



## Improving Students' Activities and Learning Outcomes in Ecosystem Materials through Student Team Achievement Division Learning Model

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### Abstract

The learning outcomes of class X IPS 3 students in the subject of Biology, Ecosystem material, are still not satisfactory. Of the 35 students, as many as 30 students (86%) scored below the KKM. This is the background for conducting Classroom Action Research (CAR). The Student Team Achievement Division (STAD) model is used in this research to improve learning outcomes and student activity. The subjects of the research were 35 students of class X Social Sciences 3 Academic Year 2018/2019 with 35 students, consisting of 18 female students and 17 male students. The results showed that 54% of students scored above the KKM in the first cycle, and 86% of the students scored above the KKM in the second cycle. From these data, it can be concluded that the STAD Learning Model can increase student activity and learning outcomes in Biology learning, especially Ecosystem material in class X IPS 3 SMA Negeri 1 Ciampea.

**Keywords:** Activities and Learning Outcomes; Ecosystem; Student Team Achievement Division (STAD).

### INTRODUCTION

Students will be able to learn well when they are in a pleasant atmosphere, feel safe, free from fear. Therefore, the teacher must be able to create a conducive learning climate because it is a driving factor that can provide its own attraction in the learning process, otherwise a less pleasant climate will cause boredom and boredom. A pleasant learning climate will raise enthusiasm and foster student activity and creativity. This requires the creativity of a teacher to develop effective learning patterns and methods so that students can easily understand the subject matter. One of the topics that are considered difficult by students of SMA Negeri 1 Ciampea, especially in class X IPS 3 is Ecosystem, this is reinforced by the presence of quantitative data in the form of evaluation results of Biology learning. From the evaluation results obtained data that 86% of students scored below 75 or still under the minimum completeness criteria (KKM). Some of the other problems identified are; (a) some students are not active and do not dare to express opinions, ask questions or answer questions. (b). use

of less varied learning methods. (c). lack of props. (d). low motivation of students in participating in learning. To improve students' mastery of Biology subject matter in class X IPS 3 SMA Negeri 1 Ciampea, the researchers carried out improvement of learning through CAR using the Student Teams Achievement Division (STAD) cooperative learning model which is expected to increase activity and learning outcomes of class X IPS 3 students Ecosystem material. According to Hamdani (2011) the STAD type cooperative learning model was developed by Robert Slavin and his colleagues from Johns Hopkins University. STAD is one of the simplest cooperative learning methods. Students are placed in teams of four to five heterogeneous people, both gender, race, and level of ability (achievement). The teacher presents the lesson then students work in teams to ensure that all team members have mastered the material. In the final stage, students are given a quiz with a note that students are not allowed to help each other. STAD consists of five main components. The five components are class presentations, teams, quizzes, individual progress scores, and team recognition.

Based on the identification of the problems found, the formulation of the problem was determined: Can the application of the STAD type cooperative learning model on Ecosystem material increase the activity and learning outcomes of students of class X IPS 3 SMA Negeri 1 Ciampea?

This classroom action research aims to: 1) Increase student activity in Ecosystem material through the application of the STAD type Cooperative learning model in class X IPS 3 at SMA Negeri 1 Ciampea in the even semester of the 2018/2019 academic year. 2) Improving student learning outcomes in Ecosystem material through the application of the STAD type cooperative learning model in Ecosystem learning in class X IPS 3 students of SMA Negeri 1 Ciampea in the even semester of the 2018/2019 academic year. 3) Measuring the magnitude of the increase in student activity and learning outcomes in Ecosystem material through the application of the STAD type Cooperative learning model in class X IPS 3 students of SMA Negeri 1 Ciampea in the even semester of the 2018/2019 academic year. The results of this classroom action research are expected to be useful for students, teachers and improving the quality of learning at SMA Negeri 1 Ciampea.

## METHOD

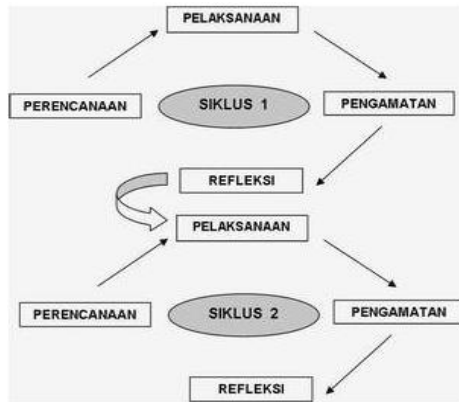
This research was carried out for 6 months, from January to June 2019. This research was carried out in class X IPS 3 SMAN 1 Ciampea Bogor, which is located in Ciampea Bogor. The subjects in this study were students of class X IPS 3 at SMA Negeri 1 Ciampea Bogor for the 2018/2019 academic year. The number of students is 35 people consisting of 18 female students and 17 male students.

This classroom action research was carried out at SMA Negeri 1 Ciampea, with the following stages:

1. Planning, including determining Basic Competencies in Ecosystem material in class X IPS 3 and its implementation in March 2019.
2. Action, covering the entire process of teaching and learning activities through the STAD type cooperative learning model, observation and evaluation.
3. Observation, carried out during the learning process, observed student activities and teacher activities in the STAD type cooperative learning model.
4. Reflection, including analysis of learning outcomes and analysis of learning observations and at the same time formulating improvement plans in the next cycle.

The research was carried out in collaboration with colleagues, who assisted in observing and reflecting during the research, so that the implementation of the research could be controlled and maintain the validity of the research results.

This classroom action research was carried out in four stages according to John Elliot's model starting from planning, implementing, observing, and reflecting. The flow of the implementation of the action can be seen in the Figure 1:



**Figure 1.** Stages of Classroom Action Research (Muslihuddin, 2011)

In Figure 1, it is showed that Classroom Action Research begins with the planning stage. The prepared planning is carried out at the implementation and observation stages. The implementation and observation stages are carried out at the same time, namely observations are made when the research is carried out in class. After the implementation and observations have been completed, reflection is carried out, namely activities to examine the implementation of learning. In detail, the stages in each Classroom Action Research cycle will be explained as follows:

### 1. **Planning**

The action plan includes the creation of learning tools, namely:

- a. Learning Implementation Plan (RPP) on Ecosystem material.
- b. Student Worksheets (LKS) containing Ecosystem materials
- c. Evaluation Questions (Competency Test) which will be carried out at the end of each cycle
- d. Make an observation sheet about the process of learning activities in Ecosystem material.

### 2. **Action Implementation**

The implementation of the action in this action research is in the form of implementing learning activities in the classroom according to the planned learning scenario which includes the following activities:

- a. Apperception: question and answer about function
- b. Explanation of the learning objectives to be achieved
- c. An explanation of how the learning will be carried out is the STAD approach model.
- d. An outline explanation of the Ecosystem material.
- e. Group division and distribution of student worksheets.
- f. Students work on the Ecosystem practice questions in groups.
- g. Group representatives present their answers in front of the class.
- h. Teacher assesses student work
- i. The teacher and students conclude the subject matter.

### 3. **Observation**

The activities observed in the implementation of the action are:

- a. Student interaction with students during group work.
- b. Student activities when working on worksheets.
- c. Interaction of students with teachers during the learning process.
- d. Carry out learning according to the RPP that has been made.
- e. Conduct an evaluation at the end of the lesson in accordance with the learning objectives contained in the lesson plans.
- f. Carry out an analysis of the evaluation results.

For the purposes of observation in the learning process, the researcher is assisted by a collaborator who is a colleague from the same school with the researcher.

#### 4. Reflection

The stages of reflection are as follows:

- a. The findings at the implementation stage are discussed.
- b. Discussions conducted by teachers as well as researchers with observers aim to evaluate whether the course of learning is in accordance with the learning plan with the STAD approach model. If there are things that are not appropriate in cycle I, a solution will be sought to improve the course of learning in cycle II.

The materials used for reflection are observation sheets and learning outcomes tests for each cycle. The observation sheet is used to see the extent to which the implementation of learning is in accordance with the Biology lesson plan that uses the STAD approach model. Learning steps that are not appropriate will be noted for improvement in learning in the next cycle.

Research instrument is a tool used when conducting research in an effort to find and collect research data. The instruments used in this study are: 1) Competency Test, used to obtain data on student learning outcomes which are carried out after the learning process takes place using the STAD model in Ecosystem material in accordance with the indicators and learning objectives that have been formulated in the Lesson Plan. The form of the test is in the form of a multiple choice written test with 10 questions, the ability that is measured is the knowledge aspect with levels C1 - C4; 2) Observation sheet, compiled to obtain a direct picture of student activities in implementing teaching and learning activities. Observation of the action was carried out by another teacher who acted as an observer. Observer sheets are arranged to observe researchers and students in carrying out class actions, class conditions and student activity in the learning process.

The instruments used in this classroom action research are in the form of tests and non-tests. The test instrument is a set of test questions in the form of Multiple Choice to measure student learning outcomes at the end of each cycle. The non-test instrument is an observation sheet to measure student activity. The data collected are students' score which obtained from the results of the competency and observation data for both students' activities and teachers' activities during learning process.

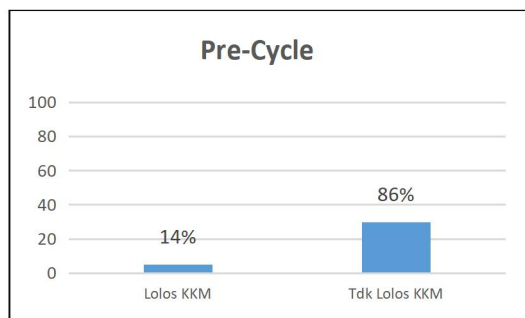
The data analyzed are student learning outcomes, namely the results of daily tests in each cycle and student activities. A student is said to have succeeded in learning if he has reached a mastery level of at least 75% or with a score of 75. For students whose mastery level is less than 75% are given a remedial program on subjects that have not been mastered by students by giving assignments to work on questions that have not been mastered in accordance with the subject matter in question and carried out by students outside of class hours. While classical completeness is determined at 85%, it means that a class is said to have succeeded (achieved learning completeness) if at least 85% of the data on the number of students in the class has achieved individual completeness with the following conditions:

1. If there are already 85% of the total number of students in the class who have reached the level of mastery learning, the class can continue activities in the next learning unit.
2. If the number of students who achieve the level of mastery learning is still less than 85%, then students whose level of mastery of the material is less than 75% must be given a program of improvement regarding the parts of the lesson that have not been mastered while students who have reached the level of mastery of 75% or more can be given enrichment program.

## RESULT AND DISCUSSION

In the pre-cycle, the researcher and his colleagues (observer) discuss the learning that has been carried out by the researcher. The researcher asked the opinion of colleagues about: (1) learning tools, (2) learning outcomes (3) student activities in learning and (4) teacher activities in learning.

Learning in this pre-cycle includes material on the definition of Ecosystem by using direct learning in the form of lectures. After completing the learning, it is continued with evaluation to see the learning outcomes. The value of learning outcomes in the pre-cycle can be seen in graph 4.1 below:



**Figure 2.** Students' Learning Outcomes in the Pre-Cycle

From Figure 2, it can be seen that there are 14% or 5 students who scored above or equal to the KKM, and as many as 86% or 30 students scored below the KKM. The average value of student learning outcomes is 52 with the highest score of 80 and the lowest score of 30. This illustrates that student learning outcomes in Biology are still relatively low. Therefore, a research was conducted using the STAD learning model.

### Cycle I

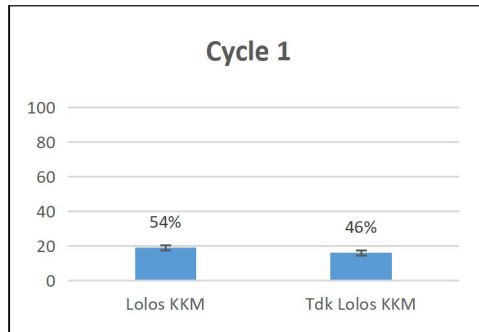
#### a. Action Planning

- 1) Before preparing the lesson plan, the researcher identified problems and planned the steps to be implemented in cycle I.
- 2) After the researcher knows the problem and the steps that will be used in the action in the first cycle, the researcher then makes a Learning Implementation Plan (RPP).
- 3) Determine the subject matter that will be discussed in the research.
- 4) Develop a Learning Implementation Plan (RPP).
- 5) Develop evaluation format. in the form of preparing a grid of questions to written test tools.
- 6) Develop a learning observation format.

#### b. Action Execution

The learning implementation in Cycle I was carried out on Friday, March 22, 2019 and Friday, March 29, 2019 in Class X IPS 3 at SMA Negeri 1 Ciampea with a total of 35 students. In this case, the researcher acts as a teacher, while the observer is another teacher at SMA Negeri 1 Ciampea.

The learning refers to the lesson plan that has been prepared. Observations are carried out during the learning process. At the end of the first cycle of learning, the second meeting of students was given a first cycle test with the aim of knowing student learning outcomes in the learning that had been carried out. If it is depicted in graphical form, then the learning outcomes data are presented in Figure 3.



**Figure 3.** Students' Learning Outcomes in the Cycle I

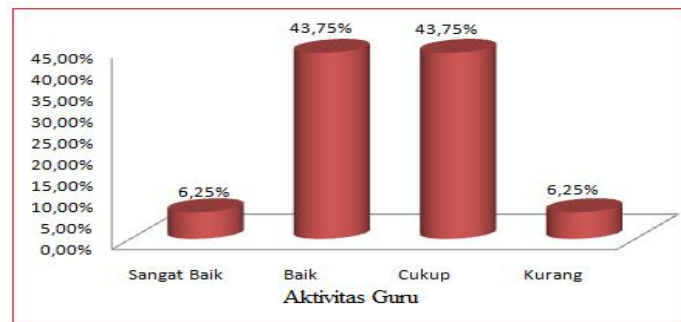
From Figure 3, it can be seen that there are 54% or 19 students who scored above or equal to the KKM, and as many as 46% or 16 students scored below the KKM. The average value of student learning outcomes is 75 with the highest score of 100 and the lowest score of 50. When compared with the results in the pre-cycle, there is an increase in the average student learning outcomes from pre-cycle to cycle I by 23, and there is an increase in learning mastery by 40%.

c. Observation

1) Teacher's Activities in Cycle I

The observer observed the ongoing learning in the first cycle, which were observed were: Teacher activities in learning through the application of the STAD type cooperative learning model in the first cycle

The observer's observations on teacher activities in learning in the first cycle of the first meeting are shown in graphic form, so the percentage of teacher activity in the first cycle of the first meeting is presented in Figure 4 below:



**Figure 4.** Teacher's Activities in Cycle I Meeting I

From Figure 4 it can be seen that the percentage of teacher activity observations in the first cycle of the first meeting is 6.25% in the very good category, in the good category 43.75%, in the moderate category 43.75%, and in the less category 6.25%.

The results of the observer's observations on teacher activities in learning in the first cycle of the second meeting can be seen Figure 5 below:



**Figure 5.** Teacher's Activities in Cycle I Meeting II

From Figure 5 it can be seen that the percentage of teacher activity observations in the first cycle of the second meeting is 12.50% in the very good category, in the good category 43.75%, in the sufficient category at 43.75%, and in the poor category at 0%.

2) Students' Activities in Cycle I

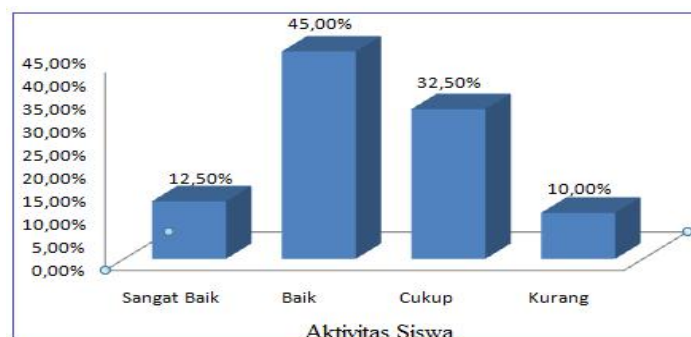
The observer's observations on student activity in learning in the first cycle of the first meeting can be seen in the form of a graph, then the percentage of student activity in the first cycle of the first meeting is presented in Figure 6 below:



**Figure 6.** Students' Activities in Cycle I Meeting I

From Figure 6 it can be seen that the percentage of student activity observations in the first cycle of the first meeting is 10% very good category, good category 37.5%, sufficient category 35%, and less category 17.5%.

As for the observer's observations on student activity in learning in the first cycle of the second meeting, it can be seen in the form of a graph, then the percentage of student activity in the second meeting of the first cycle is presented in Figure 7 below:



**Figure 7.** Students' Activities in Cycle I Meeting II

From Figure 7, it can be seen that the percentage of student activity observations in the first cycle of the second meeting is 12.5% in very good category, 45.5% in good category, 32.5% in sufficient category, and 10% in poor category.

d. Reflection

In the implementation of cycle I, it was not as expected, this was caused by:

- 1) The allocation of time is not in accordance with the plan because students are not familiar with the STAD type cooperative learning model so that additional time is needed.
- 2) Students are not used to studying in groups so that there are still students who are less active and less able to work together in groups.
- 3) There are still some groups who are not on time in completing group assignments, because the group members are not serious in learning
- 4) Some groups are still unable to carry out STAD type cooperative learning as a whole and comprehensively.
- 5) The time condition is not optimal, so the portion of the learning implementation is not balanced.

The teacher as a researcher together with the observer discusses the weaknesses that occur in the first cycle as a reflection in the first cycle. The results of the reflection in the first cycle are used as the basis for improving learning in the second cycle.

**Cycle II**

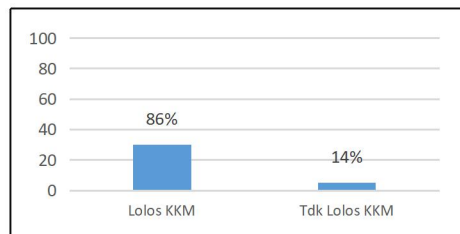
a. Action Planning

- 1) Revise the STAD type cooperative learning model so that learning is easier for students to understand.
- 2) Prepare a revised learning implementation plan on Ecosystem material with competency standards using the Ecosystem concept in problem solving.
- 3) Prepare a benchmark instrument for student observations or observations.
- 4) Prepare LKS with ten variations of questions.
- 5) Prepare learning observation sheets, for student activities and for teacher activities.
- 6) Prepare lattices and test materials for learning outcomes.
- 7) Designing scenarios for implementing actions in STAD type cooperative learning.

b. Action Execution

The implementation of learning in cycle II was carried out on Friday, April 12, 2019 and Friday, April 19, 2019 in Class X IPS 3 at SMA Negeri 1 Ciampea with a total of 35 students. In this case, the researcher acts as a teacher, while the observer is another teacher at SMA Negeri 1 Ciampea.

The learning refers to the lesson plan that has been prepared. Observations are carried out during the learning process. At the end of the second cycle of learning students were given a second cycle of tests with the aim of knowing the value of student learning outcomes in the learning that had been carried out. The data on learning outcomes in cycle II can be seen in Figure 8 below:



**Figure 8.** Students' Learning Outcomes in Cycle II



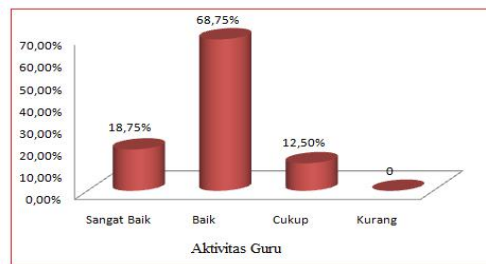
From Figure 8, it can be seen that 86% or 30 students scored above or equal to the KKM, and 14% or 5 students scored below the KKM. The average value of student learning outcomes is 88 with the highest score of 100 and the lowest score of 60. There is a significant increase in cycle 1 to cycle 2, namely there is an increase in the average student learning outcomes from cycle I to cycle II by 14 and there is an increase in learning mastery by 31%.

c. Observation

The observer observes the ongoing learning in cycle II, the observations are:

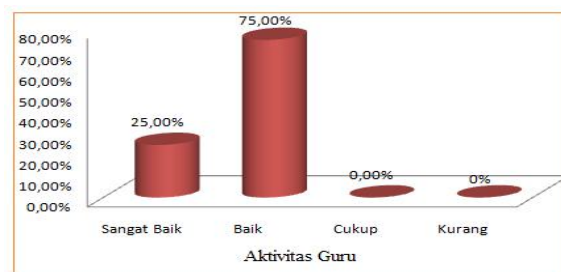
- 1) Teacher activities in learning through the application of the STAD type cooperative learning model in cycle II

The results of the observer's observations on teacher activities in learning in the second cycle of the first meeting are shown in Figure 9 below:



**Figure 9.** Teacher’s Activities in Cycle II Meeting I

From Figure 9 it can be seen that the percentage of teacher activity observations in the second cycle of the first meeting is 18.75% in very good category, 68.75% in good category, 12.5% in sufficient category, and 0% in poor category. The results of the observer's observations on teacher activities in learning in the second cycle of the second meeting are presented in Figure 10 below:

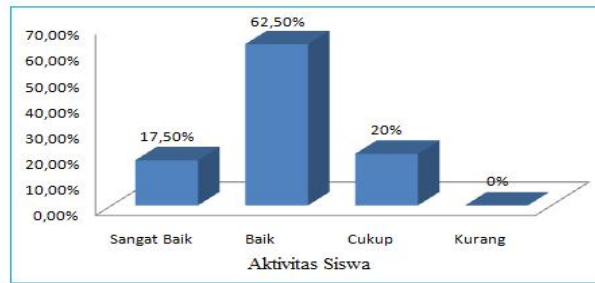


**Figure 10.** Teacher’s Activities in Cycle II Meeting II

From Figure 10 it can be seen that the percentage of teacher activity observations in the second cycle of meeting II is 25% in the very good category, 75% in the good category, 0% in the moderate category, and 0% in the poor category.

- 2) Student Activities in Learning through the Application of the STAD Type Cooperative Learning Model in Cycle II

The observer's observations on student activities in learning in the second cycle of the first meeting are shown in graphic form, so the percentage of student activity in the second cycle of the first meeting is presented in the following Figure 11:



**Figure 11.** Students' Activities in Learning in Cycle II Meeting I

From Figure 11 it can be seen that the percentage of student activity observations in the second cycle of the first meeting is 17.5% in very good category, 62.5% in good category, 20% in sufficient category, and 0% in poor category. The results of the observer's observations on student activities in learning in the second cycle of the second meeting can be seen in the form of Figure 12.



**Figure 12.** Students' Activities in Learning in Cycle II Meeting II

From Figure 12 it can be seen that the percentage of student activity observations in the second cycle of the first meeting is 25% in the very good category, 67.5% in the good category, 7.5% in the sufficient category, and 0% in the poor category.

c. Reflection

- 1) Student activities in the learning process have led to the STAD type cooperative learning model.
- 2) Students have begun to be able to actively participate in carrying out group assignments given by the teacher.
- 3) Students have begun to be able to actively participate in learning activities and on time in doing assignments.
- 4) Increased learning activities in maintaining and improving the learning atmosphere that leads to the STAD type cooperative learning model.
- 5) Give the impression to students that the STAD type cooperative learning model is fun.
- 6) There is an increase in the percentage of student learning completeness.
- 7) The teacher's activities in learning are as expected.

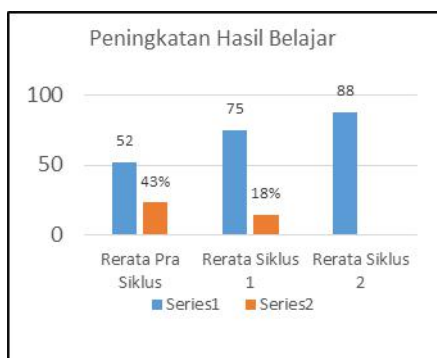
Based on the results of research for two cycles that aim to improve student learning outcomes on the material Ecosystem. It can be seen in the implementation of the first and second cycles, it has shown an increase in Biology learning outcomes. In the application of the STAD type of cooperative learning model, the interaction of students and teachers at the beginning of the lesson is initiated by the teacher by forming groups and explaining learning procedures using the STAD learning model, by giving games to each group, this can stimulate students' enthusiasm to compete and to each student has a responsibility to the group, and students can learn actively and fun

Then the teacher directs and explains how students learn well in their groups. During the learning process, the teacher manages the class interactively, guides students, and motivates students to actively participate in learning activities. At the end of the lesson, the teacher and students conclude the lesson that has been implemented. Then the teacher evaluates the students by giving questions that are in accordance with the concept of the ecosystem.

Based on this, it can be concluded that there has been an increase in student learning outcomes and activities in learning Biology. The results showed that the students' ability to understand the subject matter in learning through the application of the STAD type cooperative learning model as a whole showed an increase in student learning outcomes. The details of the upgrade are:

### 1. Learning Outcomes Achievement

Learning through the application of the STAD type cooperative learning model can improve learning outcomes from pre-cycle to cycle I and then to cycle II, as can be seen from the recapitulation of learning outcomes in Figure 13 below:

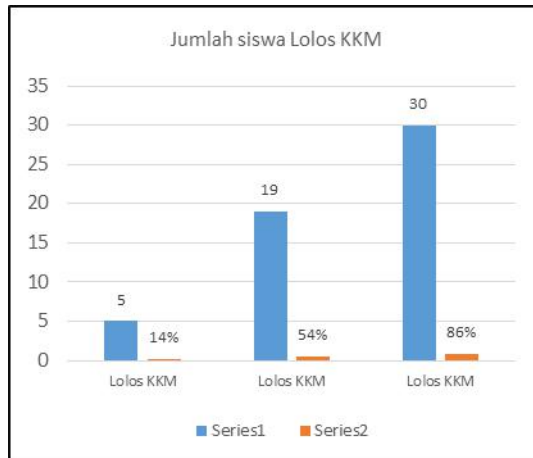


**Figure 13.** Learning Outcomes Achievement Pre-Cycle, Cycle I, Cycle II

From Figure 13 it is clear that there is an increase in learning outcomes from pre-cycle with an average of 52 to the first cycle with an average of 75, there is an increase in learning outcomes of 43%. While the first cycle with an average of 75 to the second cycle with an average of 88, there was an increase of 18%. This means that in the second cycle there was a significant increase.

### Improvement in Learning Completeness

Learning through the application of the STAD type cooperative learning model can improve student learning outcomes, it can be seen from graph 4.14 that there is an increase in the percentage increase in mastery learning outcomes from pre-cycle, first cycle, and second cycle.



**Figure 14.** Percentage of Improvement in Learning Completeness

Figure 14 shows that there has been an increase in the mastery of learning outcomes from 5 people (14%) who completed the pre-cycle to 19 people (54%) in the first cycle and further increased student learning mastery to 30 people (86%) in the second cycle.

## 2. Improvement of student activity

Learning through the application of the STAD type cooperative learning model can increase student learning activities, this can be seen from Figure 15 that there is an increase in the percentage of student learning outcomes, from cycle I to cycle II.



**Figure 15.** Percentage of Students' Activity

From Figure 15 it can be seen that the percentage of student activity has increased, namely in the very good category from 10% in the first cycle to 25% in the second cycle and in the good category from 37.5% to 67.5%.

## CONCLUSION

The results showed that 54% of students scored above the KKM in Cycle I, and 86% of students scored above the KKM in Cycle II. From these data, it can be concluded that the STAD Learning Model can increase student activity and learning outcomes in Biology learning, especially Ecosystem material. In class X IPS 3 SMA Negeri 1 Ciampea.

Teacher activity is in good category, and student activity is increasing well. So it can be said that the application of the STAD type cooperative learning model can improve learning outcomes,

increase student activity, and can increase teacher activity. Classical completeness has reached 86%, meaning that it has exceeded 85%, so the research is considered sufficient.

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