IMPROVEMENT EFFORTS OF STUDENT LEARNING THROUGH COOPERATIVE LEARNING MODEL MAKE A MATCH TYPE OF MATERIAL DERIVED SMA SWASTA DAERAH KISARAN

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Absract - As for the purpose of this study was to determine the increase in students' mathematics learning outcomes through Cooperative Learning Model Material Make A Match on derivatives in the Regional Private High School TP.2012 /2013.Jenis research is a class act consisting of two cycles where in every cycle there are 4 stages namely planning phase, the implementation phase, observation and reflection stages. Data analysis techniques in this study is to assess the results of tests given to students at the end of the cycle. Having assessed then searched the percentage of student learning outcomes in the classical style. From the results of research conducted after the action on the first cycle obtained percentage of students in classical learning completeness that is 59.09%. From these results, it is repeated in the second cycle, the indicator different material. At the end of the action on the second cycle administered tests in which obtained the degree in classical learning completeness students is 88.64% . Based on research analysis above, it can be concluded that the study of mathematics at the material derivative in the Regional Private High School range can be enhanced through the Cooperative Learning Model Make A Match. Where improvement is obtained after the second cycle is done.

Keywords: Cooperative Learning Make A Match, material derivatives

1. INTRODUCTION

Education is important to determine ahead of a nation. To produce the human resources as the subject of a good development, required capital from the education itself. Through education of Indonesia can be expected to catch up in science and technology. Education in schools is among the government's efforts to produce quality human resources. In this regard the government continuously strives to improve the quality of education by defeating efforts improve in all areas. [1]

Math in this case serves to underlie the development of science and technology. As Suprijanto, dkk (2009) argues that "Mathematics is a basic science that became the benchmark for the development and progress of science and technology. Mathematics can provide the ability to think logically to solve problems, provide high skills in critical thinking, systematic, and creatively to solve problems. It is the main capital in the mastery of science and technology to face global competition ". Given the importance of mathematics in the advancement of science and technology, it is expected the students to master math. [4]

But most students are less enthusiastic in accepting the math, they are more passive, reluctant, afraid or embarrassed to express their opinions. Not infrequently disadvantaged students learn in mathematics because mathematics is considered difficult, scary and even some of them were hated.

Based on the results of interviews with mothers researchers Nurainun Sinambela mathematics teacher who taught in class XI Regional Private High School said that the range of student learning outcomes in mathematics lesson is still relatively low, 55% of the students scored below the KKM (Criterion completeness Maximum) is 75. Content student learning outcomes are still low on the material derivative, where the material is a lot of students who could not determine the derivative function algebra and determine the derivatives of trigonometric functions.

This is based because students do not like math and methods used by teachers for teachers is still conventional methods rely on lectures and demonstrations for learning, so that students are less enthusiastic even reluctant to follow the math. Reluctance arising from within the students are not only caused by the students themselves, but also by the inability of teachers to create situations that bring

students interested in math. Guru is one nurture and develop students' ability to be intelligent, skilled and high morals. As a determinant, teachers are required to have the ability as educators and teachers. As a teacher, most teachers must master the material taught and skilled in how to teach.

The mathematics teacher who succeed are teachers who are able to cope and solve problems in the classroom wisely. Accordingly, it is certainly not sufficient for a math teacher depends only on the methods and techniques long in teaching mathematics, but it must be another way to attract students to participate actively in the learning process, because the goal of every learning process is obtained optimal learning results. This can be done when students are actively involved, either physical, mental or learning process merupapakan emosi.Keberhasilan main thing in dearer in implementing education in schools. The main components in the learning process for teachers and students. [3]

In learning often encountered the tendency of students who did not want to ask the teacher even though they actually do not understand about the material conveyed teachers. This problem makes the relationship between teacher and student become passive so that no student feedback only silently accepting the delivery of learning material from the teacher. In order for the implementation of learning mathematics is not boring so that students are happy in mathematics learning, the implementation can implement various strategies. One is through the use of appropriate learning models in the learning process. Learning model that been expected to develop and improve the competence, creativity, independence, cooperation (cooperative), leadership, tolerance and life skills.

Appropriate learning models with a view above, one of which is the type cooperative learning model Make a Match. Cooperative learning model Make a Match combines the advantages of cooperative learning and individualized, students looking for a partner while learning about the concept in a pleasant atmosphere. In this case the students were told to look for pairs of cards that is the answer / question before the deadline, students can match the cards were given points. Through this type of learning model students are invited to learn independently, are trained to optimize the ability to absorb scientific information sought, trained to explain the findings to the other party and are trained to solve problems. So, through a learning model Make a Match students are encouraged to think and understand the material not only hear, accept, and remember it. But with this model activeness, independence and skills of students can be developed and finally understanding the concept obtained can grow effectively.

Based on the description above, the cooperative learning model Make A Match seems appropriate in the process of learning and teaching to improve student learning outcomes, so that researchers interested in conducting research with the title: "Improving Student Learning Outcomes Through Cooperative Learning Model Make A Match On Content Local Private School derivative TP range. 2012/2013 ".

2. METHODS

2.1 Location and Time Research

The research was conducted in classes XI-IPA Regional High School Private Jl range. Madong Lubis No 6 East District of Asahan. The research was conducted in the second semester TP. 2012/2013.

2.1 Subject and Object Research

Subjects in this study were students of class XI-IPA Regional Private SMA range as many as 44 students. While the object is student learning outcomes in the material derivative model of cooperative Make a Match Learning.

2.3 Types of research

This type of research is the Classroom Action Research (PTK), which based on assessment cycle consists of four stages: planning, implementation, observation and reflection.

2.4 Research procedure

Implementation of the research started from the first cycle, if it had known the location of the success and the failure lies in the act of the first cycle, the researchers designed cycle II to the increase that we want accomplished. In this case the researchers are planning or conducting the second cycle, where researchers will conduct research cycle to an increase in students' mathematics learning outcomes, the exposure draft study as follows:

1. Planning

   Planning is done in an effort to improve students' mathematical concepts as follows:

   a. Creating Learning Implementation Plan (RPP) material derived using cooperative learning model Make a Match

   b. Make some cards containing questions and answers to observe student learning activities and tests to measure the ability of student learning outcomes.

2. Implementation Measures

3. By the plans, the action is:

   a. Teachers prepare some cards that contain multiple concepts / topics suitable for review sessions, one section about the cards and other parts of the card answers.

   b. Each student gets a card that reads questions or answers.

   c. Each student is thinking about an answer or a question of cards in his hand.

   d. Each student looking for a pair of cards that match cards

   e. Any student who can match his cards before the deadline rated.

   f. If students are not able to match the card with his friend (can not find the card or cards answer questions) will get the punishment that has been agreed.

   g. After each round, the cards shuffled again so that each student gets a card that is different from before, and so on.

   h. Teachers together with students to make conclusions on the subject matter.

4. Observations (Observation)

   In this case the observation during a learning activity, from beginning to end of the study. Researchers will be aided by the Observer. Observer will observe the behavior of each group (the group that received about the card and the group that received reply card) in order to see the liveliness students understand and master the concepts, about- resolve the problems, and summarizes the results of tests and observations that have been made in the first cycle for reflecting facilitate action

5. Reflection

   Based on the results of the evaluation in the first cycle, a researcher with the teachers to review and discuss the results of the implementation of the action, based on the standard of success that was previously set (teaching is successful if 85% of all students can be a value of 75% or more). If found constraints in the problem, so researchers and teachers find solutions solving these problems. Then the solutions will be the basis of a revised improvements in the classroom learning later revised these improvements will be included in the planning for the next cycle proceeds.

6. Research Instruments

Research Instruments in this study are as follows:

1. Observation sheet consisting of observation to observation sheets for teachers and students.

2. The written test form description achievement test consisting of five questions that first validated by Lecturer of Mathematics FKIP Prodi University Math of Asahan.

2.5 Data analysis technique

According Trianto (2010: 241) under the provisions of the SBC determination of mastery learning are determined by each school is known as the minimum completeness criteria, guided by three considerations, namely: the ability of each learner is different; facilities (facilities) each school is different; and the carrying capacity of each school is different. From the above opinion in this study, researchers used data analysis techniques in accordance with the minimum completeness criteria (KKM) subjects in schools where researchers conducted the study, which is 75 and the classical completeness is 85%.[5]

Observation sheet used to determine the activity of students and teachers in learning using cooperative learning model type Make A Match. Achievement test consisting of five questions in narrative form is used to determine the value of students in mastery learning.

To determine the value of students' mastery learning to use the formula:

$$NA = \frac{B}{N} x 100$$

Where : $NA = Value\ end$

$B = The\ scores\ obtained\ by\ students$

$N = Total\ score$

Criteria: $\quad 0 \leq NA < 75 \quad$: Students have not completed the study

$75 \leq NA \leq 100$: Students already completed the study

To determine the completeness of student learning classically used formula as follows (Suryosubroto in Asriati in Asriani, 2012: 21):

$$D = \frac{X}{N} x\ 100\ \%$$

Information:

$D = mastery\ learning\ clasical \geq 85\%$

$X = $ The number of students who achieve mastery learning $\geq 75\%$

$N = $ Total number of students

Criteria: classical mastery learning in the classroom will apply if there are a minimum of 85% of students who have reached a value $\geq$ 75%.[2]

3. RESULTS AND DISCUSSION

3.1 Description Data Research

This research was conducted at the Regional Private High School in the range of class XI-IPA using cooperative learning model Make a Match, this study consisted of two cycles and each cycle tests of learning outcomes.

Problems I

Appropriate background issue in the first chapter that the problem is a result of student learning is still low, especially in derivative material in determining the derivative function of algebra and trigonometry functions derivatives. 55% of students on the math scores derived material under KKM ie type of cooperative learning model 75. Make a Match has never been used in Private Senior High Range Region. Therefore, the researchers used a type of cooperative learning model Make a Match on derivative materials in order to determine the increase in student learning outcomes in class XI-IPA.

1. **Alternative Solution I (the Action Plan I)**

The steps taken in the first action plan are:
   a. Determining sub material and indicators that will be taught in cycle I
   b. Designing a lesson plan (RPP) as a guide for teaching and learning
   c. Designing learning with cooperative learning model Make a Match in defining the derivative function algebra.
   d. Designing tests first cycle of learning outcomes as a means to determine the ability of students and the results of the final scoring
   e. Make observation sheet to see the condition of learning activities in the classroom when learning takes place by using cooperative learning model Make a Match.
   f. Designing a discussion group that is split into two groups (the group that received about the card and the group that received reply card).

2. **Implementation of Measures I**

Teachers implement instructional activities based on the plan of action is to use cooperative learning model Make a Match. The material taught is the derivative of the function algebra.

The steps of the implementation of measures undertaken at this stage are as follows:

a. Before the lesson begins first class atmosphere and member conductive learning motivation to the students that they are able to learn the material and build a harmonious relationship between teachers and students.

b. Teacher recalls the previous lesson

c. Teachers explain, formulate, and resolve demonstrated examples - examples of questions derived material algebraic function.

d. Applying cooperative learning model Make a Match.

e. Teachers guide students in learning activities.

f. The teacher gives the test results I learn as much as 5 questions about the derivative function algebra, this test aims to see the success of actions taken.

g. The teacher collects the first student achievement test, which further teacher gives each student the opportunity to answer that question to the front of the class and then discussed together.

3. Observation I

In this study, which acts as a teacher is a researcher and act as an observer is Mrs. Nurainun Sinambela S.Pd mathematics teacher who served in the high school. Observations from the beginning of the implementation of the action until the end of the implementation of the action can be seen in appendix 5 and 6. Observations on learning activities can be summarized as follows:

a. Compactness pair unfavorable group

b. Enthusiastic work on the problems on the card is still lacking Make a Match

c. Students are less enthusiastic in asking when the pair group presentation and a teacher explains the material.

d. Students respond less well to the presentation of work friends

e. Students have not been able to summarize the material already learned

f. Efforts are being made of teachers so that the students would answer the questions teachers will include:

1) The teacher gives words of encouragement to the students want to answer questions

2) Continue to give motivation to students who answer incorrectly and try to direct the correct answer so

3) Commending the students who answered the question whether false or true

Suggestions for improvement of students' active observer and utilization is still less than the maximum time, students should be able to understand about the utterly inconceivable that easy to finish it, teachers should be more interaction with students.

4. Data Analysis I

Based on the results of a test study, the results of the students' ability to cycle I was 26 of 44 students have reached a level of completeness in learning outcomes with classical completeness 59.09%, while 18 other students do not achieve mastery in learning outcomes. Thus in the first cycle has not reached the classical completeness therefore the study continued in the second cycle.

5. Reflection I

From the observation of classroom learning actions on the implementation of the first cycle level student learning outcomes have not been in line with expectations. As for the weakness of the act of learning by observation in the first cycle, namely:

a. Students unfamiliar with cooperative learning model Make a Match

b. Students are still confused in solving a given problem

c. Students still less scrupulous in understanding and resolving the given problem.

In this case means completeness of student learning outcomes is said to be less successful. Thus in the first cycle has not reached the classical completeness, therefore researchers went on the second cycle.

Problems II

Of the difficulties faced by the students based on the reflection above, then on the implementation of this second cycle, the issues to be addressed are (1) Students are not familiar with cooperative learning model Make a Match; (2) Students are still confused in solving a given problem; (3) The students are still less scrupulous in understanding and resolving the given problem.

1. **Alternative Solution II (Action Plan II)**

The steps taken in the plan of action II. By designing learning contain teacher efforts made in the implementation of the action II, namely:

a. Teacher recalls steps are cooperative learning model Make a Match
b. Teacher recalls derived materials have been studied algebra functions
c. Determining sub material and indicators that will be taught in the second cycle
d. Designing a lesson plan (RPP) as a guide for teaching and learning.
e. Designing learning with cooperative learning model Make a Match in determining the derivatives of trigonometric functions
f. Designing achievement test cycle II as a means to determine the ability of students and the results of the final scoring.
g. Make observation sheet to see the condition of learning activities in the classroom when learning takes place by using cooperative learning model Make a Match.
h. Designing a discussion group that is split into two groups (the group that received about the card and the group that received reply card).
i. More teachers supervise and assist students who are having trouble during the study material derivatives of trigonometric functions

2. **Implementation Measures II**

Activities undertaken in the second action, namely:

a. Before the lesson begins first class atmosphere and member conductive learning motivation to the students that they are able to learn the material and build a harmonious relationship between teachers and students
b. Teacher recalls the previous lesson
c. Teachers explain, formulate, and resolve demonstrated examples - examples of questions the material derivatives of trigonometric functions
d. Applying cooperative learning model Make a Match.
e. Teachers guide students in learning activities
f. Teachers provide learning II test results as much as 5 about the derivatives of trigonometric functions, this test aims to see the success of actions taken
g. Teachers around supervise and motivate students to be active in learning the material derivative of trigonometric functions
h. Teachers collect students' achievement test II, which further teacher gives each student the opportunity to answer that question to the front of the class and then discussed together.
i. Master shut lessons with guide students to summarize the subject matter and ask the opinion of the students about cooperative learning model Make a Match in learning derivatives

3. **Observation II**

Observations on the second cycle increased from the observation on the cycle I. observation results obtained are:

a. Compactness couples already good group
b. Enthusiastic work on the problems on the card Make a Match pretty good
c. Enthusiastic students in asking when the pair group presentations and teachers explain the material is already well
d. Students have been able to respond to the presentation of work friends
e. Students are able to summarize the material that has been studied with the guidance of teachers
f. Teachers give motivation to students who answer incorrectly and try to direct the correct answer so
g. Teachers give rewards to couples who presented the answer to her next class

4.   **Data Analysis II**

   From the results of tests carried out, the result of student learning for the second cycle that there is an increase in the average - average grade between cycles I and II. In the first cycle the value of classical completeness is 59.09% (26 students) of 44 students, while in the second cycle the value of classical completeness is 88.64% (39 students) of 44 students. Ability and learning outcomes of students has increased and students have reached a level of mastery learning as expected. This shows the success of the administration of the action on the second cycle

5.   **Reflection II**

   Efforts - efforts that have been made on this second cycle successfully improve student learning outcomes. Teachers have been able to maintain and improve the implementation of teaching and learning activities using cooperative learning model Make a Match. It is based on the observation results showed an increase with the improvement of teaching and learning activities conducted teacher. Based on observations of teacher of mathematics, cohesiveness among groups (card questions with answer cards) is getting better so enthusiastically working on the given problem very well, questions and answers presented during the learning took place and presentation of the results of the answers is also getting better, the students had dared express / respond to the work of friends (represented couple). Because classical completeness is fulfilled, this study was not continued in the third cycle.

3.2 Discussion of Results

   Based on the results of the discussion on the implementation of the class action from the first cycle to the second cycle by using cooperative learning model Make a Match can improve student learning outcomes. Enthusiastic students to ask is getting better and more focused. Students also can answer questions and enjoy learning because learning is a model of learning through play and make the students learn to be a spirit.

   So based on mastery test results of student learning outcomes in the first cycle and the second cycle, the table has increased, meaning that through cooperative learning model Make a Match in its application to students has been successful and increased.

4.   **CONCLUSION**

   Based on the results of research and discussion presented in Chapter IV starting from the first cycle to the second cycle can be concluded that the use of Cooperative Learning Model Make a Match on derivative material in class XI IPA Regional High School may increase the range of Learning Outcomes. Where improvement is obtained after the second cycle is done.

5.   **REFERENCES**

[1] Arikunto, S. 2005. Dasar-dasar Evaluasi Pendidikan. Jakarta: Bumi Aksara
[2] Arikunto, Suharsimi. 2010. Prosedur Penelitian Suatu Pendekatan Praktik. Jakarta: Rineka Cipta
[3] Hutasuhut, A. 2012. Upaya Meningkatkan Hasil Belajar Matematika Dengan Penerapan Teori Belajar Dienes Pada Materi Sub Pokok Bahasan Sudut Pusat dan Sudut Keliling Lingkaran Di Kelas VIII SMP Swasta Nasional Petatal Tahun Pelajaran 2012/2013.
[4] Suprijanto, Dkk. 2009. Matematika Kelas XI Program IPA. Jakarta: Yudhistira
[5] Trianto. 2007. Model-model Pembelajaran Inovatif Berorientasi Konstruktivistik. Jakarta : Prestasi Pustaka.