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Self-regulated Learning for Elementary School Students' Mathematics Learning Using Think Pair Share

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ABSTRACT
Background: Students need Self-regulated learning to achieve maximum learning outcomes. In mathematics, students are often faced with challenges in solving complex problems or questions. So, in order for students to be able to face these challenges, students must have the motivation and strategy to solve them. This shows that students must have good Self-regulated Learning skills. The Think Pair Share learning model, can accommodate and have a positive influence on students' self-regulated learning. *Aim*: This research aims to find out how much difference the influence of the Think Pair Share learning model has on students' Self-regulated Learning in studying Mathematics. *Method*: This research is quantitative research. The population and sample size are 21 fourth-grade students in one of the state elementary schools in Palangkaraya. Sampling was carried out using a purposive sampling technique. The data collection instrument is a self-regulated learning scale questionnaire. The research conclusion analysis technique used in this research is the paired sample t-test. *Results and Discussion*: The SRL t_calculation value obtained using TPS learning was 7.074 and a significance value of 0.000. The significance value is 0.000 < 0.05 and t-count > t-table, namely 7.074 > 1.976 so Ho is rejected. *Conclusion*: There is a positive influence of Think Pair Share learning on the Self-regulated Learning of fourth-grade elementary school students in learning mathematics.

Keywords: Think Pair Share; Learning Model; Self-regulated Learning; Mathematics Learning; Elementary School

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INTRODUCTION

Learning is one of the central aspects of the world of education. Learning today focuses on a student-centered learning process. Student-centered learning is expected to be able to provide full meaning to each material studied (meaning learning) so that the subject matter can be well received and applied in everyday life (Vallori, 2014). This cannot be separated from the teacher's efforts in delivering learning.

Meaningful learning carried out by teachers is applied to all subjects taught at school, including mathematics learning. Mathematics is a science that is closely related to everyday life, so when teaching mathematics in schools you can integrate the subject matter into students' lives so that it has a high level of meaningfulness. Meaningful learning carried out by teachers is applied to all subjects taught at school, including mathematics learning. Mathematics is a science that is closely related to everyday life, so when teaching mathematics in schools you can integrate the subject matter into students' lives so that it has a high level of meaningfulness.

Teachers as designers and implementers of activities in the teaching and learning process have an important role in mathematics learning. Something that teachers know and teachers do in learning can improve students' academic performance (Hill, Rowan & Ball, 2005). Teachers have an important role in designing and implementing learning in order to make students active and provide meaningful learning experiences because every lesson is expected to have a relatively permanent influence, both in terms of knowledge of behavior and students' thinking skills (Santrock, 2011). One alternative that teachers can use is to apply a learning model, namely Think Pair Share (TPS).

TPS learning places students in learning activities in pairs and working together to gain knowledge. The teacher asks questions and students are asked to think of an answer on their own, then work in pairs to get an agreed answer, then the teacher asks students to share the answers they have agreed with all the students in the class (Slavin, 2005). TPS learning combines individual and group thinking patterns. TPS can broaden students' understanding of the concept of material and students can exchange ideas through other people's opinions to jointly develop ideas or opinions. TPS includes three stages of the learning process which can activate individual work, and collaboration with groups and can enliven the class atmosphere because there are challenging questions asked by the teacher (Fitzgerald, 2013).

TPS has different learning from other cooperative learning, namely; (1) students think individually about the theme provided by the teacher, (2) students pair up with friends to

discuss it, and (3) students share understanding with their partners and classmates (Sharan, 2009). Apart from applying learning models, in learning mathematics students are often faced with challenges to solve complex problems or questions. So, for students to be able to face these challenges, students must have the motivation and strategy to solve them. This shows that students must have good SRL skills.

SRL needs to be developed from elementary school, because the higher the level of education, the higher the mathematics problems faced, so strategies and motivation are needed to solve existing problems. Students who have SRL are students who know how to become successful learners by using the right cognitive aspects, motivation, and good strategies in learning (Sierens, et al, 2009; Astuti & Wangid, 2018). Students with good SRL will tend to be more independent and responsible for what is given to them. Students become more aware of the conceptual reasons for relationships or explanations of questions that occur during the learning process. In addition, students are able to construct their own learning concepts and find solutions to the problems they face. Students who have SRL will be active in carrying out their learning activities. Individuals who have high SRL tend to learn better, are able to monitor, evaluate, and organize their learning effectively, save time in completing tasks, manage learning and time efficiently, are able to direct and control themselves in thinking and acting, and do not feel dependent to other people emotionally (Sumarmo, 2004; Astuti, 2024).

In the learning process, SRL has three cyclical aspects, namely processes and beliefs that occur before learning begins (forethought), processes when learning activities occur (performance), and processes that occur after learning activities (self-reflection) (Zimmerman, 2002). These three aspects can help students to have good planning and strategies in learning, have learning targets and goals, be responsible for learning, and be able to determine steps to achieve learning goals. Good SRL can encourage success and increase student achievement with certain learning strategies to achieve the desired goals (Jantz, 2011).

Based on the results of interviews with teachers at one of the state elementary schools in Pahandut sub-district, Palangka Raya, information was obtained that when learning mathematics students were less focused, less enthusiastic, and less enthusiastic when participating in learning, there was a lack of student response when given the opportunity to ask and answer questions. Given by the teacher, the students are silent and do not answer and the teacher often reprimands the students to be calm and pay attention to the material the teacher is conveying. Students also lack confidence in the answers from their own thoughts and often ask the teacher about the correctness of their answers. Apart from that, there is a lack of student readiness to participate in mathematics learning, such as some students not doing their homework, and forgetting to bring their Mathematics textbooks and other writing equipment. This indicates that students' lack of discipline and readiness in managing their learning results in suboptimal mathematics learning results, indicated by students' mathematics UTS results which are still below the KKTP.

Based on the description above, the aim of this research is to find out how big the influence of the Think Pair Share learning model is on the Self-regulated Learning of fourth-grade elementary school students in learning Mathematics.

METHOD

This research is quantitative research (Sugiyono, 2013). Intended to measure how big the influence is between variables and how strong the relationship between variables is. This research was carried out at one of the state elementary schools in Palangka Raya, Central Kalimantan. The design of this research is described as follows.

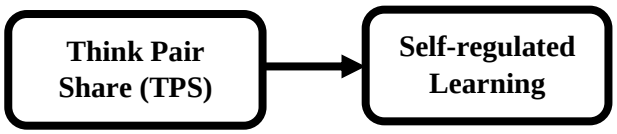

Figure 1. Research Model

The population and sample for this research were 21 grade IV students at one of the state elementary schools in Palangkaraya. Sampling was carried out using a purposive sampling technique. The data collection instrument is a self-regulated learning scale questionnaire. The research conclusion analysis technique used in this research is the paired sample t-test.

RESULTS AND DISCUSSION

Results

The SRL scale used in this research is a Likert scale. SRL measurement is more accurate using a Likert scale compared to using multiple choice (Retnawati, 2015). The Likert scale used consists of four components, namely: Very Appropriate (SS), Appropriate (S), Not Appropriate (TS), and Very Unsuitable (STS). The form of a statement consists of positive statements and negative statements.

The validity trial of the SRL scale was carried out in each phase of SRL, namely the planning phase (forethought), implementation phase (performance), and self-reflection phase. Data from validity trials on the self-regulated learning scale were obtained as follows.

Table 1. KMO

SRL	*Kaiser-Meyer-Olkin Measure of Sampling Adequency*
Fase 1	0,560
Fase 2	0,558
Fase 3	0,582

Table 1 shows the results of the validity test for each SRL phase. The KMO value in phase 1 is 0.560, phase 2 is 0.558, and phase 3 is 0.582. Based on these data, it can be seen that the KMO value in the three phases of SRL is greater than 0.5, thus factor analysis can then be carried out on the SRL scale. The anti-image correlation value for each SRL phase is said to be valid if it is more than 0.5. of the 52 statements, there are 3 statements that are invalid.

After the validity test, it is continued with the instrument reliability test. Instrument reliability is the certainty, constancy, or reliability of the instrument in assessing what is being assessed. An instrument is said to be reliable if the results of reliability calculations with Cronbach's Alpha are at least 0.65. The reliability of the instrument was calculated with the help of the SPSS program. The reliability of the SRL scale can be seen in Table 2 below.

Table II. Reliability Test Results

Variable	*Cronbach's Alpha*
Self-regulated learning	0,747

Table 2 shows the Cronbach's Alpha value for self-regulated learning of 0.747. It is known that an instrument is said to be reliable if it meets the requirements, namely a Cronbach's Alpha value of at least 0.65. Thus, it can be concluded that the self-regulated learning instrument can be declared reliable.

Table III. Results of SRL pretest and post-test analysis

Information	*Pretest*	*Posttest*
Mean	148,24	149,08
Max score. ideal	196	196
Min score. ideal	49	49
Maximum score	180	189
Minimum score	58	68

Data from the calculation of descriptive analysis of the pretest and posttest SRL questionnaire using TPS learning are presented as follows.

Table 3 shows that the average pretest SRL is 148.24. Then in the final, condition the average SRL posttest value using TPS was 149.08. These results show that there is an increase in the average SRL before and after implementing TPS learning.

After carrying out the validity test and reliability test, the researcher enters the next stage, namely conducting hypothesis testing. Decision-making and drawing conclusions regarding hypothesis testing were carried out using the paired sample t-test at a significance level of 0.05. If the significance opinions (Nahdi, 2016). Working individually in a think pair share affects students' SRL because students must be responsible for finding solutions to answers so makes students active and motivated to look for ideas for solutions and demonstrate their ability to solve a given problem. It is evident value is greater than 0.05 then Ho is accepted. Conversely, if the significance value is less than 0.05 then Ho is rejected. The results of the analysis regarding SRL data with TPS learning can be seen in Table 4 below.

Table IV. SRL Difference Test in TPS

Variable	t_{count}	Df	Sig.
Self-regulated Learning	7,074	148	0,000

Based on the results of the paired sample t-test in Table 4, the SRL t-count value obtained using TPS learning was 7.074 and a significance value of 0.000. The significance value is 0.000 < 0.05 and t-count > t-table, namely 7.074 > 1.976 so Ho is rejected. So, it can be concluded that there is a difference and positive influence of TPS learning on the SRL of fourth-grade elementary school students in learning mathematics.

Discussion

The results of the hypothesis test showed that there are differences and positive influences in TPS learning on the SRL of fourth-grade elementary school students in learning mathematics in the geometric aspect, namely regarding the perimeter and area of square, rectangular, and triangular figures. Proven by the significance value of 0.000 < 0.05 and t-count > t-table, namely 7.074 > 1.976 so that Ho is rejected and Ha is accepted. TPS learning has 5 learning stages, namely: 1) explaining the learning objectives, 2) thinking about answer solutions independently (think), 3) discussing answers in pairs, 4) presenting discussion results (share), and 5) evaluating.

TPS learning gives students more time to think, respond, and help each other (Arends, 2007).

The first step in learning TPS is that students are given an explanation of the objectives of the learning that will be carried out and given an apperception regarding plane shape material, such as what shapes are included in plane shapes and their properties. Then students are given problems regarding the perimeter and area of flat shapes including three shapes, namely squares, rectangles, and triangles. In the second stage, namely thinking, each student is given a problem through a worksheet, then students have the opportunity to think about the answer to the problem given, and then students are asked to write down the results of their respective thoughts.

At the thinking stage, before students look for solutions to problems with their group friends in pairs, each student is asked to think about answers or find ideas for answers on their own. Students are required to independently take the initiative to find answers which will later be discussed in pairs. This causes students to have internal awareness of when to work independently and when to work in groups and express

from the average value of the SRL aspect of TPS learning, that the highest average is in the implementation (performance) aspect.

At the pair stage, students are grouped by the teacher in pairs to compare and discuss answers from individual students'

thoughts with their partners or group friends. The pair stage or paired tutoring is considered very effective because students can provide understanding to each other and complement each other (Slavin, 2006). Then proceed to the next stage, namely the share stage.

At the sharing stage, students present answers to the results of their discussions both individually and in pairs. After the student's presentation, the teacher helps the student to reflect or evaluate the results of the discussion and the material studied, namely reviewing the formula for the area and perimeter of a rectangular shape. The evaluation stage in TPS learning is considered very important because it is used to mutually correct answers from pairs of group members and other groups (Faust, 1998).

TPS learning really helps students in discussing because it is structured and builds student interaction when discussing and sharing answers with group friends or partners regarding ideas or solutions to problems that have been identified. In TPS learning, each group member has an equal task. Apart from that, TPS learning can increase student participation, facilitate student interaction because there are only two people in a group, and provide more opportunities for each group member to contribute ideas or opinions (Lie, 2008).

TPS facilitates students interacting well with group members or partners, thereby training students' social skills, character, and emotional intelligence. Therefore, the stages carried out in TPS learning can influence students' SRL.

CONCLUSION

There is a difference and positive influence of TPS learning on the SRL of fourth-grade elementary school students in learning mathematics in geometric aspects regarding the perimeter and area of square, rectangular, and triangular figures. Shown with a significance value of 0.000. The student's SRL category is classified as high. The application of TPS is carried out using five learning steps with a discussion process in pairs to solve problems related to the perimeter and area of square, rectangular, and triangular shapes.

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