The Effect of Learning Model and Self-Reliance Learning toward Science Learning Outcomes

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Abstract---**This research aimed to: (1) know the difference of science learning result of students who were taught by STAD type cooperative learning model with Jigsaw type cooperative learning model, (2) know the difference of science learning result of students who had high independence with students who had low independence, 3) know the interaction between cooperative learning model and independence of students' science learning outcomes. This study was a quasi-experimental study. The population of the study was consisting of 3 classes, namely class V, while the sample there were class V-A and V-B by using random sampling. Instruments used for science learning and self-study questionnaires. Technique of data analysis using Analysis of Variant (Anava) two lanes with 2x2 factorial design. The results showed that: (1) the learning outcomes of science students in learning by STAD type cooperative learning model were higher when compared with Jigsaw type cooperative learning model. (2) the learning outcomes of science students who had higher learning independence was higher than students who had low learning independence. (3) there was an interaction between the learning model and the learning attitudes toward the students' science learning outcomes.**

Keywords---STAD Type Cooperative Learning Model; Self-Reliance Learning; Science Learning Outcomes.

I. INTRODUCTION

Natural Science as a product can not be separated from its nature as a process. The learning process of science focuses on a process of research and problem solving. When learning science students are expected to improve the thinking process to understand natural phenomena (Wisudawati and Sulistyowati, 2014).

The purpose of education of Natural Science(IPA) or science in primary schools is the achievement of science in terms of products, processes and scientific attitudes (Bundu, 2006). (1) In terms of products, learners are expected to understand the concepts and interrelationship with everyday life; (2) In terms of process, learners are expected to have the ability to develop knowledge, ideas, and apply the concepts they obtain to explain and solve problems found in everyday life; (3) In terms of attitudes and values of learners are expected to have an interest to study objects in the environment, be curious, diligent, critical, introspective, responsible, able to cooperate and independent and nurture the love of nature and realize the greatness of God.

In reality, the ideal goal of science learning as mentioned above is still experiencing some constraints. This is known from the low ability of students in the field of science. Observation of science learning process in some primary schools shows that teachers still use learning approaches with learning strategies that only transmitknowledge. This condition is thought to be caused by the number of teachers using lecture methods, less use of visual aids, most of the primary school teachers are classroom teachers who teach several subjects at once, so that teachers experience difficulties or may not want to be bothered in choosing a learning model that will be used for the subjects different.

In the learning process there are some weaknesses in science learning such as: (1) the teacher only gives theory without balanced with practice, (2) on the learning process students have not seen working group, (3) the implementation of learning is done by teacherprocedure to give explanation of material studied after that learners are asked to answer the questions in the book, (4) on the teacher's learning process has not been maximally using students work sheet (LKS) so that learners less given the opportunity to think and solve their own problems, (5) low-learner interaction is marked with rare visible learners ask questions, (6) learners only as a waiter information.

Based on the review above, it is necessary to immediately take remedial action to improve the ability to understand the science subjects on the learners. Teachers are expected to develop a model of learning, so that students' understanding of a subject becomes relatively better. Teachers are required to use a variety of innovative learning models, to encourage student independence in learning.

Learning model that puts students as learning center among them is cooperative learning model. Cooperative learning is a learning model that focuses on grouping students with different levels of academic ability into small groups (Saptono, 2003).

Slavin in Wina Sanjaya (2008) suggests two reasons: 1) some research proves that the use of cooperative learning can improve student learning outcomes while improving social relationships, cultivating attitudes of accepting lack of self and

others, and can increase self-esteem. 2) cooperative learning can realize the needs of students in learning to think, solve problems, and integrate knowledge with skills. Of the two reasons, the cooperative learning is a form of learning that can improve the learning system that has been weakness.

Wina Sanjaya (2008), Cooperative Learning Model has two main components, namely cooperative task and cooperative incentive structure. Cooperative tasks relate to what causes members to work together in completing group tasks. While the cooperative incentive structure is something that stimulates individual motivation to work together to achieve group goals. The incentive structure is considered to be regarded as the uniqueness of cooperative learning, because through incentive structures each group member works hard to learn, encourages and motivates other members to master the subject matter so as to achieve group goals.

Thus, the interesting thing about cooperative learning model is the expectation besides having the impact of learning, that is the improvement of student achievement also has the effect of accompanist like social relation, the acceptance to the learner who is considered weak, the self esteem, the academic norm, respect for time, and likes to help others.

According to Arends (2008: 13), STAD is an approach in cooperative learning where students work in groups that have heterogeneous capabilities and in their judgments are given by individual or group assessments. So in the STAD learning model is implemented is more emphasis on the process of cooperation in a heterogeneous group of good ability, gender, race and so on and in the assessment carried out by the assessment of individuals or groups with the test.

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There are three concepts in this lesson: team respect, individual rewards, and equal opportunity to achieve success. The implementation of STAD type of cooperative learning model according to Slavin (2008) are five main steps: a) class presentation, b) group, c) test / quiz, d) performance improvement or individual progress score, and e) group or recognition awards team.

In addition to the learning model, student learning independence also plays an important role in influencing learning outcomes. Independence has an important role for elementary school children. In the early grades, students are still learning to adapt to the new classroom environment, while in the higher classes students are able to position themselves as independent students. This can be seen when the teacher's role in learning is no longer the primary and only source of learning, but the student must actively seek out through many other learning resources, the student does something on the basis of his own consciousness, and is not easily influenced by any decision taken. Students who are used to self-sufficient will easily adjust themselves.

Muslichah Asy'ari (2006) said that in science learning early on, students need to be trained to solve a problem so that later after they have enough adult to have a provision to face problems in his life.

Based on the background of the problem above, the main problems in this research are: (1) Are the students' learning outcomes taught by STAD type cooperative learning model higher than the students taught by Jigsaw type cooperative learning model? (2) Is the learning outcomes of science students who have higher learning independence higher than students who have low self-reliance? (3) Is there an interaction of influence between the use of cooperative learning model and independence of the learning outcomes of science?

The purpose of this research are: (1) To know the difference of science learning result of students who are taught by STAD type cooperative learning model with Jigsaw type cooperative learning model, (2) To know the difference of science learning result of students who have high independence with students who have low independence (3) To know the interaction between cooperative learning model with independence to student science learning outcomes.

II. METHOD

This research was conducted at Al Ikhlash Taqwa Private Elementary School in Medan. The population in this study was all students of grade V SDS Al Ikhlash Taqwa Medan. The sampling technique in this research was the cluster random sampling technique that was from the whole class chosen 2 class as the sample which was subjected to treatment through random selection.

The sampling technique in this research was the cluster random sampling technique that was from the whole class chosen 2 class as the sample which was subjected to treatment through random selection. This research used experimental method with quasi design of 2x2 factorial design experiment. Through this design compared the influence of STAD type cooperative learning model and Jigsaw type cooperative learning model on science learning outcomes in terms of student learning independence.

Through this design compared the influence of STAD type cooperative learning model and Jigsaw type cooperative learning model on science learning outcomes in terms of student learning independence. Data analysis techniques used were descriptive and inferential statistical techniques. Descriptive statistical techniques were used to describe data included: mean, median, mode, variance and standard deviation. Inferential technique that would be used was variance data analysis technique (ANAVA) 2 x 2. Hypothesis testing was done at 5% significance level. Before the two path ANAVA was done, firstly test the requirement analysis that was normality test using Liliefors test and homogeneity test using Fisher test and Bartlett test (Sudjana, 2001).

III. RESULTS AND DISCUSSION

The first, second and third hypothesis testing was performed using two-way ANAVA. The summary of the calculation results can be seen in Table 1 below.

TABLE 1. Summary of ANAVA Test Results

Sumber Variasi	dk	JK	RJK	F_h	$F_{t(1,65)}$ (α=0,05)
Model Pembelajaran (A)	1	26,35	26,35	15,31	3,99
Kemandirian Belajar (B)	1	33,63	33,63	19,55	3,99
Interaksi (AB)	1	10,02	10,02	5,82	3,99
Galat	62	107	1,72	-	-
Total	65	177	71,72	-	-

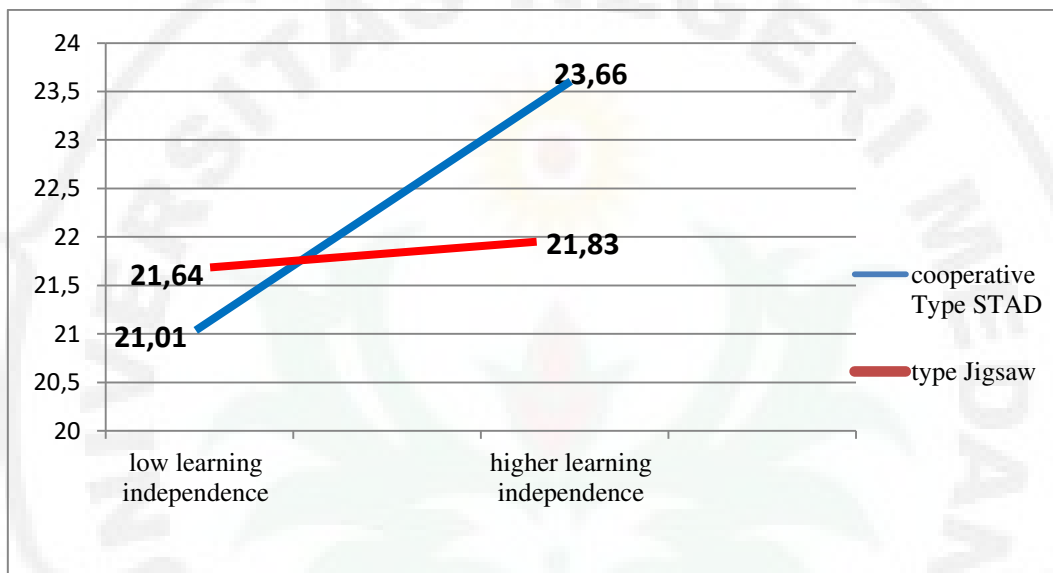The interaction of the three variables is shown in below :

Fig. 1 Interaction Between Learning Model and Self-Reliance Learning on Science Study Results

IV. DISCUSSION

The result of the first hypothesis test showed that the average of science learning outcomes as a whole group of students who got treatment model STAD type cooperative learning was higher than the group of students who got treatment model of cooperative learning Jigsaw type. The interesting thing about cooperative learning model was the expectation besides having the impact of learning, that was the improvement of student achievement (student achievement) also had the effect of accompaniment such as social relation, acceptance to the learner who was considered weak, self esteem, academic norm, time, and likes to help others. According to Etin Solihatin and Raharjo (2007), basically cooperative learning implies as a common attitude or behavior in working or helping among others in a regular structure of cooperation within the group.

The higher influence on learning science outcomes given by STAD type cooperative learning model was evidence that STAD type cooperative learning model was one type of cooperative that emphasizes the existence of activities and interactions among students to motivate and help each other in mastering the subject matter to achieve maximum achievement.

This result was reinforced by research conducted by Curie Putri Hijri and Dhoriva Urwatul Wutsqa (2015), Suharsono (2015), Erny Untari (2013), Idha Novianti (2012) and T. L. Ibraheem (2011) which stated that the use of learning model using cooperative type STAD had a very significant impact on the increase of yield student learning.

The results of the second hypothesis test showed that the average learning outcomes of science that had higher learning independence was higher than the average of science learning outcomes of students who had low self-reliance.

Students who had high learning independence would have the ability to accept, understand and master the material taught more easily and quickly, this was because individuals with high learning independence requires little stimulation and training so that ultimately could achieve maximum learning results. Not infrequently students with high learning independence had the ability to learn a step ahead of other students and if conditions such learning was maintained then the role of teachers as facilitators more required and all learning objectives could be realized because the learning activities were smooth without constraints but otherwise students who had efficacy low self, then he would need more training and guidance to master the material to be taught so that it took time to achieve maximum results.

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The findings of this study supported the results of research obtained by Ni Nyoman Lisnahandayani, et al (2013) at the junior high school level indicates that students' learning independence had a positive effect on science achievement. Laila Fitriana (2010) examines the influence of independence on learning achievement in junior high school, found independence had a significant effect on learning achievement, student achievement that had higher learning independence was better than the achievement of students who had moderate or low learning independence. The study also conducted by Nita Agustinawati (2014) at high school level showed that learning independence had a positive effect on the learning result of History.

The result of the third hypothesis testing showed that there was an interaction between the learning model and the learning independence of the students' learning outcomes. Interaction showed that the model of learning and learning independence had an influence on students' science learning outcomes.

This research was reinforced by previous research conducted by Agustin (2004) on science subjects that the influence of the learning model and learning independence had an interaction in influencing student learning outcomes where the interaction occurred as much as 32.56%. Then research conducted by Sudarsono (2005) that the model of learning and learning independence to give effect to the learning outcomes of Mathematics. Later research by Curie Putri Hijriani & Dhoriva Urwatul Wutsqa (2015) could be recommended that cooperative learning models of Jigsaw and STAD types could be applied to improve students' self-confidence. Research conducted by Sadiman, et al there was interaction of cooperative learning type Jigsaw and STAD with creativity to student learning outcomes.

V. CONCLUSSION

Based on the analysis and discussion as described in the previous section, it was found as follows: (1) the learning outcomes of science students who followed STAD type cooperative learning model with an average of 23.03 higher than students taught by Jigsaw type cooperative learning model with flat -20.38 (Fcount = 15,31). (2) learning outcomes of science students who had high learning independence with an average of 21.27 higher than students who had low learning independence with an average of 19.37 (Fhitung = 19.55). (3) there was an interaction between the learning model and the learning independence of the learning outcomes of IPA (Fhitung = 5.82).

Based on the findings, it was concluded that the learning model and the learning independence had an effect on the learning outcomes of the students' science class. In order for more tangible influence, learning independence should be considered.

Based on the conclusions obtained in the study, it is suggested to science teachers (class teachers) to use STAD type cooperative learning model in learning to improve student learning outcomes and policy givers in the school to recommend to teachers to use STAD model in learning.

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