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The Implementation of Cooperative Learning Model STAD to Students Learning Outcome at SMA N 8 Padangsidimpuan

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Abstract
This study aims to look at the differences in mathematics learning outcomes and activities of students taught through the implementation of cooperative learning model STAD STAD that does not apply in class X SMA 8 Padangsidimpuan. This research is a *quasi-experimental* design with *two-group pretest posttest.* The subjects of this study were all students of class X SMA N 8 Padangsidimpuan. The sample selection, *cluster random sampling,* is applied as an experimental class *of cooperative* learning model type *Student Teams Achievement Division* (STAD) and grade control applied learning Conventional. The instruments are used in research in iS the form of essays that have been declared invalid by a team of experts. The final conclusion is that the learning outcomes of students who apply learning model type *Cooperative* Learning *Student Teams Achievement* (STAD) is better than the results of student learning with conventional *learning.*
Keywords: *Cooperative* Learning Model Type of *Student Teams Achievement* (STAD), Learning Outcomes.

1. Introduction

Education is a lifelong need. Every human being needs education, until when and wherever he is. Education is very important, because without human education will be difficult to develop and even underdeveloped. Thus education should really be directed to produce quality human beings and able to compete in addition to having noble character and moral good.

Mathematics education is one of the basic science that can grow the ability to explore students' critical thinking skills and this is very necessary in the development of technology at this time. In addition, mathematics is one of the most important lessons in education. The main cause of the importance of mathematics because the ability of students in math is the foundation and the main vehicle that becomes the absolute requirement and can train students to think clearly, logically, regularly, systematically, critically, responsibly and have daily personality that must be fostered since primary education.

Based on observations conducted by researchers at SMAN 8 Padangsidimpuan obtained information that student learning outcomes are still very low, although there is an increase in the percentage of completion of each semester, but the average value obtained is still lacking and has not yet reached KKM set by the school. Students are still having difficulty especially in learning mathematics. The low yield due to several factors studied mathematics include: Completeness of facilities and infrastructure in schools, student motivation in learning and teaching methods or models are not in accordance with the subject matter being taught so that the teacher dominates the learning of the students themselves. The use of learning models that are less in line with the subject matter done by the teacher during the teaching and learning process can make the students less active, no matter and do not pay attention even cause the students noisy during the learning process takes place.

To overcome this problem the teacher has tried to make various efforts including equip facilities and infrastructure learning, renovate the curriculum and conduct training and upgrading to improve the quality of education. But it has not provided much change or progress toward the students' mathematics learning outcomes.

Responding to concerns over the need for a model that involves active learning students to improve students' mathematics learning outcomes, namely one of which is a type *of cooperative* learning model *Student Teams Achievement* (STAD).

Cooperative learning (cooperative learning) seeks to help students to learn academic content and skills to achieve a variety of goals, social goals and the relationship between humans and the final section highlights the tasks of assessment and evaluation. Model *Cooperative learning* requires cooperation and all students are engaged in the task structure, the structure of interest, and its reward structure. There are several types that can be applied in a cooperative learning model, among other things: 1) *Student Team Achievement Divisions* (STAD); 2) *Jigsaw;* 3) *Group Investigation* (GI); and 4) *Structural* covering *Think Pair Share* (TPS), and *Numbered Head Together* (NHT). Cooperative learning model *of Group Investigation* (GI) designed by Herbert Thelen in GI students not only work together, but also help plan the topics to be studied as well as investigative procedures to be used (Arends, 2008: 4- 16).

Suyatno (2009: 52) argues that "The STAD Type cooperative learning model is a cooperative learning model for grouping of intervening skills involving team recognition and group responsibility for individual member learning". In essence, cooperative learning model *Student Teams Achievement Division* (STAD) using the method of discussion, the students are divided into groups that have the number of members of 4-5 people

and divided heterogeneous (mixed according to merit, gender, ethnicity, etc. other). Then, begins with the delivery of learning objectives, delivery of materials, group activities, quizzes, and group awards.

The ability of students' science processes is influenced by several factors, including the learning model used by teachers in the classroom. According to Joyce (2009: 199), biological sciences research model designed to teach the processes of biological research, affect the ways students process information, and educate their commitment to conduct scientific research. Students have learned the scientific process, have mastered important concepts from several disciplines of science, have gained basic information about science, and have developed a positive outlook on science.

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Slavin (2005: 143) argues that" This learning model is the simplest and most appropriate learning model used by teachers who just started using the approach with cooperative learning. Munawaroh (2012: 193) in his research the use of STAD type cooperative learning model can improve the entrepreneurial attitude of students in entrepreneurial learning, preferably the organizers, especially SMK Negeri I Jombang, as far as possible to improve teaching and learning by using STAD type cooperative learning model for the learning process Teaching can be achieved maximally and students can be active, creative and innovative. Sriyati (2014: 12) in his research it is suggested to the mathematics teacher to use STAD model in learning to improve student's learning achievement and to the policy holder in school to recommend to teachers to use STAD model in learning.

1.1 Cooperative learning model of type *Student Team Achievement Divisions* (STAD)

According Slavin cooperative learning is a learning model where students learn and work in small groups collaboratively whose members are 4-6 people with heterogeneous group structure (Slavin, 2005: 8). According to Suprijono cooperative learning is a broader concept covering all types of group work including forms of a more led by the teacher or directed by the teacher. In general, cooperative learning is directed by the teacher, where teachers assign tasks and questions as well as provide materials and information designed to help participants solve the problem in question. Teachers usually assign a specific test form at the end of a task. (Suprijono, 2012: 54)

The model is characterized by a structure *of cooperative learning* tasks, goals, and reward cooperative. Students in *cooperative learning* situations driven and / or required to do the same thing together, and they must coordinate its efforts to complete the task. In addition, in *cooperative learning,* two or more individuals are interdependent *(interdependent)* to get a *reward* that will meraka for, when they went on to become the group. Lessons with *cooperative learning* can be characterized by the following features: a) Students work in teams to achieve the learning objectives; B) The teams consist of students with low, moderate, and high achievers; C) The teams consist of a mixture of race, culture and gender; d) his *reward*- system oriented groups and individuals. The results obtained by students d ari cooperative learning in Figure 1.

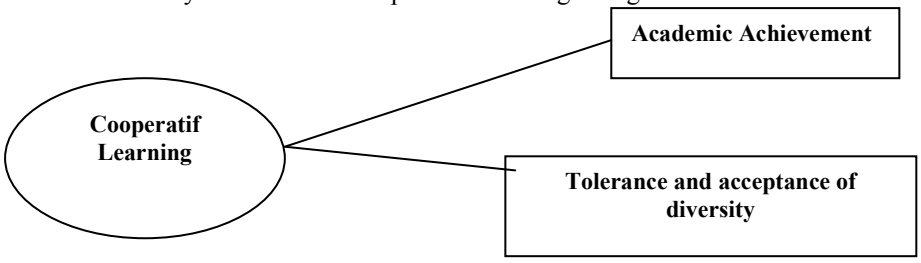

Figure 1. Results obtained by the learner from *Cooperative Learning*

Cooperative learning models developed to achieve at least three important goals: academic achievement, tolerance and acceptance of diversity, and the development of social skills (Arends, 2008: 5).

Student Team Achievement Divisions (STAD) are the simplest and most direct model of a cooperative learning approach. (Suyatno, 2009: 52) argues that "The STAD Type cooperative learning model is a cooperative learning model for grouping of mixed abilities involving team recognition and group responsibility for individual member learning". Mixed membership by level of achievement, gender and tribe.

Table 1. Syntax learning model *Student Team Achievement Divisions* (STAD)

Phase	Master's Behavior
Phase 1: Classify goals and *establishing a set.*	The teacher explains the lesson objectives and *establishing a set*
Phase 2: Present the information	Teachers present information to students verbally or by text
Phase 3: Organize students into learning teams	The teacher explains to the students how to form learning teams and helps the group make efficient transitions
Phase 4: Helps teamwork and learning	Teachers help teams learn as long as they do their work.
Phase 5: Testing various materials	The teacher tests the students' knowledge of the various learning materials or groups that present their work.
Phase 6: Giving recognition	Teachers seek ways to acknowledge individual and group endeavors and achievements.

The following explanation of the syntax of *scientific inquiry* learning model by Arends (2008: 21) are: Phase One, clarifying the purpose and establishing a set. Some aspects of clarifying lesson goals and establishing sets are no different than those applicable to other teaching models. Effective teachers begin all the lessons by reading, explaining their goals in an understandable language, and showing the connection of the lesson with previous learning. Since many lessons with cooperative learning take more than a day or a week, and because the goals and objectives are multifaceted, the teacher usually places special emphasis on this teaching phase. The second phase is presenting information verbally or in test form.

Here often mistakenly assume that students can read and understand the material provided. When cooperative learning requires students to read texts, then effective teachers, regardless of the age of students or subjects being taught, are responsible for helping students to become better readers. Phase three, organizing students in learning teams. The process of incorporating students into learning teams and getting them started on the job is perhaps one of the most difficult steps for teachers using cooperative learning. Fourth phase, helping with teamwork and learning. Less complicated cooperative learning activities allow students to adjust their work to the teacher's minimum interruption or assistance. The fifth phase, testing various materials. Teachers test students 'knowledge of various learning materials or groups that present the students' work. Sixth phase, giving recognition. Another important post-teaching task unique to cooperative learning is the emphasis given to the recognition of student effort and achievement.

1.2 Learning Outcomes

According to Gagne in (Suprijono, 2010: 5-6) learning outcomes are patterns of actions, values, understandings, attitudes, and skills. Gagne divides the five categories of learning outcomes: a) Verbal information; B) Intellectual skills; C) Cognitive strategy; D) Motor skills; E) attitude. According to Abdurrahman in (Haris, 2012: 14) Learning outcomes are the abilities that a child acquires through learning activities. According to Sudjana (2009: 2) learning outcomes are the abilities students have after they have received their learning experience.

In the national education system, the formulation of educational objectives, both curricular and instructional objectives, using the classification of learning outcomes from Benjamin Bloom which broadly divide it into three domains, namely: 1) Cognitive domain; 2) affective sphere; 3) psychomotor sphere.

According to Arends, (2008: 117-119) is a very useful tool for making decisions about instructional purposes and to access learning outcomes is the *taxonomy for educational objectives* (taxonomy for educational purposes) Bloom. Taxonomy was originally developed by Bloom (Bloom, 1956). More recently this taxonomy has been revised by a group of Bloom students (Anderson et al., 2001) knowledge divide into 4 categories:

1. Concrete Knowledge (factual) includes the basic elements that students need to know which will be studied with a topic.
2. Conceptual Knowledge is knowledge of the interdependencies among the basic elements
3. Procedural knowledge is clicking the knowledge bsed on the step of anything.
4. Metacognitive Knowledge is knowledge of student cognition and knowledge of when to use certain conceptual or procedural knowledge

2. Method

2.1 Population and sample

Population is the goal that becomes the object of research. Fraenkel, *et al* (2012) explains that the population refers to all members of a particular group that generalize. The population in this study was all students of class X SMA N 8 Padangsidimpuan. Sampling by means of *cluster random class to* which each class (class random) have an equal opportunity to be sampled in the study. The sample was divided into two classes, namely as an

experimental class that learned by using learning model type *Cooperative Student Teams Achievement* (STAD) and a control class that learned with conventional learning.

2.2 Data collection technique

This research is a kind of *quasi-experimental* research that aims to determine the result of something that is imposed on the subject of the student. The study involved two different sample classes treated. The experimental class was treated in the form of learning using *Cooperative* Learning model of type *Student Teams Achievement* (STAD). Control class is treated in the form of learning using learning conventional. The variables of this study consisted of one species that is the dependent variable. The dependent variable in this study is the learning outcomes of six indicators, namely observation, comprehension, application, analysis, evaluation and creation.

The study involved two different treatment classes. To find out the student learning outcomes is done by giving tests on both classes before and after being treated. The study design is *quasi-experimental* design: *two group pre -postest design.* Thus the study design i ni are listed in Table 2.

Table 2. Research design

Sample	Pretes	Treatment	Postes
Experiment	$X_1 2$	X	$X_2 2$
Control	$X_1 3$	Y	$X_2 3$

Information :

$X_1 2$ = Results of experiment class pretest
X = Treatment with *Scientific inquiry* learning model
$X_2 2$ = Postes result of experiment class
$X_1 3$ = Results of pretest control class
Y = Treatment by applying direct learning model.
$X_2 3$ = Results of postest control class

Collecting data in this study using the research instrument, ie test student learning outcomes. instrum en learning outcomes in the form of shaped essai achievement test test.

Before the test is used, first reviewed checked its content through the opinions of experts as a validator. Content validity refers to an instrument that has the conformity of the content in the reveal / measure to be measured (Margono, 2009). In addition, content validation is also intended for the content of the test to be tested in accordance with the contents of the current curriculum. Validation of this content is determined by expert consideration, to give an idea of the validity of the test before it is followed up. Test of student learning outcomes checked by experts in the field, as a panel of experts in determining the suitability Test indicators. First, the researchers provide 25 to instruments form of assessment of student learning outcomes which provides researchers exam answer sheet about the indicators of student learning outcomes. Should there six indicators of student learning outcomes according to Bloom.

Collecting the data is done in one stage, the first stage of gathering data on collecting data about students' learning outcomes of students. The data obtained in the study were analyzed descriptive and correlative. Descriptive analysis aims to describe student learning outcomes. Correlation analysis used to test the hypothesis that done with normality test, and hypothesis testing with SPSS 20.

3. Results

Results of data processing test results of mathematics learning, obtained the lowest score (χ_{min}), Highest score (χ_{maks}), Average score ($\chi_{average}$) And standard deviation (s) for the experimental and control class as shown in Table 3.

Table 3 Data Results Ability Test Results Math Students

Class	Maximum Score	X_{min}	X_{max}	$X_{average}$	S
Experiment	100	64	96	81,73	15.85
Control	100	54	90	73.37	16.2

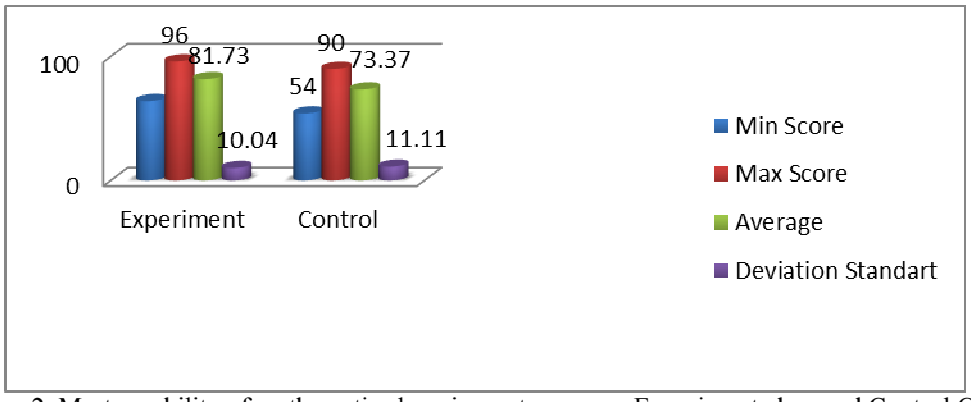

Figure 2. Mastery ability of mathematics learning outcomes on Experiment class and Control Class

From Table 3 and Figure 1 shows that the average score of the two classes do not differ significantly, it suggests that the results of post-test capability mathematics learning outcomes. The experimental class students did not differ much with the control class students, the mean score in the experimental class was 81.73 slightly higher than in the control class 73.37. When viewed from the achievement grade scores 93.33% of the ideal score is certainly much different from the score achievement score of 73.33% of the ideal score. Based on this, it can be concluded that the average test ability of mathematics learning outcomes Students in the experimental class are better than in the control class.

Table 4 Test Results Normality Data Test Ability Student Learning Mathematics Results

Class	L_{count}	L_{table}	Information
Experiment	0.1573	0.1590	Normal
Control	0.1466	0.1590	Normal

From the table above shows that L_{count} L_{table} it can be concluded that the data test capabilities mathematics learning outcomes in the experimental class and control distribution norm l.

Table 5. Results Homogeneity Test Ability Test data results for Math Students

Class	Variance	F_{count}	F_{table}	Information
Experiment	100.80	1.22	1.84	Homogeneous
Control	123.43			

From the table above shows that F_{count} F_{table} it can be concluded that the experimental class and control class have the same variance in terms of mathematical communication skills. In other words both pairs of data groups have homogeneous variance.

4. Conclusion

Based on data analysis found differences in the ability of students' mathematics learning outcomes through the implementation of cooperative learning model *Student Teams Achievement Division* (STAD) by not implementing cooperative learning model *Student Teams Achievement Division* (STAD in class X SMA 8 Padangsidimpuan. The ability of students' mathematics learning outcomes in the experimental class is better than the control class, whereas in the experimental class is obtained 93.33% complete percentage with the average value of 81.73 reach the "Good" criteria. While in the control class obtained percentage of 73.33% with an average score of 73.37 reached the minimum criteria "Enough".

There are differences in students' mathematics learning activities through the implementation of cooperative learning model *Student Teams Achievement Division* (STAD) by not implementing cooperative learning model *Student Teams Achievement Division* (STAD) seen from the observation of student activity. For students in the experimental class activity obtained student activity levels by 79.25% "Good" and the class gained control student activity levels by 61.50% "Enough".

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