

# Influence of Implementation STAD Cooperative learning and Science Process Skills Approach toward Students' Activity and Achievement at SMP Karuna Dipa Palu

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**Abstract**—This research is aimed to describe the influence of STAD cooperative learning combine with biology process skill approach to students' activity and achievement of grade VIII students in SMP Karuna Dipa Palu. The research method was a quasi-experiment method with counterbalanced measures design. The design is used to test two groups with different literation. Then the groups were given cross literation so it has same literation in a different time. First two classes were chosen. The sample used in the research is grade VIII students there is VIII B class with 22 students and VIII C with 16 students. Sampling technical is purposive sampling. Data is collected by observing student sheet to get data of student activity and to get student achievement of biology using multiple choice test. Data is analyzed by t-test. Done student achievement of biology and student activity normality test and student achievement of biology and student activity homogeneities test by SPSS Seri 15 program, in significant degree 0,05. Results of t-test are: (1) Account = 38,43 >Table = 2,021. It means the application of cooperative learning model STAD type with biology process skill approach to student activity has significant influence. (2) Account= 21,404 >Fable= 2,021. It means the application of cooperative learning model TSTAD type with biology process skill approach to student activity has significant influence. The conclusion of the research is the application of cooperative learning model STAD type combine biology process skill has the influence to students activity and achievement of grade VIII student SMP Karuna Dipa Palu.

**Keywords**---Cooperative learning STAD type, process skill, student achievement, and student activity.

## I. INTRODUCTION

The learning process is a treatment that is given to students to determine changes in behavior on students, the interaction

among students with a teacher and the environment, the study conducted by teachers influence on student learning outcomes. During the time, many of the students consider learning a routine activity that is unpleasant and tedious, especially biology class which according to them only a mere rote learning, sitting for hours to devote thought and attention to listen to lectures of teachers in a certain subject. This activity was always perceived as a very heavy burden, and consequently students' passion to decrease. The decline in student learning is also a lot of passion caused by the methods and approaches used by the teacher.

Teacher in the application of learning, mostly applying conventional lecture method, having students memorize the specific material and the provision of duty without feedback, the students' learning process often only serves as a listener without giving the opportunity to develop their personal potential. The learning approach can be interpreted as a point of departure or point of view to the learning process. The term refers to the views on the approach to the process that is still very common. Therefore, strategies and methods used can be sourced, inspired, encouraged and facilitated by a particular approach. A learning approach can be implemented using several methods of learning. Likewise, certain learning methods can be used to the implementation several different approaches [1].

The learning process has been done in SMP Karuna Dipa Palu still apply the methods and the learning model of lecture and question and answer (conventional) so that the activity and student achievement is still low, it also happens in previous years. The low quality of the process and student learning outcomes is shown by the following fact: (1) students tend to show little interest well to learning Science-Biology,

this can be seen from the student activity is very low, (2) seen from the results of learning shown by the results formative test, the average is still low. For class VIII observed / observable average formative test results in three times the test, which is 56 (quoted from a list of values class VIII semester of 2010). While individual completeness or completeness Minimum Criteria established by junior Karuna Dipa the field of study Biology IPA is 65, and the classical completeness is  $\geq 70\%$ .

The main factor is perceived as the cause of low students activity and achievement, should be the because of the lack of variety application of models and approaches in learning process undertaken by a teacher at the school. This is allegedly one of the main causes of the mastery of any subject matter is still minimal because students are less directly involved in the learning process (teaching centered). To overcome these problems, the researchers will carry out the implementation of cooperative learning model through skills approach to the activity of biological processes and outcomes junior class VIII student Karuna Dipa Palu. With the implementation of cooperative learning model through a biological process skills approach, it is assumed to affect the activity and student learning outcomes which include mastery of concepts, thinking skills, rational and process skills.

The problems that were examined in this study is "How is the Influence of Application of Cooperative Learning Model of STAD Model combined with Biology Process Approach to Student Activity and Learning Outcomes of Class VIII SMP Karuna Dipa Palu?" The purpose of this study was to describe the effect of the application of cooperative learning model STAD combined approach skills biological processes in the activities and results of class VIII student of SMP Karuna Dipa Palu.

## II. LITERATURE REVIEW

### A. Skills Process

Suggested that, Skills Process (process-skill) as the cognitive processes including interactions with its contents. Further stated that the skills of the whole process are directed scientific skills (both cognitive and psychomotor) that can be used to find a concept or principle or theory, to develop a concept that has been there before, or to perform a denial of an invention (falsification) [2].

Process skills are the ability of students to apply scientific methods to understand, develop and discover science. The process is a very important skill for students in preparation to use scientific methods in developing science and is expected to gain new knowledge / develop the knowledge they have [3].

### B. The types of Process Skills

There are a variety of skills in the process of skills, these skills consist of the basic process skills (basic skills) and process skills (integrated skills) [4]. Meanwhile, according to [5], the basic process skills consists of six skills, namely; observe, classify, interpret, predict, do experiments, and concluded/communicate. Meanwhile, the integrated process skills; identifying variables, tabulating the data, present data in

graphical form, describe relationships between variables, collect and process data, analyze research, develop hypotheses, operationally defining variables, designing and implementing experimental research.

- Observing skills
- Classifying skills
- Measure Skills
- Communicating skills
- Concluded skills
- Predicting skills

### C. Objective Process Skills Approach

The development of process skills approach is an effort that is essential for obtaining optimal success. The subject matter will be easily mastered and internalized by the student if the student's own experience of the learning event. According [2], the purpose of the process approach is:

- Providing motivation for learning to students in this process skill students are encouraged to continue to participate actively in learning.
- To further deepen the concept, understanding, and the fact that students are learning because basically themselves who seek and find the concept.
- To develop theoretical knowledge with the realities of life in the community so the theory with the realities of life will be harmonious.
- As preparation and practice in the face of the reality of life in the community, because the students have been trained to think logically to solve the problems.
- Develop an attitude of self-confident, responsible, and a sense of social solidarity in the face of various problems of life.

### D. Cooperative Learning Model

Cooperative learning is learning strategies in a number of students as a member of a small group of different ability levels. In completing the task group, each member of the group must work together and help each other to understand the subject. In cooperative learning, learning is said to be complete if members of the group have mastered the learning material [6]. It was also stated that cooperative learning is taught specific skills so that students can cooperate well in the group, such as being a good listener, students are given an activity sheet with questions or tasks that are planned to be taught. During group work, task group members are to achieve mastery.

Several features of cooperative learning; (A) each member has a role, (b) there is connection direct interaction between students, (c) each member of the group responsible for the study and also friends group of their, (d) the teacher helps develop interpersonal skills group, (e) teachers only interact with the group when needed [7].

### E. STAD Cooperative Learning

Cooperative learning model (Cooperative Learning) with type Divisions Student Team Achievement (STAD) is a learning strategy with a number of students as a member of a small group (4-5) person, every group should be heterogeneous, composed of men and women, from different tribes and has a different ability levels are high, medium, and low.

Ref. [6] Explains that the cooperative learning is taught specific skills to be able to work just as well in the group, such as being a good listener, students are given an activity sheet with questions or tasks that are planned to be taught. During group work, task group members are to achieve mastery. Teachers who use STAD also refers to the learning of the student group, presents a new academic information to students every week using verbal or text presentation. The steps of STAD cooperative learning method according to [8] can be seen in Table.

TABLE I, THE STEPS OF LEARNING METHOD STAD

Step Indicator	Teacher Behavior
Step One. Outlines the objectives and motivate students.	Teachers tell the learning objectives and communicate the basic competencies to be achieved and to motivate students.
Step Two. Presenting information	Teacher gives information to the students
Step Three. Organize students into groups of study.	The teacher informs the student groupings
Step Four. Guiding the group learned	Teachers motivate and facilitate the work of students in study groups.
Step Five Giving Evaluate	Teachers evaluate learning outcomes of the learning materials that have been implemented.
Step Six Reward	Teachers reward individual and group learning outcomes.

Source: [8]

### F. Experimental Learning Method

The experimental method is a way of teaching management to increase the activity of students in experimenting with the experience and prove yourself something learned. In this method, students are given the opportunity to do and feel by themselves by following a process, observing an object, analyze, demonstrate and draw their own conclusions about the object studied. Experiments are done on learning approach to product systems analysis techniques or materials [9].

Experiments can be done through individual or group activities. It depends on the purpose and meaning of the experiment or the number of tools available. This experiment can be done with the demonstration, when the tool is already only one or two devices at a time, the experiment must be carried out systematically, that should start from the planning, preparation, execution, review the results and make a report and presented in front of his friends. In addition, the report

also serves to see how far the implementation of students' thinking skills, the ability to provide arguments [9].

Experimental learning implementation always requires the use of the real tools, because this is the essence of learning object tried something. Therefore always put the student's activity, so that the teacher's role tends to be more as mentors and facilitators. To support the learning success of the experiment, things need to be prepared and conditioned to the maximum. In addition, to support the effectiveness and efficiency of the lessons of experiments needed not their guidance lessons for students, starting from early learning of students already understand the subject of the experiment clearly, nor at the end of the activity experiments the students acquire skills of scientific attitude and show the findings [9].

Ref. [9] Stated that the procedure experimental method can be carried out as follows: 1) Prepare tools (experimental device); 2) Instructions and information about the tasks that must be done in an experiment; 3) Implementation of experiments using work sheets/guidelines are arranged in a systematic experiment, so that students in practice not many get into trouble and make a report; 4) Strengthening the acquisition of the findings of experiments conducted with a discussion, question, and answer and/or duty; 5) Conclusion.

Ref. [9] Suggested that the ability of teachers to be taken to ensure that the experiment is working well, which are (a) capable of guiding students to formulate hypotheses to the evidence and conclusions and make a report on the experiment, (b) mastered the concepts studied, (c) capable managing a classroom, (d) able to create effective experimental learning conditions, (e) is able to provide an assessment process. While the conditions and the ability of students to be aware of to support the experiment is (a) have the motivation, attention, and interest in learning through experimentation (b) have the ability to carry out the experiment (c) have an attitude of diligent, conscientious, and hard work, (d) capable writing, reading and listening well.

[9] Experimental method has the advantages and disadvantages:

1) *Advantages*. Excellence implementation of the teaching methods of experiments can be achieved when the learning conditions are created effectively, among these advantages is to: (a) arouse the curiosity of students, (b) generate scientific attitude of students, (c) making learning in real-time, (d) to foster students learn the habits of groups and individuals.

2) *Disadvantages*. Experimental method, in addition, has the advantage, also still has flaws or obstacles that are likely to be anticipated by the teacher if it would apply this method, including (a) require the tools and costs, (b) requires a relatively long time (c) very little schools have experimental facilities (d) teachers and students many are not accustomed to doing experiments.

### G. Understanding Learning Outcomes

Learning is essentially a process of change in behavior due to their experience. The changes mean is a permanent change in behavior on the aspects of knowledge, understanding, attitudes, behaviors, skills, habits and appreciation. While the

definition of experience in the learning process is the interaction between the individual and his environment [10]. So learning can be regarded as a process of behavior change due to experience and practice.

Ref. [11] Suggests that the learning outcomes are influenced by the experience of learning the subject with the physical world and its environment. The results of ones learning to depend on what you already know the subject of study, goals, motivations, which affect the process of interaction with the material being studied. To determine the success or failure of a student to learn course requires size. By measuring learning outcomes, then one can know the level of mastery of the subject matter being studied, and the results of the learning that's called learning outcomes.

Ref. [12] Suggest that the learning outcomes are the results achieved in the particular field of study students to use the test as a means of measuring success. To determine the success or failure of a student to learn course requires size. While Sukartiningsih (2005) divides the three types of learning outcomes: (1) the skills and habits, (2) knowledge and understanding, and (3) attitudes and ideals. Each of these types of learning outcomes can be filled with material that has been set in the curriculum. But Gagne (1985) in [13] divided the five categories of learning outcomes: (1) intellectual skills, (2) cognitive strategies that regulate the way of learning and thinking person in the broadest sense, (3) verbal information such as knowledge and facts, (4) attitude and (5) motor skills. It is further mentioned that the quality of learning outcomes is the quality obtained from the study, after studying the matter and take the test with good results. By using skills in learning to be one trigger for obtaining quality and good learning outcomes.

#### *H. Student Learning Outcomes Assessment*

Educational evaluation involves four components that are interrelated and constitute an inseparable unity. This means that the evaluation should involve three other activities of assessment, measurement, and test. Evaluation according to [13] as a process of determining the value relating to the performance and results of students' work. Where the results of the evaluation are expected to encourage educators to teach better and to encourage students to learn better. Evaluations provide information for classes and teachers to improve the quality of teaching and learning.

Winkel (1982) in [13], suggested that the evaluation of teaching can be categorized into two, namely formative and summative. Formative evaluation is an evaluation conducted at the end of the discussion of a subject/topic, and are intended to determine the extent to which the learning process has been running as planned. Whereas summative evaluation is the use of the tests during the learning process is still ongoing so that students and teachers to get information about the progress that has been achieved.

Assessment is an important component in education. Efforts to improve the quality of education can be reached through the improvement of the quality of learning and assessment system. Both are interrelated, a good learning system will produce a good quality learning. The quality of

learning can be seen from the results of the assessment. Furthermore, the rating system will encourage educators to define good teaching strategies and motivate learners to teach better [13].

Efforts to improve the quality needs to improve the quality of assessment systems. Thus, the mandate of Law 2003 National Education System Article 58 paragraph (1) that "the evaluation of learning outcomes of students conducted by educators to monitor the process, progress and improvement in learning outcomes of students on an ongoing basis".

Ref. [14] Suggested that learning outcomes can be explained by understanding the two words that make it up are "results" and "learning". Understanding results (product) refers to an acquisition as a result of doing an activity or process that results in changes in the functional input. In the cycle of "input - process - results", the results can be clearly distinguished from the input due to the change. Similarly, in the teaching and learning activities, after experiencing learning, students change their behavior than ever before.

The purpose of education is a planned behavior change can be achieved through the learning process. Learning outcomes are the results achieved from the learning process in accordance with the purpose of education. Learning outcomes are measured to determine the achievement of educational goals that learning outcomes should be in accordance with the purpose of education.

Ref. [15] Suggests that the learning outcomes seek change in behavior in the form of domains of cognitive, affective, and psychomotor. For the purposes of measurement of learning outcomes, the domains are organized in a hierarchical manner, starting from the lowest and simplest to the highest and complex. In the cognitive domain are classified into rote learning ability, comprehension, application, analysis, synthesis, and evaluation. In the affective domain-level learning outcomes include Reception, participation, assessment, organization, and characterization. The psychomotor domain is composed of a level of perception, readiness, guided movement, accustomed movement, complex movement, and creativity.

Ref. [16] Suggests that mastery learning in the Education Unit Level Curriculum (SBC) is the level of achievement of competence mastery learning after students participating in learning activities using minimum completeness criteria (KKM). Where KKM is a minimum threshold of competence achievement in every aspect of the assessment subjects that must be mastered by students who ideally is 75%. However, this KKM could be lower or higher than 75% depending on the school. Consideration determines these criteria adapted to the analysis of the three cases, the level of complexity (complexity), the level of average ability students (student intake), and the level of support school resource capabilities. Learning to cause changes in behavior and learning are attempts to bring about behavior by exploiting the process of learning in students. Changes in personality indicated by the change in behavior due to learning.



**I. Students Activity**

The learning process that teachers should make learning process involving students. Students are active to be able to determine the application of the concept, understand the rules and principles of the disciplines studied. This is in line with what was raised [17] that learning is done and also the process that makes students become active. So in learning, it was students who dominate the activity of the learning process, while teachers could provide guidance or direction to the student or facilitator.

The opinions above are also supported by [18] which states that learning is done, obtain a certain experience in accordance with the expected goals. While the activity is not limited to physical activity, but also include activities such as the psychic nature of mental activity. Strengthening the physical activity is also supported by the [19] which states that physical activity is active enterprising learners with limbs and psychic activity (psyche) is that if the power of his soul to work as many or many to work in the framework of teaching. Learning activities include activities that are both physical and mental. This means that in both activity and learning activities that must always be hooked on the student. Activities students are very important that the results obtained by the students optimal learning, student activity is crucial for student learning outcomes to improve the competence of student learning achievement.

Learning activities related to student activities proposed by Dierich (1990) in [19] divides the learning activities into a group activity, are:

- 1) *visual activities*: read and observe the demonstration
- 2) *oral activities*: ask some questions and express the opinion
- 3) *listening activities*: listening to a conversation or groups discussion
- 4) *writing activities*: do the task
- 5) *motor activities*: doing an experiment

Grouping activities by Dierich (1990) in [19], describes the activities that allow students to become active, for example, a visual activity that is read and observe demonstrations; oral activity is asking questions and expressing their opinions; of listening, for example, listen to a conversation or discussion groups; activities of writing for example take the test; and motor activity which is conducting the experiment. According to Bloom (1978) in [20] that the psychomotor domain of the outcomes of learning skills and ability to act. There are six aspects, namely, the realm psi motor is reflexes, movement ability, the ability to argue (perceptual abilities), and communications.

Students are called active if he/she doing the learning activities that are relevant to the subject matter presented. Aspects of student activity are observed, among others; participation of students in learning, doing worksheets, in collaboration with a group of friends, active students in discussions, and student participation in demonstrations/experiments. To determine the level of activity

of students in learning, cooperative learning cycle approach used by Memes guidelines (2001), if the value of the student activity  $\geq 75.6$  then categorized as active, if the value of the activity from 75.5 to 59.4 then categorized quite active, while the value of activity  $<59.4$  then categorized as less active.

**III. RESEARCH METHOD**

This type of research is descriptive quantitative research, using quasi-experimental. The study design used is counterbalanced Measures Design [21]. This design is used to test two subjects with different treatment, then both these subjects are crossed so that the second treatment subjects received the same treatment at a different time. By using this design, the first selected two classes, one class for the experimental group and one class for the control group.

Next, the two groups were given different treatment, namely the experimental group was treated in the form of learning with cooperative model through process skills, while the control group was treated in the form of learning with the conventional model, the model of learning that has been used, wherein the learning process centered on the teacher (teaching centered) with the main teaching methods used are lectures and question and answer, then at the end of the learning activities are given post-test. Design of the implementation of the research can be described as follows:

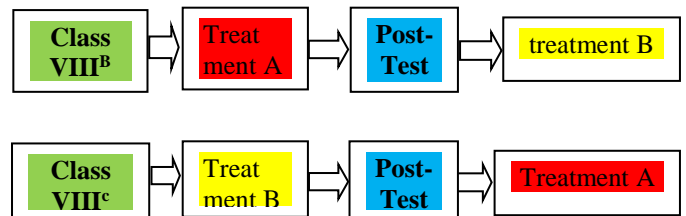


Fig. 1 Research Design

Explanation:

Treatment A = Experiment with using the model type STAD cooperative approach to skills biological processes.

Treatment B = The control group with a lecture and question and answer (multimethod).

Post-test = conducted at the end of teaching-learning process

**A. Population, Sample and Sampling Technique**

1) *Population*. The populations in this study were all students of Class VIII SMP Karuna Dipa, who registered in the academic year 2010/2011. Distribution of each class can be seen in Table 3.1.

TABLE II. TOTAL POPULATION

No.	Class	Population	Explanation
1.	VIII A	23	Excellent Class
2.	VIII B	22	
3.	VIII C	16	
Total		61	

Source: The Report of SMP Karuna Dipa Palu in 2010

2) *Sample*. Samples were two classes, namely class VIII B with the number of students 22 people consisting of 12 female and 10 male class VIII C with the number of students 16 people consisting of 11 girls and 5 boys. Both subjects mentioned above are given the same material with different treatment phase as follows:

a. *Phase I*, class VIII B treated STAD cooperative learning through the process skills approach, whereas class VIII C treated with conventional teaching methods lectures, discussion, and demonstration.

b. *Phase II*, a class VIII C treated STAD cooperative learning through the process skills approach, whereas class VIII B treated with conventional teaching methods lectures, discussion, and demonstration. Furthermore, both the subject exchanged (crossed) treatment, so that the two subjects feel the treatment is given.

3) *Sampling Technique*. The sampling technique in this research was done by purposive sampling that the sampling technique used by researchers if the researchers have certain considerations with sampling [22]. A sampling of the population in this research was done by taking subjects that have high levels of capability of learning outcomes equal or homogeneous, is class VIII B and VIII C, this is determined based on the results of academic achievement has been obtained in the material before, whereas class VIII A is an excellent class.

4) *Data Analysis Technique*. The data obtained in this study is data on effective and psychomotor abilities of students were quantitative data and analyzed using inferential statistics. Inferential statistics is all investigation based on statistical data along with instructions as to the accuracy and stability rather than decisions based on probability [23]. Inferential statistics used to generalize research covering the estimate (estimate) and hypothesis testing. Data analysis technique used computer assistance with SPSS 15 series.

5) *Hypothesis Testing*. The formula used to test the equality of two average [20] are as follows:

$$t_{hitung} = \frac{\bar{X}_1 - \bar{X}_2}{S \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad (1)$$

Where :

$$S = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}} \quad (2)$$

Information :

- $\bar{X}_1$  = the average score of the experimental class
- $\bar{X}_2$  = the average score of the control class
- $n_1$  = the number of students in experimental class
- $n_2$  = the number of students in control class
- S = standard deviations

Testing criteria which accept  $H_0$  if  $t(1 \text{ to } 0.5) < t < t(1 \text{ to } 0.5)$  on the real level = 0.05 and  $df = n_1 + n_2 - 2$  as well as to the prices of other  $t H_0$  rejected.

#### IV. RESULTS AND DISCUSSION

##### A. Result

Average achievement of student learning outcomes through the implementation of cooperative learning model STAD combined with biological process skills approach to student learning outcomes can be converted values listed in Table III.

TABLE III. THE RESULT

Score	treatment A (Experiment)	treatment (Conventional)
higher	91,33	73,00
lower	72,67	58,00
average	83,08	66,13

Based on the average value of learning outcomes by the application of the above experimental method, obtained the highest value and the lowest value 72.67 91.33 with a mean score obtained were 83.12. While the average value of learning outcomes by the application of conventional methods, obtained the highest value of 73.00 and the lowest 58.00, with a mean score obtained 66.13.

Based on the results, it is known that the highest score obtained by the students are in a class taught by the experimental method, while the value obtained by the students in the class taught by the conventional method lower. However, data obtained from the results of the written test in the form of multiple-choice (multiple choice), were statistically analyzed to test the hypothesis of the study. Hypothesis testing is done using a t-test, but previously necessary data normality test to determine whether the obtained data were normally distributed or not. Having tested the normality of the data to determine the homogeneity of variance test. If both these assumptions are met, that is normally distributed data and be homogeneous hypothesis testing.

1) *Normality Test Learning Outcomes (Treatment A and B)*. Normality test data is intended to show that the sample data came from a normally distributed population. Normality test used is the Kolmogorov-Smirnov. In treatment A (experimental) obtained  $0.170 > 0.05$ . While treatment B (conventional) obtained  $0.200 > 0.05$ . This shows that both the data are normally distributed.

2) *Homogeneity Test Learning Outcomes (Treatment A and B)*. The homogeneity test is conducted in order to show that two or more groups of sample data come from populations having the same variance. Homogeneity test of learning result variance, both in treatment A (experiment) and treatment of B (conventional) obtained  $0,953 > 0,05$ . This indicates that both the variant data of the learning outcomes are homogeneous.

### B. Students Activity

Achievement of the average value of student activity with the implementation of cooperative learning model STAD combined biological process skills approach towards student activity as shown in Table IV below.

TABLE IV. THE AVERAGE VALUE STUDENT ACTIVITIES

Score	Treatment A (Eksperimen)	Treatment B (Conventional)
Higher	95,00	84,00
Lower	75,00	63,00
Rata-rata	85	72,18

Based on the average value of student activity with the adoption of the above experiment, obtained the highest value of 95.00 and a low of 75.00, with a mean score of 85.00. While the value of student activity with the application of the conventional method, the highest value of 84.00 and the lowest 63.00, with a mean score of 72.18.

Based on the results of the student activity assessment above, it is known that the highest score obtained by the students are in a class taught by the experimental method, while the value obtained by the students in the class taught by the conventional method lower. However, data obtained from the observation of student activities were statistically analyzed to test the hypothesis, but it needs to be done before normality test to determine whether the obtained data were normally distributed or not. After being tested for normality, further to determine the homogeneity of variance test. If both these assumptions are met, that is normally distributed data and homogeneous then a test of the hypothesis.

1) *Normality Test Student Activity Data.* Normality test results for student activity observation data with the Kolmogorov-Smirnov test data obtained treatment A (experiment)  $0.241 > 0.05$ . whereas treatment B (conventional) obtained  $0.555 > 0.05$ , indicating normally distributed data.

2) *Homogeneity test of Student Activities.* Homogeneity test is done to see that two or more groups of data samples come from populations having the same variance. The test results obtained, both in treatment A (experiment) and treatment B (conventional)  $0.576 > 0.05$ . The second shows a variant data homogeneous student activity.

### C. Research Hypothesis Testing

Does the implementation of cooperative learning model STAD biological process skills approach combined positive effect on the activity and student learning outcomes? then be tested against the average score of posttest in each class. Because of the assumptions of normality and homogeneity has been fulfilled, then followed by t-test. Statistical techniques t-test is performed to find t, and after t is known, then compared with the value  $t_{table}$  to take a decision.

Based on the statistical test by using a t-test, both on learning outcomes and student activity obtained  $t \geq t_{table}$  ie  $\geq 2.021$   $38.432$  and  $21.404$   $t \geq t_{table}$  ie  $\geq 2,021$ . This means that  $H_0$  is rejected and  $H_1$  accepted. So it can be concluded that "There is the influence of the implementation of cooperative

learning model STAD combined biological process skills approach to the learning outcomes and the student activities of SMP Karuna Dipa Palu".

### D. Discussion

Based on the statistical test by using a t-test, both on learning outcomes and student activity obtained  $t \geq t_{table}$  ie  $\geq 2.021$   $38.432$  and  $21.404$   $t \geq t_{table}$  ie  $\geq 2,021$ . This means that  $H_0$  is rejected and  $H_1$  accepted. So it can be concluded that "There is the influence of the implementation of cooperative learning model STAD combined biological process skills approach to the learning outcomes and the students' activities of eighth-grade students at SMP Karuna Dipa Palu".

1) Learning outcomes for students who are taught using experimental learning method are better than using conventional methods. It can be seen from the average value obtained posttest for classes taught by using the experimental method was 83.12. While the average value posttest classes taught by conventional methods, namely 66.17.

2) Students' activities taught by the experimental method is better than the activity of students taught using conventional methods. This can be evidenced by the average obtained for treatment A 95.00 highs and lows of 75.00 with a mean score of 84.89. While the value obtained in the treatment of B highest and lowest 84.00 63.00 with a mean score of 72.18. In accordance with the provisions of Ministry of Education (2003), that the value of 84.89 categorized as very good, while the value of 72.18 fit in either category.

The results of the study it can be concluded that cooperative learning model STAD combined approach of process skills can enhance the activity and results of class VIII student of SMP Karuna Dipa Palu, this is because the STAD cooperative learning not only learn the material, but students also need to learn especially skills called cooperative skills. This cooperative skill to work to facilitate working relationships and tasks between individuals and between groups.

The results of the experimental class learning by using learning model STAD on the concept of photosynthesis better, because students more easily determine and understand concepts that are difficult to discuss with his friends. Through discussion will be established communication and interaction with other students to share ideas, as well as provide opportunities for students to express their opinions. The learning environment for cooperative learning is characterized by democratic processes and active role in determining what students should learn and how to learn it. Teachers set up a high-level structure in the formation of groups and define all the procedures, but students still are given the freedom to control from time to time in the group.

The use of such skills above, students are expected to find and develop their own facts and concepts and cultivate and develop attitudes and values. The whole rhythm, movement or action in the learning process like this, it will create learning conditions that involve students actively. In accordance with the opinion of [24] which says that the cooperative skills approach can work if the student has the skills required for the

unit process certain subjects. The cooperative skills have been implemented and carried out by researchers at the junior Karuna Dipa Palu to run well and smoothly so that the results obtained in the application of STAD cooperative learning can be maximized.

The ability of the inside of a teacher to develop the use of the skills and methods of cooperative developed methods of teaching others, the use of teaching aids (teaching media), to change the atmosphere or to move the learning process as well as innovations in the other, it is required to facilitate students receive and understand the material presented, which in the end will bring a positive impact on the development of student learning outcomes. Another benefit for students among others will increase the motivation to learn, practice mutual cooperation in the team, have a sense of responsibility, a healthy and able to compete well in a friend of the group and with other groups. Thus nature and attitude that these will be able to bring private succeed in meeting the challenges of higher education-oriented groups. In cooperative learning, learners will be easier to find and understand concepts that are difficult if they are able to discuss the problems faced by his friends.

The research result [25] explains that by using the process skills approach to learning, children will be able to discover and develop attitudes and values that are required throughout the rhythm of motion or action in the process of teaching Study abroad which would create conditions of active student learning. Thus, through the process skills approach was applied a touch to enable students to learn to learn something, to create an interest that eventually led to an engagement that is based on a sense of responsibility in the face and mitigate the problems in learning.

Learning will work well when there is the courage to look for methods and build a new paradigm. It is necessary the application of ways and other methods that have been used in the past. A method that has proven to be able to bring good results in the past will not necessarily bring the same results if applied in the present and future [26].

In accordance with the opinion of Sumaatmadja (1997) in [26] mentioned that a teacher always demanded reforms, in order to motivate and provide the widest possible opportunity to the students to learn and achieve the expected competencies. Similarly, things that happen in junior Karuna Dipa Palu, was the ability of teachers in selecting and applying the learning method, the state of students, facilities and learning environment will determine the success in learning activities.

Process skills approach applied by touch to enable students to learn to learn something realize an interest, which ultimately leads to an engagement that is based on a sense of responsibility in the face and mitigate the problems in learning. Meanwhile, the learning process is always to include the student actively in order to develop the abilities of students, among others, the ability to observe, interpret, predict, applying the concept, planning and carrying out the research, and communicate findings.

In line with the opinions [26] who argued that the objective approach covering process skills; provide motivation for learning to students in the skills of the students are encouraged to continue to participate actively in the learning; further deepen understanding of the concept and the fact that students learned as intrinsical students themselves who seek and find the concept; to develop knowledge or theory with the realities of life in the community so that between theory and reality of life will be harmonious; as preparation and practice in dealing with life in the community because the students have been trained to think logically to solve problems; develop an attitude of self-confident, responsible and a sense of social solidarity in the face of various problems.

The results of the application of process skills approach in this study provide a very real impact in improving the activity and student learning outcomes. It can be seen from the observation of student activity during the learning process, as well as student learning outcomes obtained from the posttest. Student's motivation to learn biology can be seen in the learning process that occurs is the student activity in asking and answering the submitted materials, students were eager to follow biology delivered. Students are very happy and understand the material presented by the application of learning approaches ie process skills approach.

In Increasing the motivation of students is also evident in their seriousness in following the subject matter of biology on the concept of photosynthesis. Similarly, the activity of students in participating lab photosynthesis-related materials, student discipline in doing both groups and individuals assigned by the teacher, as well as increased learning outcomes obtained from the posttest. Students can interact directly with the tools and materials in the laboratory, predicting things that are associated with the photosynthetic material, observing through existing experiments and can explain things that are in accordance with the existing theory.

Skills process undertaken to increase the attractiveness and interest of the students to learn biology they perceive as a bogey at every meeting, because they are not accustomed to working on any given problem perfectly. This emerging interest will arouse the enthusiasm the students to learn because the appeal of this approach that allows students to accept any given concept. With the approach of the process, skills will allow students to recall the concept better, in the interest of students to study biology has grown, which in turn can increase learning outcomes.

The low of the students' learning outcomes and conventional learning activities found in this study, in accordance with the opinion [8] according to that conventional learning approach for this can result in lower student learning activities. Yet knowledge is formed through a series of events or activities, both physically and mentally. So if physical activity less attention, of the knowledge, gained students become less meaningful, resulting in student learning outcomes to be low. Physical learning activities will be even greater if students themselves are more involved in learning.

Direct experience will be more effective in shaping the student's memory than when students only silent just observe and record what is conveyed by the teacher. A good memory



will have an impact on the high learning outcomes are achieved. One approach to learning that can be applied to enhance the activity and the results of student learning are the process skills approach as described above.

Stages of learning the skills approach begin the process of displaying the phenomenon, giving a perception, connecting learning to students' prior knowledge, experimentation, fill the LKS, reinforcement material, and the planting concept with reference to the theory of the problem. Through the application of process skills approach, students will be trained to develop such attitudes active, cooperation, discussion, conclude, and communicate any information obtained so as to enhance the students' learning activities that could ultimately improve student learning outcomes.

## V. CONCLUSION AND SUGGESTION

### A. Conclusion

Based on the results of data analysis and discussion that has been described, it can be concluded that:

1) There is the effect of the application of cooperative learning model Student Team Achievement Divisions (STAD) combined biological process skills approach towards learning outcomes of the eighth-grade students of SMP Karuna Dipa Palu.

2) The implementation of cooperative learning model Student Team Achievement Divisions (STAD) combined biological process skills approach has a positive influence on the activity of eighth-grade students of SMP Karuna Dipa.

### B. Suggestion

Based on the conclusion, it can be proposed some suggestions that can be considered in order to improve the activity and student learning outcomes:

1) In connection with the lack of amenities at this school, the teachers are expected to designing and selecting methods / strategies in implementing a learning activity, which can create an atmosphere (of active learning, innovative, creative, effective, and fun) PAIKEM which ultimately expected to increase the activity and student learning outcomes, especially in the subjects of biology.

2) In view of this research is still simple and very limited, so what comes out of this study is not the end, because it is necessary to further research for perfection and precision application of a method of learning, in order to increase the activity and student learning outcomes.

## REFERENCES

- [1] Rustaman. Belajar dan Pembelajaran. Banjarmasin: RinekaCipta. 2003.
- [2] Indrawati. Pengembangan Keterampilan Proses SAINS bagi Mahasiswa Calon Guru Melalui Praktikum Fisika Dasar pada Pokok Bahasan Fluida, *Jurnal Pendidikan Fisika Indonesia*.Vol. 2, No. 2, Juli 1999.
- [3] Dahar, R.W. Teori-teori Belajar. Jakarta: Erlangga.1985.
- [4] Depdiknas R. I. Implementasi Kecenderungan Pendidikan Sains. Jakarta.2004.
- [5] Karli. Optimalisasi Media Pembelajaran. Jakarta : Grasindo. 2002.
- [6] Slavin, R.E. Cooverative Learning, Teori, Riset dan Praktik. Terj. Nurlita. Bandung: Nusa Media. 2008.
- [7] Carin. Project Based Learning Suatu Pendekatan Inovatif Pembelajaran dalam Melaksanakan Kurikulum Berbasis Kompetensi, *Jurnal Pendidikan dan Kebudayaan*, Volume 4 nomor 1, Maret 1993.
- [8] Chotimah, H. Peningkatan Proses dan Hasil Belajar Biologi dalam Pendekatan Kontekstual melalui Model Pembelajaran Think Pair Share pada Peserta Didik Kelas X-6 SMA Laboratorium UM.PTK. Malang: SMA Lab. UM. 2007.
- [9] Komalasari, K. Pembelajaran Kontekstual, Konsep dan Aplikasi. Cetakan I. Bandung: Rafika Aditama.2010.
- [10] Djamarah dan Zain. Strategi Belajar Mengajar. Banjarmasin: Aneka Cipta.1995.
- [11] Sudirman. Interaksi dan Motivasi Belajar Mengajar. Jakarta: PT. Persada.2004.
- [12] Mappa, S. Teori Belajar Orang Dewasa. Jakarta: Dikti Depdikbud.1986.
- [13] Sukartiningih. Implementasi Model Advance Organizer dengan Peta Konsep dalam Pembelajaran Fisika untuk Meningkatkan Hasil Belajar Fisika Kelas II SMP Negeri II Palu. Skripsi tidak dipublikasikan. Palu. Universitas Tadulako. 2005.
- [14] Purwanto. Evaluasi Hasil Belajar Siswa. Yogyakarta: PustakaPelajar. 2009.
- [15] Arikunto, S. PenelitianTindakanKelas. Jakarta: BumiAksara. 2008.
- [16] Sumiatidan Asra. Metode Pembelajaran. Bandung: CV. Wacana Prima. 2007.
- [17] Sardiman. Peranan Konstruktivisme dalam Pembelajaran dan Pengajaran Sains, Seminar Internasional Pendidikan IPA Jurusan Pendidikan IPA Fakultas Ilmu Tarbiyah dan Keguruan Universitas Islam Negeri Syarif Hidayatullah. Jakarta. 2005.
- [18] Sanjaya. Pembelajaran Sains Menyenangkan dengan Metode Konstruktivisme. UIN Syarif Hidayatullah Jakarta, *Metamorfosa Jurnal Pendidikan IPA*, Volume 1 No. 2, Oktober 2007. Jakarta.. 2007.
- [19] Ahmadi dan Rohani. Belajar dan Pembelajaran. Jakarta: Rineka Cipta. 1995.
- [20] Hamalik, O. Proses Belajar Mengajar. Cetakan ke-7. Jakarta: BumiAksara. 2008.
- [21] Shuttleworth, M. Counterbalanced Measures Design. Retrieved [Date of Retrieval] from Experiment Resources :<http://www.experimentresources.com/counter-balanced-measures-design.html>. (18/01/2011). 2009.
- [22] Sugiyono. Metode Penelitian Pendidikan (Pendekatan Kuantitatif, Kualitatif dan R & D). Bandung: Penerbit Alfabeta. 2007.
- [23] Hadi. Pembelajaran dengan Pendekatan Realistik untuk Meningkatkan Pemahaman Sistem Linear Dua Peubah Siswa Kelas II SLTP. Malang: Tesis tidak diterbitkan Program Pascasarjana UM. 2000.
- [24] Nur, M. Pengajaran Berpusat pada Siswa dan Pendekatan Konstuktivis dalam Pengajaran. Pusat Sains dan Matematika Sekolah. Surabaya: Unesa Press.2000.
- [25] Samani. Teori Pembelajaran IPA dan Hakekat Pendekatan Keterampilan Proses. Jakarta: Dikmenum Depdikbud. 1996.
- [26] Semiawan, C., Tangyong, A.F., Belen, S., Matahelemual, Y., Suseloardjo, W. Pendekatan Keterampilan Proses, Bagaimana Mengaktifkan Siswa dalam Belajar. Jakarta: PT. Gramedia Indonesia. 1992.