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The Influence of Learning Models and Self-Efficacy Against Chemistry Learning Outcomes at Kutacane State High School

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***Abstract* - this study aims to find out: 1) the students' chemistry learning outcomes that are taught using the STAD type cooperative learning model and the Chemistry learning outcomes of students who are taught by the Make A Match learning model; 2) Chemistry learning outcomes between students with high levels of self-efficacy and learning outcomes of students with low self-efficacy; 3) the interaction between the learning model (type STAD and Make A Match) and self-efficacy in influencing the learning outcomes of Chemistry. The research method used is a quasi-2x2 factorial design experiment. The results of the study concluded that: (1) the average Chemistry learning outcomes of students taught with the STAD type cooperative learning model were higher than the Make a match learning model; (2) the average learning outcomes of Chemistry students who have high self-efficacy are higher in low self-efficacy; (3) there is an interaction between the learning model and self-efficacy towards the learning outcomes of Chemistry.**

Keywords— STAD type, Make A Match, Self Efficacy and chemistry learning outcomes.

1. INTRODUCTION

The learning model that had been applied in Kutacane 1 State High School and Kutacane 2 State High School was found that teachers in teaching chemistry subjects, most of the learning models used were Direct Instruction. This is because the teacher thinks most chemistry subject matter is more precisely delivered by the lecture method. This is because chemistry learning by placing students individually will be more conducive. The other method besides the lecture is discussion by studying the material yourself either through books or the internet. Although the teacher has implemented a group-based learning model, but the learning has not been fully directed and well conditioned. Therefore, in the study group students do not fully participate and not a few students tend to be passive.

Based on the data obtained, it can be seen that the average UAS value is still low and still below the KKM value. This was allegedly caused by various factors including: students considered chemistry lessons identical to calculations that were difficult to understand and memorized that were difficult to remember because many chemical terms were difficult to understand. Teachers tend to teach using conventional methods even though chemistry classes are carried out in the early hours at school. Students still remain insolvent in the classroom and tend to be quiet when the teacher asks questions or asks students' opinions about the material that has been taught and there are even some students telling other friends when the teacher explains the chemistry subject matter so that the class becomes noisy. If given group work training not all students participate in working on tasks given by the teacher. Even if it is held in the classroom, only a few students are active because many students think that they are unable to communicate multiply in issuing their opinions and are less confident in their ability so that students tend to withdraw in discussions and become more passive in learning.

STAD type cooperative learning model is a learning model that helps teachers to handle students who have diverse abilities. The main function of this learning model is to determine that all team members are truly learning, and prepare their members to be able to work on the quiz well. The group is expected to work together as well as possible and help each other in understanding the subject matter. While the cooperative learning model of the model make a match (looking for a partner) is a learning activity that is designed to be more relaxed, cooperation, more elements of the game, but does not foster a scientific attitude or critical thinking in learning activities. Taking into account these two types of learning models, efforts to determine the effectiveness of each of these learning models need to be researched so that the appropriate cooperative learning model can be used as a guideline in improving learning outcomes in chemistry subjects at Senior High Schools in Kutacane.

In addition to cooperative learning models that can improve student learning outcomes, self-efficacy possessed by a student greatly influences the learning outcomes of chemistry in the classroom. If students have self-efficacy in following learning activities, then they will be encouraged to do the tasks and do activities that are difficult but quite realistic in doing it, he will be persistent and never give up in every learning activity. This he can find if the atmosphere of learning activities is very supportive and has high self-efficacy. Then the learning model used by a teacher in the classroom is closely related to the learning component that is related to self-efficacy.

According to a study from Wawan (2014) with the title "Experiments of Cooperative Learning Model Student Team Achievement Divisions (STAD) Assisted by Winpolt and Team Assisted Individualization (TAI) in Application Material Derivative Function Viewed From Students'

Mathematical Reasoning Ability". The purpose of this study was to determine the effect of learning models on mathematics learning achievement as seen from students' reasoning abilities. The model that is compared is the STAD cooperative learning model which is assisted by Winpolt. Then this research was strengthened by Roslaini's research (2015) for Cooperative Learning of STAD Type to Improve Class V Mathematics Learning Outcomes of SDN 16 Koto Kampung Dalam Kabupaten Padang Pariaman ", with the results of the study showing that STAD type cooperative learning models can improve learning outcomes on the subject the extension of ordinary denominations is not the same in SDN 16 Koto Kampung Dalam. Nasaruddin (2015) with the title "Improving Science Learning Outcomes With Cooperative Learning Model Type STAD For Students Grade IV SDN 10/73 Aralle District Kahu Kabupaten Bone", and the results of the research this is obtained that the use of the STAD Cooperative Learning Model can facilitate students in understanding the material changes in motion energy and can improve student learning outcomes.

In this study, various theories can be related to the influence of cooperative learning models and self-efficacy on student chemistry learning outcomes. Furthermore, the results of the research will be presented and the discussion is related to the theory of theory that has underlie this research. The reason for choosing the STAD cooperative learning model and the make a match learning model is because the learning source is not only the teacher, but also the students. Such conditions are expected to help students who have learning difficulties and can encourage students to complete each subject of the subject matter delivered by the teacher.

In connection with what has been explained above, the objectives of this study are (1) to determine the learning outcomes of Chemistry students who are taught with the STAD type cooperative learning model is higher than students taught with the Make A Match learning model (2) to find out the learning outcomes of Chemistry students who have high self-efficacy are higher than students who have low self-efficacy (3) to find out the interaction between learning models and self-efficacy towards learning outcomes of Chemistry.

II. METHOD

This research was conducted at Kutacane 1 State High School and Kutacane 2 State High School, Southeast Aceh District. The population in this study were all students of class XI of the Science Department in Kutacane 1 State High School and Kutacane 2 State High School with a total of 389 students. The sampling technique in this study was cluster random sampling technique.

This study uses an experimental method with a quasi design 2x2 factorial design. Through this design compared the influence of STAD cooperative learning model and Make A Match learning model on Chemistry learning outcomes in terms of student self-efficacy. These variables are then included in the research design as shown in Table 1.

TABLE 1. Research Design

A / B	STAD (A_1)	MAM (A_2)
high (B_1)	$A_1 B_1$	A_2B_1
low (B_2)	A_1B_2	A_2B_2

Information:

A1B1: Chemistry learning outcomes group of students treated with STAD type cooperative learning model that has high self-efficacy

A2B1: Chemistry learning outcomes of groups of students treated with make a match learning models that have high self-efficacy

A1B2: Chemistry learning outcomes of groups of students treated with STAD type cooperative learning model with low self-efficacy

A2B2:Chemistry learning outcomes of groups of students treated with make a match learning models that have low self-efficacy.

The data analysis technique used is descriptive and inferential statistical techniques. Descriptive statistical techniques are used to describe data between others: average value, median, mode, variance and standard deviation. The inferential technique that will be used is variance data analysis (ANAVA) technique 2 x 2. Hypothesis testing is carried out at a significance level of 5%. Before the two-way ANAVA was carried out, the analysis of the requirement test was done, namely the normality test using the Liliefors test and homogeneity test using the Fisher test and Bartlett test.

Furthermore, for the purposes of testing hypotheses, the following statistical hypothesis is formulated:

Hipotesis I $H_0 : \mu A_1 \leq \mu A_2$
$H_a : \mu A_1 > \mu A_2$

Hipotesis II $H_0 : \mu B_1 \leq \mu B_2$
$H_a : \mu B_1 > \mu B_2$

TABLE II.TESTING HYPOTHESIS BY USING 2 WAY ANAVA

Varians	Dk	JK	RJK	F_{Hitung}	F_{Tabel}
A	1	21,06	21,06	4,55	3,94
B	1	19,91	19,91	4,30	3,94
AB	1	131,60	131,60	28,48	3,94
Galat	139	643,51	4,62	-	-
Total	142	816,080	177,19	-	-

Where,

A : Teaching model
B : self effication
Dk : Degree of freedom
JK : The sum of squares
RJK : The average of the sum of squares

The interaction can be seen in fig. 1

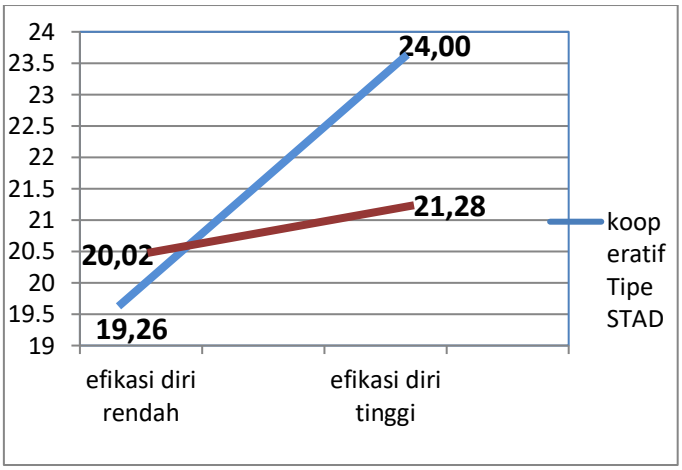

Fig 1. Interaction of learning models and self-efficacy

III. RESULT AND DISCUSSION

Based on the results of testing the first hypothesis, the results of the calculation of the hypothesis obtained F count = 4.55. For the distribution value of F table = 3.9, this result shows that F arithmetic> F table gives a decision that Ho is rejected and Ha is accepted. Thus, the research hypothesis proposed is that Chemistry students' learning outcomes of STAD type cooperative learning model is higher than the Chemistry learning model of make a match.

This is in line with the results of Maulana's (2007) study which states that there is an increase in student learning outcomes using the STAD learning model. According to Maulana Research STAD learning model provides opportunities and opportunities for students to think more and reason about what students are learning. This model also encourages students to do skills such as observing, asking questions, gathering information, associating, and communicating. Where students here are required to be active in doing these skills in person. The STAD model can also develop students' attitudes, skills and knowledge. The application of the STAD model in learning not only focuses on how to develop students' competencies in conducting observations or experiments, but how to develop knowledge and thinking skills so that they can support creative activities in innovating or working. Through a series of learning using the STAD model, student learning outcomes include the cognitive, affective, and psychomotor domains can be trained.

While the Make A Match Model is a model that prioritizes teaching objectives that emphasize the function of language as a communication tool. The focus of the Make A Match model lies in how language is used as a communication tool not about grammatical structure. Whereas the results of learning in school are not only about the use of language / skills of students in mastering the language but also students' understanding of the structure of grammar.

From the description above, it can be seen that student learning outcomes related to cognitive aspects are highly developed in the STAD model. Thus, it is clear that using the STAD Model will give a better influence on the learning outcomes of Chemistry compared to learning using the learning approach Make A Match.

From the results of the calculation of the second hypothesis, F calculated = 4.55. For the distribution value of F table = 3.9, this result shows that F arithmetic> F table gives a decision that Ho is rejected and Ha is accepted. Thus, the proposed research hypothesis is that there are differences in Chemistry learning outcomes of students with high self-efficacy and Chemistry learning outcomes of students with low self-efficacy. The results showed that the average value of Chemistry learning outcomes of students who have high self-efficacy is higher than students who have low efficacy. This indicates that students who have high self-efficacy are better able to understand Chemistry lessons than students who have low self-efficacy. The researchers observed during the learning process, it appears that students who are classified as having high self-efficacy tend to be more sociable, mingle with new environments, be active in groups and personally, more motivated and enthusiastic about learning, more confident in asking questions, answering questions, expressing opinion. Students who have high self-efficacy also do not feel afraid of wrong or different opinions with other students and have more mutual respect.

Based on the description above, it is clear that students who have high self-efficacy obtain higher Chemistry learning outcomes than students who have low self-efficacy. It can be concluded if there are differences in Chemistry learning outcomes of students who have high self-efficacy and low self-efficacy.

From the results of the calculation of the third hypothesis obtained F count = 28.48. For the distribution value of F table = 3.9, this result shows that F arithmetic> F table gives a decision that Ho is rejected and Ha is accepted. Thus, the proposed research hypothesis is that there is an interaction between the learning model and self-efficacy towards the learning outcomes of Chemistry. When viewed from the average learning outcomes of Chemistry in groups of students who have high self-efficacy and are taught with the STAD learning model is higher than the average learning outcomes of other student groups. This is because students can follow the learning well, where students are able to solve the problems proposed, a learning model that can foster students' enthusiasm in learning. Meanwhile, in teaching and learning activities, either in the STAD learning model or the Make A Match learning model can take place interactively because of the pleasant learning atmosphere.

Learning using the STAD teacher learning model is no longer a learning center but is student-centered. That is, the STAD learning model is intended to provide understanding to students in knowing, understanding various materials using a scientific approach, that information can come from anywhere, anytime, not dependent on the direction of the teacher's information. The essence of this model expects students to make the process of observing, asking, reasoning, trying, communicating (networking) everything related to the learning process itself. Through this model students are expected to think scientifically and can learn and work in groups solving problems given by the teacher so as to achieve optimal learning achievement. One of the things that need to be considered also in the factors that influence learning outcomes is self-efficacy. The self-efficacy of students who are not well known by the teacher as a whole will be difficult

to direct students to be active in learning activities. This situation is what causes the value of student learning outcomes is still a lot below average.

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