table 2, it appears that the average student achievement test in the first cycle was 72.64, while students' completeness was 52.94%. It has not reached the indicators of the success of this study, while the results of the student self-confidence questionnaire are presented in Table 3 below.

Table 3 Data on the Questionnaire Self Confidence Results for Students Cycle I

Criteria	The Number of Students	Percentage (%)
Very High	6	17,65%
High	22	64,71%
Medium	5	14,71%
Low	1	2,94%
Very Low	0	0%
Percentage of High and Highest		82,36% (Not yet Reached)

In table 3, it can be seen that the percentage of students' self-confidence questionnaire results in the first cycle was 17.65% in the very high category and 64.71% in the high category. It means that the percentage of students' self-confidence reached 82.36% in the high minimum category. It has not yet reached the indicators of the success of this study. Meanwhile, the implementation of learning can be seen in Table 4.

Table 4 Results of the Implementation of Cycle I Learning

Teacher	Student	Implementation of Learning
95,7%	90,9%	Reached

Table 4 shows that the percentage of learning accomplishment has reached the target, i.e., the activities of teachers and students, respectively, are 95.7% and 90.9%. However, based on the results of reflection, It is found deficiencies that arise during the learning process in cycle I. These deficiencies are as follows.

1. Many students do not pay attention until the end of the example presented in the LKS worked example.
2. At the thinking stage, some students have discussed with their partners even though students should work alone first
3. It is difficult to ask students to be willing to go forward in a class
4. At the thinking stage, some students who find difficulties are more likely to directly ask the teacher without discussing more deeply with a group of friends.

Based on this, improvements for cycle II include:

1. The teacher gives more attention so that the discussion in the group runs optimally by always monitoring and going around the class when the group discussion takes place.
 2. If students ask the teacher, the teacher does not directly answer student questions but instead gives instructions as needed so that students can automatically answer the questions they ask and discuss with their partners
 3. The teacher will organize students into groups after the thinking phase has finished.
2. Cycle 2

Learning in cycle II takes place in two meetings. Each meeting lasts 2 x 40 minutes. While the evaluation lasted for 90 minutes and was carried out after the second meeting. The implementation of classroom action research in cycle II includes several stages, namely planning, action, observation, and reflection. The planning phase in the first cycle consists of the preparation of lesson plans, worksheets, learning achievement test questions, student self-confidence questionnaires, and teacher and student activity observation sheets.

a. The first meeting

Learning activities begin with a preliminary activity that is opening the lesson with greetings. Then the teacher conveys the topic or material to be learned that is getting to know the concept of one variable linear inequality and solving one-variable linear inequality. The teacher conveys apperception by reminding the previous material related to the material to be delivered, conveying the learning objectives and motivation.

The core activity begins with the teacher distributing a working example worksheet to all students. At the thinking stage, students individually work on the worksheets by paying attention to the examples first, then formulating answers to the questions on the worksheets and making small notes in the form of things students know and things students don't know yet. In the pair stage, students are asked to join

and discuss with their partners about the formulation of answers and small notes that have been made previously and write down the final answer LKS. The teacher monitors the course of group discussions. Then at the sharing stage, students ask several groups to present the results of the discussion. Students of other groups give responses. The teacher and students together discuss the correct solution.

The activity of learning closes by facilitating students to gather important points about the material being studied, informing about the material to be learned at the next meeting, and ending the learning activities by greeting.

b. Second meeting

Learning activities begin with a preliminary activity that is opening the lesson with greetings. Then the teacher conveys the topic or material to be learned that is changing a real problem into a mathematical model in the form of a linear inequality of one variable and solving a mathematical model of a real problem related to the linear inequality of one variable. The teacher conveys apperception by reminding the previous material related to the material to be delivered, conveying the learning objectives and motivation.

The core activity begins with the teacher distributing a working example worksheet to all students. At the thinking stage, students individually work on the worksheets by paying attention to the examples first, then formulating answers to the questions on the worksheets and making small notes in the form of things students know and things students don't know yet. In the pair stage, students are asked to join and discuss with their partners about the formulation of answers and small notes that have been made previously and write down the final answer LKS. The teacher monitors the course of group discussions. Then the sharing stage, asking several groups to present the results of the discussion, the other group students gave responses. The teacher and students together discuss the correct solution. The activity of learning closes by facilitating students to gather important points about the material being taught, inform them about the material to be learned at the next meeting, and end the learning activities by greeting.

In the next meeting, the researchers evaluated by providing a test of learning achievement in the material of one variable linear inequality and student confidence questionnaire. The following table presents the results of the analysis of student achievement tests in cycle II.

Table 5 Data on Student Achievement Test Results Cycle II

The Number of Student	Highest Score	Lowest Score	Average	Completeness	Percentage
34	100	50	77,94	26 students	76,47%

In table 5, it can be seen that the average student achievement test in the second cycle is 77.94, while students' completeness is 76.47%. It shows that the results of student achievement tests have reached indicators of the success of this study. While the results of the student self-confidence questionnaire are presented in Table 6 below.

Table 6 Results of Questionnaire Self Confidence Questionnaire Cycle II

Criteria	The Number of Students	Percentage (%)
Very High	15	44,12%
High	16	44,12%
Medium	3	11,76%
Low	0	0%
Very Low	0	0%

Percentage of High and Highest	88,24% (Reached)
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In table 6, it can be seen that the percentage of students' self-confidence questionnaire results in the second cycle was 44.12% in the very high category and 44.12% in the high category. It means that the percentage of students' self-confidence reaches 88.24% in the high minimum category. It has not yet reached the indicators of the success of this study. Meanwhile, the implementation of learning can be seen in Table 7.

Table 7 Results of the Implementation of Cycle I Learning

Teacher	Student	Implementation of Learning
100%	100%	Reached

Table 7 shows that the percentage of learning accomplishment has reached the target, i.e., the activity of teachers and students is 100%.

Discussion

In this class, action research applied Think Pair Share (TPS) type of cooperative learning model assisted by working example. Mathematics learning with Think Pair Share (TPS) type assisted cooperative learning model starts with motivating and apperception. It is intended to prepare students for learning and remind students of previously acquired material that will be used in learning. This learning uses work example-based worksheets so that before students work on problems in worksheets, students learn from the examples first, then try to formulate their answers. However, if students find it challenging to understand examples, students can write things they do not know on a small note, which will then be discussed with the group. This stage is known as the thinking stage. After those students are asked to join the group to discuss the formulation of the answers and small notes made to their group friends so that students can make the final answer to the discussion. This stage is known as the pair stage. Timing during group discussions is essential to be considered by the teacher so that students after discussion have enough time to present the results of the discussion. The teacher always guides the group that is having difficulty in solving the given problem. If some problems are experienced in large groups, then the teacher provides guidance classically in front of the class.

After the discussion ended, several groups came to the front of the class to present the results of their discussion, while other groups paid attention and responded when needed. After the presentation, the teacher asks several students to try to conclude from the results of the discussion, and other students give additional comments. If the conclusions made by students are still lacking, the teacher directs and reinforces the correct conclusions. For students to better understand the material, the teacher gives additional practice questions to students at the end of learning. Thus, learning achievement, student confidence in learning, and learning implementation can be optimal. The cooperative learning model with the type of Think Pair Share assisted by Worked Example, which is applied in learning has been proven to increase student achievement and self-confidence. Improved student achievement, student confidence, and the implementation of successive learning can be seen in Table 8, Table 9, and Table 10 below.

Table 8 Data on Student Achievement Test Results Cycle I and Cycle II

Cycle	Average	Completeness	Percentage	Achievement
I	72,64	18 siswa	52,94%	Not yet Reached
II	77,94	26 siswa	76,47%	Reached

Tabel 9 Results of Cycle I and Cycle II Student Confidence

Criteria	Cycle I (%)	Cycle II (%)
Very High	17,65%	44,12
High	64,71%	44,12
Medium	14,71%	11,76
Low	2,94%	0%
Very Low	0%	0%
Percentage of High and Highest	82,36% (Not yet Reached)	88,24% (Reached)

Tabel 10 Results of the Implementation of Learning Cycle I and Cycle II

Cycle	Teacher	Student	Implementation of Learning
I	95,7%	90,9%	Reached
II	100%	100%	Reached

Based on table 8, it can be seen that there is an increase in the percentage of students who complete from cycle I to cycle II, that is 52.94% to 76.47%. In cycle I, the teacher has difficulty asking students to come to the front of the class to present their work. From observations of the results of the evaluation of the first cycle, many students have difficulty in turning real problems into mathematical models in the form of one variable linear equations and solving these models. It is, of course, results in the low evaluation results obtained by students. Besides, the number of students who scored ≥ 75 in cycle II was more than the cycle I, from 18 students in cycle I to 26 students in cycle II. As a result, there was an increase in the number of students who completed the cycle I to cycle II, namely 52.94% to 76.47%.

Meanwhile, students' self-confidence in Cycle II was also higher than students' self-confidence in Cycle I. Based on observations, students in Cycle II were no longer ashamed to volunteer for presentations in front of the class.

Improvements are always oriented to the principles and characteristics of the Think Pair Share type of cooperative learning model assisted with working examples, so that the application of the Think Pair Share type of cooperative learning assisted by working example can improve learning achievement and confidence the student. Improvements made include the teacher organizing students in groups after the thinking stage is done because if not, then when the thinking stage, some students have started discussing with their partners.

At the end of the second cycle, the three indicators of research success have reached the desired target. It indicates that learning mathematics by applying the Cooperative learning model type Think Pair Share assisted by working example has been able to improve student learning achievement and student confidence in learning mathematics subject to Equation and Inequality Linear One Variable.

Conclusion

After applying Think Pair Share (TPS) cooperative learning model with a working example assisted in the subject of Equation and Inequality of Linear One Variable in Class VII of SMP Negeri 14 Yogyakarta in the Academic Year 2017/2018, it was concluded that an increase in student confidence in learning mathematics through learning models Co-operative type Think Pair Share (TPS) aided working example. The increase can be seen from the percentage of students who reached a high minimum category at the end of the second cycle that is equal to 88.24%. Think Pair Share learning model helped working example that can increase self-confidence is the Think Pair Share cooperative learning model-assisted working

example that has been modified, that is at the thinking stage (think) students have not been organized in groups because it will potentially make students discuss before the pair stage.

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