

THE EFFECTIVENESS OF THE TPS (THINK PAIR SHARE) COOPERATIVE LEARNING MODEL IN MATHEMATICS COURSES FOR MIDDLE SCHOOL STUDENTS

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Abstract

Objectives: In the learning process in the era of the Industrial Revolution 4.0, teachers are required to use a constructivism-based learning model, one of them is the cooperative learning model of the TPS (Think-Pair-Share) type. In learning mathematics, teachers often use the cooperative learning model of the TPS (Think-Pair-Share) type because, in practice, it is considered easier to implement. This can be seen from the results of previous studies conducted in junior and senior high schools, shows that learning mathematics using the TPS (Think-Pair-Share) cooperative model can improve student learning outcomes. This study uses the method of a literature review to review and develop previous research. The purpose of this study was to study the effectiveness of the TPS (Think-Pair-Share) cooperative learning model in mathematics for high school students. The results of this study indicate the effectiveness of the TPS (Think-Pair-Share) cooperative learning model in mathematics for high school students.

Keywords: Cooperative Learning Model, Think-Pair-Share, Secondary School.

INTRODUCTION

One of the efforts that can be made by educators to achieve learning objectives that are in accordance with expectations is to pay attention to students, subject matter, learning methods, and appropriate learning media, so that in the learning process it is necessary to select a learning model that is in accordance with student characteristics. Teaching is the process of conveying knowledge to students in order to achieve the desired learning objectives, where the goal is to increase students' motivation and understanding of concepts. Motivation is one of the factors that also determines the effectiveness and success of learning because students will study more seriously if they have high motivation (Evi Sinta Dewi et al. 2020).

The low student learning outcomes are caused by many things; among others, teachers pay less attention to students' initial abilities and the student learning environment, and confinement provides a stimulus that involves students in the process of thinking and working together. Students tend to hear and record important things conveyed by the teacher, so they seem passive. Teachers also rarely reflect on learning, so they do not explore and improve the factors that cause low learning outcomes.

One way to improve the quality of learning is to match the learning model to the level of student knowledge. The selection of the Think Pair Share (TPS) type of cooperative model is an alternative to solving this problem. The reason for the TPS learning model is that this learning model has been proven to improve student learning outcomes. This is illustrated in several

research results by Nurnawati (2012), Zulfah (2017), and Ni'mah (2014). The results of these studies provide evidence that TPS can be applied in learning and that TPS learning can be used to improve student learning outcomes in learning mathematics. The research results of Bunga (2018), Ilelah (2019), Tomatala (2020), Nilam Wally (2019), and Muskitta (2021) reveal that the use of the TPS type cooperative learning model provides an increase in student learning outcomes in learning mathematics.

The use of the TPS (Think Pair Share) cooperative model is very suitable for improving student learning outcomes. In general, cooperative learning is considered to be more teacher-directed, where the teacher sets assignments and questions and provides materials and information designed to help students solve problems. The cooperative learning model of the "Think Pair Share" type is very useful for training students to communicate, carry out discussions in groups in pairs, and be able to convey their ideas to others. Thus, the cooperative learning model of the Think Share Pair type is expected to increase student learning outcomes in mathematics at the high school level. Therefore, researchers try to conduct a study with the title: Effectiveness of the Cooperative Learning Model of the Think Pair Share Type in Mathematics Material in Middle School Students.

A. Cooperative Learning Model

The cooperative learning model is a learning strategy where students learn and work in small groups independently and collaboratively, whose members consist of 2–5 people, with a structure of heterogeneous groups (Komalasari, 2010:62). Cooperative learning is small-group study to maximize their learning and learn from other members in the group. Cooperative learning procedures are designed to make students more active through search and discovery through a thought process (inquiry) and discussion in small groups. According to Johnson and Johnson (1994), the main objective of cooperative learning is to maximize student learning to increase academic achievement and understanding both individually and as a group. The purpose of cooperative learning is that students are able to learn in collaboration to increase understanding both individually and in groups, and this cooperative learning can also provide opportunities for students with different backgrounds and conditions to work together and be mutually responsible for one another's tasks.

B. Cooperative Learning Model: Think Pair Share (TPS) Type

1. Characteristics of the TPS Learning Model

According to Ibrahim (2000: 6), lessons that use cooperative learning have the following characteristics:

- a. Students work in groups cooperatively to complete the learning material.
- b. Groups are formed from students who have high, medium, and low abilities.
- c. Whenever possible, group members come from diverse races, cultures, ethnicities, and genders.
- d. Awards are more oriented toward groups than individuals.

2. TPS Learning Model Steps

The steps of the Think Pair Share (TPS) cooperative learning model, according to Trianto (2007:61), are:

Step 1: Thinking

The teacher poses a question or problem related to the lesson and asks students to take a few minutes to think for themselves about the answer or problem. Students need an explanation that talking or doing is not part of thinking.

Step 2: Pair

At this stage, the teacher asks students to pair up and discuss what they have obtained. Interaction during the allotted time can synthesize answers if a question is asked or gather ideas if a specific problem is identified. Normally, the teacher gives no more than 4 or 5 minutes to pair up.

Step 3: Sharing

In the final step, the teacher asks pairs to share with the whole class what they have been talking about. It is effective to go around the room from partner to partner and continue until about half of the pairs have had their chance.

The steps for the Think Pair Share (TPS) cooperative model, according to Suherman (2004: 22), are namely:

- a. The teacher presents material in a classical manner.
- b. Provide solutions in the form of deepening, extension, and application.
- c. Assign students in pairs to discuss it (think pair).
- d. Present the results of the group (share).
- e. Individual quizzes for each student's progress score
- f. Announce the quiz results.

Based on some of the opinions above, the steps of the Think Pair Share (TPS) cooperative learning model in this study are:

- a. The teacher presents material in a classical manner.
- b. Provide solutions in the form of deepening, extension, and application.
- c. Assign students in pairs to discuss it (think pair).
- d. Present the results of the group (share).
- e. Individual quizzes for each student's progress score
- f. Announce the quiz results.

3. TPS Learning Model Indicators

The indicators for the implementation of the Think-Pair-Share (TPS) cooperative learning model are:

- a. The teacher opens the lesson and gives instructions to the students.
- b. The teacher explains the Think-Pair-Share type of cooperative learning model to students and gives an overview of the activities that will be carried out by students during the learning process.
- c. The teacher explains material related to the subject matter that will be studied classically.
- d. The teacher organizes students into predetermined groups.
- e. The teacher distributes LKS to all students. The teacher asks students to read and think about the LKS answers independently (thinking).
- f. The teacher asks students to discuss the results of their own thoughts with their partners and the answers in the LKS that they have not understood (pairing).
- g. The teacher guides students when discussing with their partners.
- h. The teacher asks several pairs to present the results of their discussions, and other pairs respond (sharing).
- i. Teachers and students discuss the material that has been studied.
- j. The teacher gives an evaluation in the form of a test to be done individually.

4. Strengths and Weaknesses of the TPS Type Cooperative Learning Model

The advantages and disadvantages of the TPS type cooperative learning model, according to Nur Fitriyah (2017), include:

a. The strengths of the TPS-type cooperative learning model

The advantages of the "think pair and share" learning model are: (1) it allows students to formulate and ask questions about existing material; (2) students will be trained to apply the concept of exchanging opinions; and (3) students are more active in learning because they complete their assignments in groups.

b. Disadvantages of the TPS-type Cooperative Learning Model

The disadvantages of the TPS type cooperative learning model are: (1) It has been implemented in schools where the average student has low abilities and limited time, while the number of groups is too large.

C. Characteristics of Middle School Students

1. Characteristics of Junior High School Students

Judging from the stages of development, junior high school (SMP) children are at the developmental stage of puberty (10–14 years).

According to Desmita (2010: 36), there are several characteristics of Junior High School (SMP) students, including:

- a. There is an imbalance in the proportion of height to weight.
- b. Beginning to develop secondary sex characteristics.
- c. The tendency for ambivalence, as well as the desire to be alone with the desire to get along, and the desire to be free from dominance with the need for guidance and assistance from parents,
- d. Likes to compare rules, ethical values, or norms with the reality that occurs in adult life.
- e. Begin to ask skeptical questions about the existence and nature of God's mercy and justice.
- f. Emotional reactions and expressions are still unstable.
- g. Begin to develop standards and expectations of self-behavior that are appropriate to the social world.
- h. Interest tendencies and career choices are relatively clearer.

According to Syamsu Yusuf (2004: 26–27), the middle school age period is in adolescence, which is a period that attracts a lot of attention because of its distinctive characteristics and its decisive role in the lives of individuals in adult society. This period can be broken down into several periods, namely:

a. Preadolescence (early adolescence)

Preadolescence usually lasts only a relatively short time. The characteristics of this period are the existence of negative traits in adolescents, so this period is often called a negative period," with symptoms such as being restless, not wanting to work, being pessimistic, and so on. Broadly speaking, these negative traits include: (a) negative in achievement, both physical achievement and mental achievement; and (b) negative in social attitudes, either in the form of withdrawing from society (passive negative) or in the form of being aggressive towards society (active negative).

b. Adolescence (mid-adolescence)

At this time, the urge to live begins to grow in adolescents, as does the need for friends who can understand and help them, friends who can share their joys and sorrows. At this time, as a period of looking for something that can be seen as valuable and worthy of being upheld and revered, this period is called the period of longing for puja (deifying deities), which is a symptom of youth. The process of forming a stance or view of life or ideals of life can be seen as the discovery of life values. The process of discovering the values of life begins when, because of the lack of guidelines, the teenager longs for something that is considered valuable and worthy of worship, even though what he worships does not have a certain form, and often the teenager only knows that he wants something but does not know what he wants. Second, the object of worship has become clearer; that is, individuals who are seen as supporting certain

values become the personification of those values. Boys often actively imitate, while girls are mostly passive, admiring and worshipping them in their imaginations.

c. Late adolescence

After being able to determine his life stance, the individual has basically reached late adolescence and the developmental tasks of adolescence have been fulfilled, namely finding a stance in life and entering adulthood. Junior high school students are in a period of transition from childhood to adolescence. The behavior caused by this transition period creates various situations where students are unstable in controlling their emotions. Curiosity about new things that have never been encountered before results in behaviors that begin to give rise to self-character.

2. Characteristics of high school students

Senior High School (SMA) students are generally sixteen years old up to nineteen years old, depending on the stages of adolescent development. Adolescence is a period of developmental transition between childhood and adulthood that contains major changes in physical, cognitive, and psychosocial aspects. According to Piaget, high school students are at the stage of formal operational cognitive development (Papaliadkk, 2008: 534). The characteristics of high school-age teenagers, based on the opinion of several experts: According to Piaget (Desmita, 2005: 195), adolescents belonging to the stage of formal operational thought are already able to think abstractly and hypothetically. In addition, adolescents are also able to think systematically to solve problems.

At this time, adolescents solve problems by planning activities in advance and trying to anticipate various kinds of information that will be needed to solve problems. In addition to their unique cognitive characteristics, students at the high school level also have uniqueness in terms of moral development. According to Kohlberg in Desmita (2005: 207), teenagers are at the stage of conventional reasoning. At this stage, the moral level of adolescents is higher than that of children. Teenagers have started to recognize the concepts of morality such as honesty, fairness, decency, and discipline. However, adolescents do not always follow their own moral principles.

D. Relevant Research

Several studies that are relevant to this research are:

- 1) The results of Isaiah's research (2015) with the title: "Differences in Learning Outcomes for Class IX Students of SMP Negeri 10 Ambon who are taught with the Year Pair Share Cooperative Learning Model and Conventional learning models on rank material do not actually conclude that there are differences in the learning outcomes of class IX students of SMP Negeri 10 Ambon using the cooperative learning model of the think-pair-share type and conventional learning models on material of an unreal rank.
- 2) The results of Larasati's research (2018) with the title: improving class VII student learning outcomes of SMP Negeri 7 Ambon in triangular material using the Think-Pair-Share cooperative learning model assisted by the Swishmax application concluded that student

learning outcomes in triangle material could be improved by the cooperative learning model of the Think-Pair-Share type assisted by the Swishmax application.

- 3) The results of Salkery's research (2019) with the title "Differences in Learning Outcomes for Class VII Students of SMP Negeri 15 Ambon who are taught using the STAD type cooperative learning model and the Think Pair Share type cooperative learning model on Form Operation Material Algebra concluded that there were differences in learning outcomes for class VII students of SMP Negeri 15 Ambon who were taught using the STAD type cooperative learning model and the think-pair-share type cooperative learning model in algebraic operations material.
- 4) Oratmangun Research Results (2019) with the title: "Differences in Learning Outcomes for Class VIII Students of SMP Negeri 16 Ambon who were taught using the Think-Pair-Share type cooperative learning model and conventional learning models in terms of relations and functions concluded that there were differences in learning outcomes for class VIII students of SMP Negeri 16 Ambon who were taught with cooperative learning models such as Think Pair Share and conventional learning models on relations and functions.
- 5) The results of Souisa's research (2018) with the title "Comparison of Student Learning Outcomes in Class X PGRI I Ambon Using the Pairs Check (PC) Learning Model and the Think Pair Shere (TPS) Learning Model on Matrix Operations Material" conclude that there is a difference in the learning outcomes of class X PGRI I Ambon using the pairs check (PC) learning model, the think pair share (TPS) learning model, and the conventional learning model of matrices operations material.
- 6) The results of Firda's research, et al. (2020), with the title: "Differences in Student Mathematics Learning Outcomes Using Think Pair Share and Pair Check Learning in Set Materials," conclude that there is a significant difference between the average student mathematics learning outcomes and TPS and pair check learning on set material.
- 7) The results of Yulia Eka Sari's research (2018) with the title "Differences in Student Learning Outcomes Using the Think Pair Share (Tps) Learning Model with the Improved Learning Model Statistical Material Class VII SMPN 1 Sumber Gempol Tulungagung concluded that there were differences in student learning outcomes using the think learning model pair share (Tps) with the learning model improve statistical material.

E. Research Methods

In this study, the type of research used was library research, namely research conducted through data collection or scientific writing with the aim of collecting research objects or data that are of a literary nature or that have been carried out to solve a problem that is basically based on research critical and in-depth analysis of the relevant library materials. Before conducting a literature review, researchers must know in advance exactly where the source of scientific information will be obtained. Some of the sources used include scientific journals, research results in the form of theses and dissertations sourced from the internet, as well as other relevant sources. The object of this study is to determine the effectiveness and learning outcomes of

junior high school students using the Tink Pair Share (TPS) cooperative model. The data collection method in this study used descriptive analysis and was developed based on related literature studies. In this study, there were several research stages consisting of the preparation stage, the data collection stage, and the data processing stage, which are described as follows:

1) Preparation Stage

Conduct a literature review of sources to support the research to be conducted.

2) Data Collection Stage

At this stage, data is obtained from previous research using various sources, such as books, theses, the internet, journals, or other sources related to the research title.

3) Data Processing Stages

At the data processing stage, it is carried out to develop research that has been carried out by previous researchers. To obtain research objects regarding the effectiveness and results of student learning by using the Tink Pair Share (TPS) cooperative learning model.

F. Results and Discussion

The cooperative learning model is one of the models that is often used in the learning process in the current implementation of the 2013 curriculum. Think Pair Share (TPS) is a type of cooperative learning model that is often applied in the mathematics learning process because it is considered good for improving student learning outcomes. From several research results, such as research from Bunga (2018), Ilalah (2019), Tomatala (2020), Wally (2019), and Muskitta (2021), it was revealed that the use of the Think Pair Share (TPS) cooperative learning model increased student learning outcomes in math. Apart from the results of these studies, there are several advantages to the Think Pair Share (TPS) cooperative learning model, namely: (1) allows students to formulate and ask questions about existing material, (2) Students will be trained to apply the concept of exchanging opinions, (3) Students are more active in learning because they complete their assignments in pairs.

The Think Pair Share (TPS) type of cooperative learning model is one of the simplest cooperative learning models, which involves students actively learning in pairs to solve learning problems and having a sense of responsibility for their own learning as well as the learning of others (Getter and Rowe, 2008). In the cooperative learning model of this type, students not only learn the material provided, but they must also be ready and responsible for giving and teaching the material to other group members. Because of that, students are interdependent on one another and must work together cooperatively to learn the assigned material. The Think Pair Share (TPS) cooperative learning model is commonly used in all subjects and for all age levels of students (Lie, 2008). The cooperative learning model of the Think Pair Share (TPS) type provides opportunities for students to work alone (thinking) so as to foster a more independent nature in working on the questions given and also creates the nature of working together with other people in small groups or in pairs (pairing) so as to arouse students' self-confidence, and this type of cooperative learning model also provides opportunities for students to share (share) the results of discussions with their partners or

groups. In the application of the Think, Pair, Share cooperative learning model, students can be involved in the thought process and work together to solve problems given by the teacher. According to Trianto (Rianingsih et al., 2019), the Think Pair Share (TPS) cooperative learning model, or thinking in pairs and sharing, is a type of cooperative learning designed to influence student interaction patterns. In line with this, Arends (Huda, 2013: 207) also argued that this model is also effective for making class discussion patterns more varied. Thus, it can be concluded that the Think Pair Share (TPS) cooperative learning model emphasizes the process of cooperation in thinking and interacting in solving a problem. The same thing was stated by Isjoni (2011: 64), that Think Pair Share (TPS) as part of the cooperative learning model is designed to influence student interaction patterns. The Think Pair Share (TPS) cooperative learning model is a learning model that makes students more active and involved in group learning, namely by the teacher giving questions to students, then having them think in pairs and share opinions with other pairs (Komalasari, 2015: 64).

According to Trianto (Yustitia et al., 2018), Think, Pair, and Share (TPS) is a type of cooperative learning where students can think, pair, and share and work together with others. The thinking process, which is one of the steps in this model, provides space for students to be able to develop the ability to express ideas. Students can also compare their ideas and think critically and creatively when solving various problems that are given to them by their partner in the group. So that the cooperative learning model with the Think Pair Share (TPS) type is very suitable to be applied in the learning process for both elementary schools (SD), junior high schools (SMP), and senior high schools (SMA), even in higher education (PT).

G. Synthesis

The Think, Pair, Share (TPS) cooperative learning model is a model designed to help students develop their ideas by thinking, pairing, and sharing. This model is very simple so that it can be applied by teachers in the learning process for both elementary, junior high, high school, and even tertiary students. This model can also motivate students to always prepare themselves together with their partner or group in understanding each learning material in class and can also generate student interaction with reasoning in thinking and discussing with their friends in pairs with the aim of streamlining the group learning process.

In cooperative learning, the Think Pair Share (TPS) type can also create student activity in the classroom because, in the distribution of students in pairs, it is done heterogeneously based on gender, race, ethnicity, and their ability to help each other and work together in mastering the material provided. In addition, this model also gives students time to think, answer, and help each other so that they are motivated to study the material provided. In the learning process of applying the Think Pair Share (TPS) cooperative learning model, teachers are needed who are able to manage the class well so that the learning process can run smoothly. In addition to being able to manage the class well, the teacher must also master the steps of the model so that all the weaknesses of the model can be minimized properly in order to create interesting learning and can help improve student learning outcomes so that the application of the Think Pair Share cooperative learning model (TPS) is more effective in the learning process.

H. Conclusion

The effectiveness of the learning process using the Think Pair Share (TPS) cooperative learning model can run well and can be influenced by students and teachers. The teacher must be able to master the learning model so that the implementation can run smoothly. This can be shown when preparing for the implementation of learning, explaining group assignments, guiding students in discussions, and guiding students in drawing conclusions. As for students, it can be seen from the process of thinking, discussing with partners in groups, and sharing what they discussed with other groups or pairs in the class. The Think Pair Share (TPS) type of cooperative learning model can be applied to all levels of education, starting from elementary school (SD), junior high school (SMP), high school (SMA), and even higher education (PT), by taking into account the steps of those models

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