

# The Application of Cooperative Learning Think Pair Share (TPS) Model to Increase the Process Science Skills in Class IV Elementary School Number 81 Pekanbaru City

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**Abstract:** *The aims of this study to analyze the implementation of cooperative learning Think Pair Share (TPS) model in enhancing science process skills of fourth grade students of SDN 81 Pekanbaru. Subjects were students of elementary school (SDN) 81 Pekanbaru City at year 2014/2015, with a total sample of 21 students (one class). Science process skills captured through science process skills test, which consists of seven aspects of evaluation (indicators), namely: observation/observation, question, hypothesis, communication, inference, planning, and implementation. The results showed that in general a significant increase, but to aspects of "question" has decreased the number of N-gain of - 0.06. The highest increase was shown in the aspect of "application", the number of N-gain of 0.50 (medium category). Lowest increase shown in the aspect of "hypothesis", the number of N-gain of 0.16 (lower category).*

**Keywords:** Cooperative learning Think Pair Share(TPS) Model, Science process skills.

## 1. Introduction

The nature of teaching and learning is a process of interaction between teachers and students and students with students in a lesson. This relationship is called the multi-way interaction in the learning process. The teacher is one component in the learning process that has a very important role in the achievement of learning goals, because teacher can directly affect, nurture, guide, and improve intelligence and skills of students. Learning objectives will be achieved if the learning process students get knowledge and meaningful learning experiences, which is able to involve students actively and optimally, therefore, teachers must strive to apply learning strategies effectively and efficiently in accordance with the student's character and the character of the material.

Learning Natural Sciences or Science is one of the subjects given in elementary school (SD) which examines the events, facts, concepts, theories, and related generalizations surrounding natural environment. The focus of learning science / Science in Elementary school is to develop students' competence to be able to explore and understand the scientific and systematic nature which includes knowledge, concepts, and discoveries.

Implementation of science teaching/learning in Science should direct empirical approach with the assumption that the universe can be studied, understood, and explained that does not solely depend on the method of causality but through certain processes, such as observation, experimentation, and rational analysis. Learning science in elementary school are not only glued to the process and the product, but the formation of attitudes and skills need to be developed. Trowbridge and Bybee also confirmed that the science is not a real science if it is not accompanied by

experiments and laboratory work. The meaning of the sentence above confirms that learning science not only glued to the course in the form of cognitive thinking skills but also contains elements of attitudes and skills which is a basic process in forming meaningful learning and the development of various skills. Based on Curriculum Education Unit (KTSP) the purpose of teaching science. Science is for students to have the following capabilities:

- Gaining the confidence of the greatness of God Almighty is based on the existence, beauty, and the regularity of his creation.
- Develop knowledge and understanding of science concepts that are useful and can be applied in everyday life.
- Develop curiosity, positive attitude and awareness of the existence of a relationship of mutual influence between science, environment, technology and society.
- Develop skills to investigate the nature around, solve problems and make decisions.
- Raise awareness to participate in maintaining, maintaining and preserving the natural environment.

Rustaman (2003) also explains that the basic skills possessed scientists in scientific activities known to science process skills/IPA. The explanation confirms that early science process skills students need to be developed, through the active involvement of students in the learning process in the classroom and in the laboratory. Radjijanti (2000) adds that the approach is the process skills approach to teaching science/science are very basic and are supposed to be used by teachers in each teaching science ranging from elementary school level.

Reality which is found in the field that learning science in elementary school so far still has many obstacles (some elementary observations in Pekanbaru), such as: learning is

still dominated by the paradigm of understanding of memorizing, so that the students had not been preceded by constructivism, the teacher is not much involve students in learning as not teaching student in groups, does not involve students in the learning project, rarely do the experiment, no class discussions, and lack of activity present findings to the class, so that these constraints lead to a wide range of abilities and skills do not develop, especially science process skills of students. Karli H. (2010) observation results, in one of the elementary schools in the city of Jakarta concluded that the process of learning science conducted by teachers is limited to the transfer of information, making it less provide opportunities for students to interact directly with concrete objects and methods teaching which has been centered on teachers lead students to become passive and less trained science process skills. The same thing was also confirmed by Brahim, T.K. (2007) which states that the results of student learning or cognitive ability level elementary school is still very alarming, especially for teaching science. Results from several monitoring formal or non-formal, individuals and community groups, many students complained in an effort to accept the science subjects and they feel less pleased, bored, and less satisfied.

The above constraints can lead to poor quality of learning that ultimately affect the low quality of education in primary school, so it can be done in various ways to eliminate or minimize these obstacles and one of them is to use a learning-oriented in group discussions and class discussions with see differences between students, as well as creating a fun class. One lesson that can accommodate that desire is to use cooperative learning Think-Pair-Share (TPS). Think-Pair-Share (think, pair, and share) is one type of cooperative learning developed by Lyman of the University of Maryland (Slavin, 2008). TPS is a cooperative learning that is designed to influence the pattern of student interaction and is an effective way to create an atmosphere variation pattern class discussion, with the assumption that all the recitation and discussion requires setting in the control of the class as a whole (Trianto, 2010).

The essence of teaching students independently TPS is able to think and solve problems, share solutions or ideas with their partner (other students), students are prepared to be able to collaborate with other students, working together, were able to issue an opinion or idea, and sharing experiences (Azlina, NAN, 2010). According to Huda (2011: 132), the steps TPS is (a) students are asked to sit in pairs, (b) give the teacher a question/problem to students, (c) students are asked to think individually in advance of answers to questions from the teacher, (d) the students discuss the results of his thoughts with a partner to obtain

agreement on the answer to both of them, and (e) teachers instruct each pair to share answers agreed on other students in the classroom. Learning TPS has several advantages, namely: to provide an opportunity for students to work independently and in collaboration with others, to optimize the participation of students during the learning process, and can be used in all subjects at all age levels of students (Lie, 2010). Setiyarini and Sujarwanta (2013) research results also explained that the cooperative learning TPS equipped media can enhance students' science process skills.

Based on the above explanation, it can be concluded that the science process skills are important things that must be mastered and developed by students as early as possible. Therefore, researchers are trying to analyze the implementation of cooperative learning model Think Pair Share (TPS) in enhancing science process skills of fourth grade students of SDN 81 Pekanbaru.

## 2. Research Methods

This research is a quasi-experimental study. The design used in this study is one group pretest-posttest design, which in practice involves fourth grade students who are following science subjects/Science. This research was conducted in SDN 81 Pekanbaru City in March-April 2014, the entire population of primary school students of SDN 81 Pekanbaru City 2014/2015 school year, with a total sample of 21 people (one class). This study aims to analyze the implementation of cooperative learning model Think Pair Share (TPS) in improving students' science process skills. To obtain relevant data, then the instruments used in this study is the science process skills test instrument students. Science process skills test consists of seven aspects of evaluation (indicators), namely: Observation, question, hypothesis, communication, inference, planning, and implementation.

## 3. Results and Discussion

### 3.1. Research Result

This study apply the 7 aspects of assessment (indicator) science process skills of students consisting of: "observation, question, hypothesis, communication, inference, planning, and implementation". Each aspect is analyzed achievement assessment is based on the acquisition value of the pretest and posttest. Recapitulation pretest-post test mean value science process skills of students can be seen in the following table.

**Table 1:** The Recapitulation Score Mean pretest-posttest Science Process Skills Students

Concept	Pretest	Posttest	Normality Test ( $\alpha = 0,05$ )	N-gain	t calculate	P(sig.)
Observation	31,52	45,38	(Normaly distribution)	0,20	-3,596	0,011 (significant)
Questioning	30,77	26,93		-0,06		
Hipothesis	52,93	56,63		0,16		
Communication	37,70	53,78		0,26		
Inferensi	36,92	57,78		0,33		
Planning	47,85	59,60		0,23		
Implementating	46,20	73,10		0,50		
Total	282,88	376,00				
Average	40,41	53,71		0,22		

Based on the above table, it can be concluded that in general an increase in the percentage of the mean (N-gain = 0.22), but specifically to aspects of "questions" decreased (N-gain = -0.06). The highest increase was shown in the aspect of "application" (N-gain = 0.50).

### 3.2 Discussion

The results showed that in general an increase in the mean (N-gain) aspects of the science process skills of students. Improvement of the most dominant in sequence is the aspect of "application, inference, communication, planning, observation/observation, and hypothesis". Special to the aspect of "question" has decreased.

The high increase in the aspect of "application" category are based on the analysis of the value of N-gain (0.50) due to the cooperative learning model TPS able to involve students actively, so that learning becomes meaningful. TPS cooperative learning provides many opportunities for students to think and share, therefore they earn concepts can be applied. The application of the concept can be done through the process of teaching / sharing knowledge or concepts with other students, in addition to the application of the concept can also be seen from the results of student learning. Benefit from the application of the model very much, based on research results Trisiantari, *et al.* (2013) explains that the implementation of cooperative models TPS significant effect to improvement of speech and creative thinking skills of students of grade V elementary school. Another advantage of this model is to train students to answer questions from the teacher together and may improve memory of students.

Rusmaryanti, D. (2013) also explained that the cooperative learning model TPS (Think Pair Share) gives more time for students to think about and discuss with her to find a more precise answer and teaches students to help each other or in cooperation with members of the group so as to students who are less able to be assisted by a student who is able in academic terms, so that underprivileged students in academic terms will be able to understand the subject matter. According Semiawan (1992) concept is the ability to apply the skills that are generally held by scientists.

Setiyarini and Sujarwanta research results (2013) asserts that the learning model type TPS (Think Pair Share) may increase the activity of the students, especially the activities share the results of the discussion to the entire class, with an increase of 19.99%, which can be concluded that the share of results is the ability of students in applying the concept that he has. Therefore, aspects of the application of the concept is an important aspect in the implementation of cooperative learning model TPS (Think Pair Share). The application of the concept is part of a cooperative or peer tutoring, which can improve the cognitive, affective, and psychomotor students. Rusmaryanti, D. (2013) explains that the learning system that gives an opportunity to the students to work with his friend, will further enhance the ability to understand the subject matter, so that the learning outcomes achieved are also increasing. Research results Tawil, *et al.* (2014) also confirms that the application of a scientific

approach to cooperative learning model Think Pair Share (TPS) can increase students' understanding of concepts.

Other aspects of the process skills that need to be observed is the "hypothesis", which indicates an increase, but when seen from the analysis of the N-gain value (0.16) of these aspects are still classified in the category low compared with other aspects. Aspects "hypothesis" line and is closely related to aspects of the "question", as someone who is able to issue queries particularly critical question then indirectly he has proposed a hypothesis. Suja (2006) also stated that the two types of PPP (hypothetical and question aspects) are highly interconnected and interrelated.

The hypothesis is a temporary answer that can be interpreted as a response only from the relevant theories or only proceed from the counsel without first looking at the source of the theory. Answer temporary (hypothesis) is not based on empirical facts, obtained through data collection.

Low ability students in filing hypothesis, indicated due to the low students curiosity. Therefore, it takes the role of the teacher in stimulating students to be able to bring and develop the curiosity of students to teaching science in elementary school. Curiosity students can also be developed through the application of appropriate learning strategies, which include models, approaches, methods, and instructional media. The implementation of cooperative learning model as TPS also able to increase the curiosity of students and deemed suitable by some materials science, although the results of the data analysis showed that the learning model is not optimal in improving student PPP especially for aspects "hypothesis" and the aspect of "questions".

Aspects that the main focus of this research is the aspect of "questions". The low aspect "question", due to low student questioning skills, especially critical questioning skills. Asked a very important skill mastered by students and teachers. Skills asked very closely in developing thinking skills, and thinking skills related to the creation of meaningful learning. Putra and Sudargo (2014) also confirms that the submission of critical questions must be able to bring the students to find any further queries, so that critical thinking skills can develop, which in turn have an impact on improving the students' mastery of concepts. Therefore, ask students to practice the skills required of a collaborative effort cooperative learning model TPS with an approach that is able to create a curiosity in students.

Questioning skills are key in the process of learning, asking questions arise not only in students but also from teachers, therefore, as early as possible the teacher should be able to train yourself in mastering the technique of asking. Effort that teachers can do to improve the ability to ask is to apply learning-oriented inquiry-based approach to critical questions. Inquiry-based approach to critical questions can be packaged in a cooperative learning. Putra and Sudargo (2014) research results, explains that the use of inquiry learning in particular laboratory inquiry oriented cooperative learning and peer tutoring, student focused to become a scientist who expected to find concepts independently, lecturers / teachers act as facilitators and motivators, which requires them to constantly develop our potential.

Overall TPS type of cooperative learning can improve students' science process skills as a whole, but to boost the skills of asking and writing skills hypothesis still needs to be a combination of cooperative learning model TPS with a variety of approaches, such as the approach of inquiry. Inquiry approach is closely associated with the curiosity of students who are not directly impact on the ability of questioning skills and writing skills hypotheses.

## 4. Conclusions and Recommendation

### 4.1 Conclusions

Based on the results of research and discussion, it can be concluded that the application of cooperative learning model TPS can improve students' science process skills overall. The highest increase was shown in the aspect of "application", the number of N-gain of 0.50 (medium category). Lowest increase shown in the aspect of "hypothesis", the number of N-gain of 0.16 (lower category). Aspects of concern due to the decrease is the aspect of "question", the number of N-gain of -0.06. The low aspect "question" due to low student curiosity for learning, so the impact is also on the low student skills in writing hypothesis. Therefore, it takes a cooperative learning model combining TPS with other approaches.

### 4.2 Recommendations

Teachers should be as early as possible to apply cooperative learning model TPS to measure students' science process skills, but to get the most need for a combination of cooperative learning model TPS with other approaches such as inquiry approach, so that the various skills can be developed.

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