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The Application of Cooperative Learning Model Think Pair Share (TPS) Type to Improve The Ability of Understanding Science Concepts in Primary School

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Abstract. This research is based by the ability to understand students' science concepts that are still low.This is indicated by the average score of students below the KKM of 51.52. Where as KKM is applied in schools, namely 70. The ability to understand students' science concepts is still low because the teacher has not applied a model that is in accordance with the theme of Lingkungan Sahabat Kita. The purpose of this study was to improve the understanding of students' science concepts by applying a cooperative learning model of think pair share (TPS) type. Research method used in this study was Classroom Action Research (CAR) three cycles research. The research subjects were fifth grade students of Karya Mekar Elementary School totaling 33 students. Based on the indicators of understanding ability used in this study, namely interpreting, explaining, giving examples and concluding. The indicator concluded that in the first cycle, the percentage was 34.3%. Then in cycle II it increased to 54.5% and in cycle III it increased to 81.1%. Based on the results of the study it can be concluded that the application of cooperative learning models of think pair share types can improve the understanding of students science concepts in elementary schools.

Keywords: Cooperative learning, *Think Pair Share (TPS), Science Understanding, Primary School,* Action Research

INTRODUCTION ~ The 2013 curriculum is a competency-based curriculum designed to anticipate 21st century competency needs. The 2013 curriculum appears based on the advancement of information technology in society. The 2013 curriculum is designed to develop student competencies in attitudes, knowledge and skills as a whole. Process of achieving the three domains is carried out by combining three domains through integrated thematic learning. The purpose of 2013 curriculum according to Mulyasa (2013, p. 65) is to encourage students, be able to make observations well, be able to ask questions, reason, and communicate (present) what they get or know after receiving lessons. 2013 curriculum is a curriculum that prioritizes understanding, skills and character education. In applying the 2013 Curriculum students should be able to understand the material, be active in discussions and presentations. In addition, students are also required to have good manners. According to Mulyasa (2013, p. 6) said that 2013 curriculum is curriculum that emphasizes character education, especially at the basic level which will be the foundation at the next level. Through the development of 2013 Curriculum based on character education, it is expected that students will be able to compete globally.

Science materials in the 2013 curriculum are delivered in an integrated manner with several other subjects in a particular theme or commonly referred to as thematic combined learning. According to Rusman (2012, p. 254) thematic kearning is an integrated learning model which is a learning system that allows students either individually or in groups to explore and

discover concepts and scientific principles as a whole, meaningful and authentic.

Based on observations in V grade of SDN Karya Mekar it was found that the ability of students to understand science concepts is still low with an average of 51.52 (below the predetermined KKM of 70.00. This is caused by the ongoing learning process that does not actively involve students. In addition, the right learning model has not been found to overcome these problems. Exploration of the material only relies on explanations from the teacher, the use of instructional media is very limited because it only uses source books.

Use of appropriate learning models is also very influential on understanding students' concepts in a material. But as a result of the limited knowledge possessed the learning model used is just that. expected that students will be able to compete globally.

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So that makes students not feel excited about learning and feel bored when the learning process takes place. In the end learning process does not provide meaningful meaning for students, the understanding that students have in getting the material being learned is not optimal. Each learning process that is given always provides its own challenges in providing material to students.

There needs to be improvement in learning from what was originally boring to fun learning. One solution offered to be able to overcome the limitations of understanding the concepts of science students can be done by applying a variety of models. The approach or model used should be able to make the learning process more enjoyable and students can actively participate in learning activities, in order to achieve maximum activity and understanding of concepts.

Learning model that can be used is cooperative learning model Think Pair Share type. According to Slavin (Isjoni, 2012, p. 13) argues that cooperative learning is a learning model where students learn and work together in small groups collaboratively with heterogeneous group structures. Opinions regarding this model were also expressed by Hagan (Hosman, 2014, p. 235) that cooperative learning is a successful learning strategy in which small teams, each student of a different level of ability, uses learning activities to increase their understanding of a subject.

Cooperative learning has various types, one type that can be used is Think Pair Share (TPS). This technique gives students the opportunity to work alone and cooperate with others. According to Trianto (2010, p. 81) *Think Pair Share (TPS)* is a type of cooperative learning designed to influence student interaction. While according to Suyatno (2009, p. 54) *Think Pair Share (TPS)* is cooperative learning models that have established procedures to give students more time to think deeply about what is explained or experienced (thinking, answering, and helping one another). The advantage of this model is the optimization of student participation, which gives eight times more opportunity for students to be recognized and show their participation to others (Isjoni, 2014, p. 78). Based on research conducted by Wati (2013) the use of cooperative learning models Think Pair Share (TPS) type has an effect on students' understanding of concepts by 32.26 higher compared to students who use conventional learning models that is equal to 12.20. The use of cooperative learning models of the Think Pair Share (TPS) type is expected to improve students' understanding of the science concepts in Environmental Themes Our Friends of the Human and Environmental Sub-Themes and create a pleasant, active and efficient learning environment. In the Theme of Our Friends Environment Sub Theme of Human and Learning Environment 1, basic Competencies to be achieved in this learning are Indonesian 3.8 outlining the sequence of events or actions contained in the nonfiction text while in science subjects the competency to be achieved is 3.8 Analyzing the water cycle and its impact on events on earth as well as the survival of living things. Based on the background described above, a class action research will be conducted with the title Application of the Cooperative Learning Model Think Pair Share (TPS) Technique to Improve Students' Understanding of Science Concepts in Primary Schools.

The specific problems that will be described in this study are:

1. How are the activities of the fifth grade students of SDN Karya Mekar using cooperative learning model Think Pair Share (TPS) type theme of our best friend's environment?
2. How to improve the ability of understanding the science concepts of fifth grade students of SDN Karya Mekar after using

cooperative learning model Think Pair Share (TPS) type?

Cooperative learning model is a learning model in its implementation the teacher groups students into certain groups. Cooperative learning model is models that are often used in learning activities. There are many types of cooperative learning models that can be chosen by the teacher when delivering teaching materials so that the learning process becomes more varied so that students do not feel bored with the same teaching and learning activities. One of cooperative learning model that can be used is think pair share (TPS).

Think Pair Share (TPS) is a model developed by Frank Lyman and colleagues at the University of Maryland, as quoted by Arends (Trianto, 2010, p. 81) said that think pair share is an effective way to vary the atmosphere of a class discussion pattern with the assumption that all discussions need arrangements to control the class. Overall think pair share can give students more thinking. In this study we will examine the understanding of students' science concepts. There are some experts who express their opinions on the definition of understanding concepts.

According to Bloom (Widodo, 2006, p. 6) said that comprehension is understand the meaning, paraphrase a concept. Students can understand when they are able to make connections between new knowledge to be added with previous knowledge. Incoming knowledge is integrated with existing mental models and cognitive frameworks. Conceptual knowledge provides the basis for understanding.

Suyono and Harianto (2011, p. 145) said that understanding is meaningful learning, at this stage learning links new ideas with relevant prior knowledge. While concepts are ideas or groups of facts / information that have meaning. The concept is related to grouping things into categories. Meanwhile according to Sudjana (Ramdani, 2014, p. 16), understanding is higher than knowledge, such as explaining in its own sentence form something it reads or hears, gives another example of what has been exemplified or uses application instructions in another case.

Based on some of the understandings conveyed by experts, it can be concluded that understanding the concept is the ability to construct the meaning or understanding of a concept based on initial knowledge possessed with new knowledge. Understanding concepts is important for students because by understanding the correct concepts students can master and store the material they have learned in a long period of time.

The process of understanding has several cognitive processes that can be used as indicators of understanding the concept of science, according to Anderson and Krathwohl (2010, p. 106) said that understanding categories include seven cognitive processes, there are interpreting, exemplifying, classifying, summarizing, interfering, comparing and explaining.

The indicators used in this study are interpreting, explaining, giving examples and concluding.

METHOD

In this study the method used is Classroom Action Research (PTK) the research design used is the design developed by Kemmis and Mc. Taggart. According to Hermawan (2007, p. 128) said that the design of Kemmis and Mc Taggart's model is essentially in the form of devices or strands with a device consisting of four components namely, planning, action, observation and reflection. At each cycle the research activities are basically the same, but there are improvements at each stage. So that the objectives to be achieved are clearer and more directed, the researcher arranges the research design.

Classroom Action Research (PTK) was conducted at SDN Karya Mekar Cipeundeuy District, Subang Regency. The subjects of the study were students of SDN Karya Mekar class V with 40 students, including 12 male students and 28 female students. The reason of researcher chose the research subject is based on the consideration that the fifth grade students of SDN Karya Mekar still experience limitations in understanding concepts in learning science. So that researchers need to innovate and update science learning in the hope that students will be more motivated to provide convenience to develop skills, and are expected to have a positive impact on students.

The research was conducted in one month from April 8 to May 4 2019. The research took place in the second semester of the 2018/2019 school year.

Data collection techniques in this study used a test technique using multiple choice questions in the form of 15 questions and non-test techniques using observation sheets of teacher and student activities in applying cooperative learning models think pair share (TPS) types. Observation of student activities is carried out by researchers assisted by one observer in each cycle. While the observation of teacher activity is done by the fifth grade teacher. Whereas students' understanding of science concept data on aspects of knowledge were collected through individual evaluation test instruments in the form of multiple choice given at the end of each cycle. Data analysis techniques were carried out using qualitative and quantitative methods.

Result

In preliminary data the results of observations made at Karya Mekar Elementary School found that students' understanding of science concepts is still low. One of the factors that causes the lack of understanding of students' science concepts is that students are actively involved in the learning process. Preliminary data before the implementation of the cooperative learning models type Think Pair Share (TPS) is presented in Table 1.

Table 1. Think Pair Share (TPS)

No	KKM	Total Students	Percentage
1.	< 70	28	85%
2.	= 70	0	0%
3.	> 70	5	15%
Total		33	

Based on Table 1. It can be seen that from 33 students who took the pretest, only 5 people or only 15% completed it. While as many as 85% have not yet been completed.

In the implementation of the first cycle by applying the cooperative learning model type Think Pair Share (TPS). The first stage is the teacher explains the material being studied, after that the teacher divides students into groups of groups, and each group consists of 4-5 heterogeneous people. Then the teacher asks students to read the reading text that has been provided. After that the teacher asks questions to find out how students understand about the reading text they have read. After that students are given time to think about answers to questions that have been asked. Then students discuss the answers with friends in the group. After that the teacher randomly pointed students then asked what the answers to the questions the teacher had given.

The next activity is the teacher distributing worksheets about the water cycle. At this worksheet the first student is asked to observe a picture of the water cycle. The aim is that students can interpret the picture about the water cycle from the image into sentence form. Next students discuss the stages in the water cycle process. This activity aims to enable students to explain the stages that exist in the water cycle and so students can deduce what is meant by the water cycle. After the discussion activity is finished students in groups deliver the results of their discussion in front of the class. Other students provide responses / questions about the results delivered.

The results of student observations made by the observer found that 4 aspects of the 11 aspects observed received a moderate score. The first aspect that gets an average value of 2.625 is students answering questions raised by the teacher. This aspect gets low marks because when the teacher asks only a few students can answer the question from the teacher. The next aspect that gets a moderate grade and needs improvement is that students express their opinions when discussing. This aspect gets an average value of 2.625. At the time of discussion only a few students expressed their opinions while others only remained silent. The next aspect is that students value the opinions of their friends in discussions with an average value of 2.75. Because only a few students conduct discussions so

only a few students get good grades in this aspect. The last aspect that gets an average score is enough that students answer questions raised by the teacher / friend after delivering the results of the discussion, this aspect gets an average value of 2.75. When there are friends or teachers who ask questions after the student submits the results of the discussion, only a few students can answer the question.

The results of evaluating students' understanding of concepts are done at the end of learning. In each cycle I indicator the results obtained can be seen in Table 2.

Table 2. Results of Concept Understanding

No	Indicator	Percentage	Category
1	Analyze	57,4%	Poor
2	Describe	62,7%	Good
3	Provide Examples	55,3%	Poor
4	Conclude	34,3%	Deficient

Annotation:
81-100% = excellent
61-80% = good
41-60% = poor
21-40% = deficient
0-20% = not good (Arikunto, 2010, p. 269)

Based on the explanation of the table above, it can be concluded that the four indicators used are one indicator, namely explaining to be in a good category with a percentage of 62.7%. Then the other two indicators namely interpreting and giving examples are in the sufficient category with a percentage of 57.4% and 55.3%. While one other indicator is concluded to get the unfavorable category with a percentage of 34.3%. Therefore there needs to be improvements in the next cycle.

Classical learning outcomes in the first cycle can be seen in Table 3.

Table 3. Result and Post Cycle 1

No	KKM	Total Students	Percentage
1.	< 70	20	61%
2.	= 70	0	0%
3.	> 70	13	39%
Total		33	

Based on the results of the first cycle post-test it can be seen that students who score above the KKM are 39% or as many as 13 people. Whereas students who scored below KKM were 61% as many as 20 students. Because the results obtained did not meet the 85% classical class completeness, the next cycle was carried out.

After the first cycle of the study continued to the second cycle because the results in the first cycle were still not optimal. The stages of learning in the second cycle are almost similar to the first cycle, the difference being the teaching material. In cycle I discussed the water cycle and its stages. While in cycle II will discuss the function of water and the requirements for clean water.

The first thing to do is teacher prepares the class, students pray before learning, and the teacher checks the presence of students. Next the teacher apperception and proceed with delivering teaching material.

The teacher explains the material about the function of water and the requirements for clean water. After that the teacher divides students into heterogeneous groups. Each group consists of 4-5 people Then students read the reading text entitled "Water as a Source of Life" and then students answer the questions asked by the teacher. Students answer the questions individually first then discuss them with their group friends. After that the teacher asks students to submit their answers, the teacher chooses students randomly.

The next activity the teacher distributes LKS about clean water requirements and water functions. In the worksheet the first thing students had to do was observe the clean water and dirty water they brought, then the students recorded their observations in tabular form. Furthermore, students observe images about the function of water for humans, animals and plants and provide an explanation in accordance with existing images, these activities are carried out together with discussions. After the discussion activity is finished students in groups deliver the results of their discussion in front of the class. Other students provide responses / questions about the results delivered.

The results of student observations carried out in the second cycle there are two aspects that get an average value which is still in the medium category, namely the aspect of students expressing their opinions when discussing an average score of 2.875 because some students still seem to be quiet when the discussion takes place. Another aspect that scores 3,875 is that students value the opinions expressed by their friends. This aspect gets a smaller value than other aspects because there are students who do not want to discuss and assume what their friends say is wrong so he does not want to respect the opinion of his friend.

The results of the concept understanding tests conducted after the learning activities in the second cycle. The results are presented in Table 4.

Table 4. Result of Understanding the Concept

No	Indicator	Percentage	Category
1	Analyze	74,7%	Good
2	Describe	70,4%	Good

3	Provide Examples	69,7%	Good
4	Conclude	54,5%	Poor

Annotation:
81-100% = excellent
61-80% = good
41-60% = poor
21-40% = deficient
0-20% = not good (Arikunto, 2010, p. 269)

Based on table 4. It can be concluded that the three indicators of understanding the concept of science get a good category that is interpreting, explaining and giving examples and one indicator gets enough categories that is the indicator concluded with a percentage of 54.5%.

The results of classical learning completion in cycle II are presented in Table 5.

Table 5. Cycle Test Results II

No	KKM	Total Students	Percentage
1.	< 70	12	37%
2.	= 70	0	0%
3.	> 70	21	64%
Jumlah		33	100%

Based on the above table it can be seen that the number of students who score above KKM is 21 people or approximately 64% and students who score below KKM are 12 people or approximately 37% These results indicate the need for the next cycle because it does not meet the completeness of classical class.

The implementation of the third cycle is done because the previous two cycles have not gotten optimal results even though they have increased. The implementation of cycle III is almost the same as the implementation of the previous cycle, the only difference being teaching material that will be delivered. In cycle III the teaching material that will be delivered is about the factors that cause the clean water supply to decrease, due to lack of clean water and efforts that can be made to reduce the clean water crisis.

The first step taken is the teacher giving an explanation of the factors that cause a reduction in clean water, due to lack of clean water and efforts to reduce the clean water crisis. After that the teacher divides students into heterogeneous groups. Each group consists of 4-5 people Then students read the reading text entitled "World Water Day" and then students answer the questions asked by the teacher. Students answer the questions individually first then discuss them with their group friends. After that the teacher asks students to submit their answers, the teacher chooses students randomly.

Then the teacher distributes LKS to each group. In the worksheet the first thing the student has to do is observe the picture and then complete the explanation about the picture. After that students read the reading text then in discussion students answer questions about the reading text they have read.

The results of observations made in cycle III show that all aspects have received good average scores. Hopefully this result can be maintained or improved for the better.

The results of understanding students' science concept tests in cycle III can be seen in Table 6 below.

Table 6. Results of Understanding the Concept of Science

No	Indicator	Percentage	Category
1	Analyze	92,8%	Excellent
2	Describe	82,8%	Excellent
3	Provide Examples	84,4%	Excellent
4	Conclude	81,1%	Excellent

Annotation:
81-100% = excellent
61-80% = good
41-60% = poor
21-40% = deficient
0-20% = not good (Arikunto, 2010, p. 269)

Based on Table 6 it can be seen the percentage of ability to understand the concept of science in each indicator. In the first indicator, interpreting, obtaining an average percentage of 92.8% and getting a value in the excellent category. Furthermore, the indicators explain getting an average percentage of 87.8% and getting a value in the excellent category. Then the indicators give an example, get an average percentage of 88.4% and get a score in the excellent category. Finally, the indicator concluded to get an average percentage of 81.1% and scored in the excellent category. Based on the above results it can be concluded that the ability of understanding the concept of science in class V students is already good. Therefore, there is no need for action in the form of the next cycle.

The results of classical learning completeness can be seen in table 7.

Table 7. Post Cycle III Results

No	KKM	Total	Students Percentage
1.	< 70	4	12%
2.	= 70	0	0%
3.	> 70	29	88%
Total		33	100%

Based on the results of the post-cycle III test it can be seen that 88% of students scored above the KKM and as many as 12% others namely as many as 4 students whose

grades are still below the KKM. Because it meets the classical class completeness, there is no need for the next cycle.

Three cycles have been carried out. From the three cycles that have been carried out it can be seen that each cycle has an increase both in student activity and an increase in understanding of students' science concepts. Table 8 summarizes the results of the students' understanding of science concepts from the first cycle to the last cycle.

Table 8. Recapitulation of Concept Understanding Test Results for Each Cycle I, II and III Indicator

No	Indicator of Understanding the Concept of Science	Cycle I	Cycle II	Cycle III
1	Analyze	57,4%	74,7%	92,8%
2	Describe	62,7%	70,4%	87,8%
3	Provide Examples	55,3%	69,7%	88,4%
4	Conclude	34,3%	54,5%	81,1%

Annotation:
81-100% = excellent
61-80% = good
41-60% = poor
21-40% = deficient
0-20% = not good (Arikunto, 2010, p. 269)

Based on the tests that have been carried out in cycles I, II and III, the results obtained by the ability to understand the science concepts of students on each indicator. In the first cycle, the indicator that received the highest value was explained by 62.7%. Whereas interpreting indicators gained a percentage of 57.4%. Then the indicator gives an example gets a percentage of 55.3%. The last indicator is concluded to get the lowest percentage of 34.3%. While in cycle II the results of understanding the concept of science in each indicator have increased in each indicator. In interpreting the indicators in the second cycle obtained a percentage of 74.7%. Then the indicator explains the percentage of 70.4%. Furthermore, the indicators giving examples obtained a percentage of 69.7%.

While the indicators concluded getting a percentage of 54.5%. In cycle III the results of understanding the science concept test also increased from the previous cycle. The interpreting indicator gained a percentage of 92.8%. Furthermore, the indicators explain getting a percentage of 87.8%. Then the indicator gives an example of a percentage of 88.4% and the indicator concludes getting a percentage of 81.1%. While the results of the general understanding test can be seen in Table 9.

Table 9 Recapitulation of the results of the Cycle I, II and III Understanding Tests Understanding Tests

Criteria	**Pre-Cycle**	**Cycle I**	**Cycle II**	**Cycle III**
Lowest Value	20	20	20	46,7
Highest Value	80	100	93,3	100

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Average Value	51,52	61,41	68,1	85,4
The Number of Students Compliting KKM	5	13	21	29
The Number of Students Has Not Been Completed	28	20	12	4
Percentage of Completeness	15%	39%	64%	88%

Based on Table 9. It can be seen that an increase from pre-cycle to cycle I has increased from an average of 51.52 to 61, 41 and completeness of student learning has increased from 15% to 39%. Then increase from cycle I to cycle II. The average increased to 68.1 while from cycle II to cycle III an increase to 85.5. n addition to the average, students' mastery learning has also increased. From the first cycle as much as 39% then the second cycle increased to 64% and in the third cycle increased again to 88%. These results have met the classroom learning completeness standard that is 85%.

CONCLUSION

Based on the results of research on the learning process that uses cooperative learning models Think Pair Share type in class V SDN Karya Mekar to improve students' understanding of science concepts carried out in three cycles, the following conclusions are obtained:

1. Student activities in the learning process by using the cooperative learning model type of think pair share (TPS) showed an increase. This is evident from the aspects observed at the time of implementation. In the first cycle there were four aspects which were considered to be unfavorable and in the next cycle it was reduced to only two aspects and in the last cycle all aspects observed were well-received.
2. Understanding of students' science concepts in learning by using cooperative learning models of think pair share (TPS) shows an increase. Evidenced by an increase in each indicator of understanding the concepts under study namely interpreting, explaining, giving examples and concluding. In cycle I of the four indicators used the indicator explains getting a value in either category. Whereas the two indicators, namely interpreting and giving examples, get scores in the sufficient categories and the indicators conclude getting grades in the unfavorable categories. While in the second cycle three indicators get a good value in the category of interpreting, explaining and giving examples. While the indicators concluded getting a score in the category is sufficient. In cycle III all indicators, namely interpreting, explaining, giving examples and concluding to get a value in the category of very good with a

percentage of> 80%. Evidenced by the average value of the results and the percentage of classical completeness of students who have increased in each cycle. In cycle I the average value was 64.41 then in cycle II it increased to 68.1 and in cycle III it increased to 85.4. Whereas the percentage of students completeness classically in the first cycle of students who completed as much as 39%, then in the second cycle increased to 64% and in the third cycle increased to 88%. This identifies that the learning objectives that have been planned have been achieved, namely achieving classical completeness> 85%.

Thus it can be concluded in general that the use of cooperative learning models of type think pair share (TPS) can improve students' ability to understand science concepts.

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