

IMPLEMENTATION GROUP INVESTIGATION COOPERATIVE LEARNING MODEL AN EFFORT TO IMPROVE ATTITUDES AND SCIENTIFIC LEARNING COURSE BASIC MICROBIOLOGY

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ABSTRACT

Have done Classroom Action Research (CAR), which aims to improve the scientific attitude and learning outcomes Basic Microbiology with Cooperative Learning Model Study Group Instigation (GI) at Student Life Education Program III Semester, Academic Year 2012/2013 on the October 25 to November 29 2012. Number of students in this study were as many as 22 people out of 22 students (5 men and 17 women). Parameter study was the observation of group activities, scientific attitude, learning outcomes (student absorption and mastery learning students). score sheets investigation group in cycle I and II by category Amat Good. Scientific Attitude students every encounter with average 78.79 (both) at a meeting 1, 80.52 (both) at a meeting 2, 85.71 (very good) at a meeting 3, and 86.80 (very good) at a meeting 4. Further scientific attitude of students on each indicator curiosity 93.56 (very good), an indicator of cooperation 86.37 (very good), 87.56 (very good), indicator responsibility 85.61 (very good), the tolerance indicator 61, 59 (or less), confidence 88.33 (very good) and the precision indicator works 59.85 (or less). Student absorption cycle I mean post test 1 71.55 (enough), and the post-test 2 73.18 (enough) and the activities of daily tests I 83.68 (Good). While in the second cycle the average obtained at post-test 1 was 90.45 (very good), post-test 2, 61.68 (or less), and Deuteronomy 77.14 Daily II (good). Student mastery cycle I was 100% and the second cycle was 86, 36%. From the results of this study concluded that with the implementation of cooperative learning model type Group Investigation can improve scientific attitude and learning outcomes Basic Microbiology course in third semester students of the school year 2012 - 2013 FKIP biology education courses Riau University.

Keywords: *Group Investigation Learning Model, Scientific Attitude, Learning Outcomes*

A. INTRODUCTION

Teacher Training and Education Faculty of the University of Riau (FKIP UNRI) is one of the Workforce Education Institutions (LPTK) that produces educational staff strive to improve the quality of learning to produce qualified teachers and compete face of developments in science and technology. Efforts are made partly by improving curriculum and improve the learning process. Education courses biologists have conducted various activities to improve the quality of learning, including the preparation of seminars and workshops teaching, textbook writing, and research improved learning through classroom action research. Improvement of learning in each course is inseparable from the selection of instructional strategies, methods, media and appropriate learning model that will be used in teaching and learning.

Microbiology Lecture Basic Lecture is one that must be taken by students of education courses with a load of 4 credits Biology presented at semester academic year 2012/2013. Activity learning course on Basic Microbiology emphasis on active learning and student-oriented activities. This means that in order to understand the course material students need to be actively involved by studying a topic. discussed and the discussion focused on the application side for teaching in schools.

Implementation of Competency Based Curriculum (CBC) oriented Student Centered Learning in biology education courses have started in the academic year 2008/2009. The results of the evaluation team of lecturers, the implementation of CBC in Microbiology Basic still find many obstacles, among others are less available media, materials, equipment and facilities are adequate to support teaching learning materials Basic Microbiology. From the students look they are still in the stage peyesuaian by learning in Higher Education. Team Basic Microbiology lecturer from the academic year 2008/2009 has made the learning process improvements on some topics of Basic Microbiology courses by providing textbooks, giving handouts and presentation material that is taught varies according to topic. This effort looks pretty successful. Student results on Basic Microbiology Lecture last two years as in Table 1

No	Range of Value	Quality value	2010/2011	2011/2012
1.	78– 100	A	9(19.56)	14(28)
2.	65 – <78	B	22(47.82)	36(72)
3.	55– <65	C	13(28.26)	-
4.	45 – <55	D	2(4.3)	-
5.	< 45	E	-	-

In the quality of the results showed that there is an increase in student got a C to the top and nothing else who got E. However, the quantity under the contract lectures bricks passing values to the value of C is > 55, and the value of A > 78, it is not in accordance with the objectives expected of the CBC is the minimum value of C > 60 and the value of A > 80.

In order for student mastery of the course on Basic Microbiology increased in an effort to increase Pedagogic competencies required continuous efforts by faculty to improve teaching and learning and the learning environment that causes students motivated, active and creative. In semester academic year 2012/2013. The observations also showed during the learning process teachers have been using the media (LCD) In the study, but the role of the students are still lacking, Seen from a student who asked when learning is still less than 20% so that the class tends to passive. Students who are active in the learning process tends to be more active questioning and collecting information from teachers and other learning resources that tend to have a higher level of understanding. Students who are less active tend passive in the learning process, they only accept a given knowledge without looking for other sources of learning.

Based on these considerations, it is necessary to develop a method of learning that can involve the participation of students as a whole so that the

learning process is not only dominated by a particular student. Selection of learning methods are expected to be sources of information received by students not only from teachers but also to increase the participation and involvement of the student in learning and studying science Basic Microbiology. One model of learning that involves the participation of students is Cooperative learning model. Learning model divides the students in small groups. The division of the heterogeneous groups based on academic achievement, gender, cultural and socio-economic levels are different. This motivates them to interact and hopefully help each other, discuss and argue.

In cooperative learning students will be easier to find and understand difficult concepts if they can discuss these issues with their friends. In order for cooperative learning implemented well. Lecturers must work to prepare LTM with questions and tasks are planned, long working in groups, task group members are achieving mastery of material in the present lecturer and cooperation between same groups.

Based on the reflection taking into account the capabilities and characteristics of the students. To overcome these problems professors trying to make improvements in the learning process with the implementation of cooperative learning model methods Group investigation (GI). Group Investigation is a method of learning that involves students from planning, both in determining the topic and how to learn through investigation. This teaching method requires students to have good skills in communication and group process skills. The students choose a topic that you want to learn, following in-depth investigation of the various sub-topics that have been subsequently prepare and present a report before the class as a whole. But the process of learning is done in a group with the material prepared by the lecturer to be learned in groups. Students should follow the instructions to learn the disedikan by Lecturer. Group Investigation method has advantages, namely: 1. Students independently in search of information about the material that will be learned, 2. Students have a high co-operative spirit, 3. Students have proficiency in communicating with intellectual learning and analyzing the mensistesis, 4. Improving the ability of students in discussion.

Methods Group investigation is expected to increase student participation and active learning process Basic Microbiology. And it can improve student achievement in learning basic microbiology and train student independence in learning.

Based on the problem above authors would like to try to make improvements to the learning process will be improved learning outcomes for students, namely Basic Microbiology implement cooperative learning model Group Investigation (GI).

Thus the importance of cooperative learning model Group investigation is to be applied to learning, as one effort to improve the learning process basic microbiology course it is expected to improve student learning outcomes of Biology education courses.

B. THEOLOGICAL PROBLEM

- a. Is cooperative learning model group investigation (GI) can improve learning outcomes in basic microbiology student of biology education?
- b. Is cooperative learning model developed group investigation (GI) in this study can enhance students' understanding of basic microbiology course?

C. RESEARCH OBJECTIVES

- a. Improve learning outcomes for the course microbiology Elementary education students basic microbiology FKIP UR pekanbaru through model kooperatif group investigation. Kusus basic microbiology course materials
- b. Assessing whether the investigation group cooperative learning model to enhance students' understanding of basic microbiology course dalam

D. BENEFITS RESEARCH

1. For students, the application of group investigation Cooperative learning model is expected to improve learning outcomes Basic microbiology courses for students of biology education courses FKIP UR Pekanbaru.
2. For Lecturers, the implementation of cooperative learning model group investigation conducted in this study is expected as one of the alternative models of learning basic microbiology student of biology FKIP UR Pekanbaru
3. For institutions, the actions to be performed on this research can be used as an input in order to improve learning outcomes basic microbiology course for students of biology education courses UR Pekanbaru.
4. For researchers, the results of this study are expected to be a cornerstone rests in order to follow up this study with a broader scope.

E. LITERATURE REVIEW

G.1. Primary Learning Mikrobiologi Outcomes

Learning is a change in behavior that is relatively stable thanks to the training and experience (Hamalik, 2005), while according to (Dimiyati.2002) is studying the actions and behavior of students to get something in the neighborhood. On the basis of the above statement can be concluded that learning is a process of change in student behavior in acquiring something that the surrounding environment due to experience and training.

The result of learning is the ability of the students receiving learning experiences (Sujana, 2004). According Dimiyati (2002) is the result of learning outcomes in the form of numbers or scores after learning the results of a test given at the end of each lesson. According Mulyasa (2006) is the result of learning achievement of students as a whole, which is the indicator of competence and the degree of behavior change is concerned. Competencies that students need to master stated in such a way that could be considered a form of student learning outcomes refers to direct experience (Mulyasa, 2006).

From some sense the results of the above study it can be concluded that the learning outcomes are the capabilities mahasiswa setelah dinyatakan learning activities with students scores obtained from the results of the tests used. While

the results of Basic Microbiology study subjects in this study is the ability of the students expressed the scores obtained from the test results to learn Basic Microbiology course after learning to use Cooperative Learning Model investigation.

G.2 Learning Cooperative Group Investigation Model

Fundamentals of Group Investigation Model designed by Herbert Thelen, then extended and improved by Shlomo and Yael Sharan at the University of Tel Aviv, is planning a public classroom setting where students work in small groups using cooperative inquiry, group discussion, as well as planning and project cooperative. In this method the students were released to form his own group consisting of two to six members. The group then chose the topics of the units that have been studied by the entire class, divide these topics into personal tasks and activities necessary to prepare the report. Each group then presented their findings or show up in the classroom.

Group Investigation has philosophical roots, ethics, psychology since the writing of this century. The most famous among the leading figures of the orientation of education was John Dewey. Dewey outlook towards cooperation in the classroom as a pre-requisite for a bias facing complex problems of life in a democratic society. The class is a creative place where teachers and students cooperatively build a learning process that is based on mutual planning of various experiences, capacities, and their respective needs. Parties that learning is an active participant in all aspects of school life, make decisions that determine the purpose of what is done. Used as a means of social groups in this process. Group plan is a method to encourage maximum involvement of the students (Slavin, 1995:214-215).

GI method involving students from planning, both in the selection of topics and how to learn through a process of in-depth investigation. This method requires students to have good communication skills and the skills of the group (group process skills). As well as the GI method to train students to develop the ability to think independently. Active involvement of students can be seen starting from the first stage to the final stage of learning. The use of GI method is generally the class is divided into several groups of 5 to 6 members or students with heterogeneous characteristics. Distribution groups can also be done based on the pleasure of friends or common interests of a particular topic. The students choose a topic to be studied, following an in-depth investigation of the various sub-topics chosen then prepare and present a report before the class as a whole (Arends, 1997: 120-121).

GI is a type of cooperative learning to build co-operation between teachers and students in learning. Procedures for joint planning based on the experience of

each student, according to the capacities and needs. Students actively participate in all aspects, making the decision to set a direction they do. The group serves as a vehicle to interact socially. Planning group to ensure maximum involvement of all students in the use of this method.

In the Group Investigation method has three main concepts, namely: (1) research (inquiry) is the process by which students are stimulated to turn on an issue. Students felt he needed to respond to problems that may be necessary to be resolved. This problem is obtained from the student's own or provided by the teacher, (2) knowledge that the experience is not innate but acquired through the experience of students, either directly or indirectly, (3) the dynamics of the group, showing the atmosphere which describes a group of individuals who interact with the something accidentally seen or studied together with different ideas and opinions and exchanged experiences and argue.

Group Investigation method the teacher merely acts as a mediator, facilitator, and its hostile criticism. Teachers should guide and reflect the group through 3 stages: (a) stage of problem solving, (b) phase of classroom management, (c) individual interpretation phase. Gone through three stages, the learning process is expected to result in better learning and deepen the students more thoroughly materi yang delivered by teachers.

Group Investigation method has advantages dibandingkan with other methods, namely: (1) students become more independent in finding information about the material to be studied, (2) the student has a cooperative spirit is high, (3) students have proficiency in communicating with intellectual learning in synthesizing and analyzes, (4) improve the ability of students in discussion. Some disadvantages of the Group Investigation method: (1) if there is a student who is not active in the group it will hinder rather than pembelajaran goals, (2) students who do not fit the group members are less able to work together in understanding the material and in completing assignments; (3) there is a lack of students utilizing the best time in the study group.

G.2.1. Implementation Steps Cooperative Learning Model Investigation.

a. Preparation Phase

At this stage, teachers prepare learning facilities, Lecturer Identify topic to be studied, lecturers and students plan a variety of learning procedures, tasks and goals provide appropriate reading the topic that was chosen, providing LTM (Student Task Sheet) that will be studied students in the group and post test sheet, divide students in cooperative groups.

b. Phase core activities Learning

<p>Initial Activity 15 minutes</p>	<p>1. Initial Activity</p> <ul style="list-style-type: none"> • Lecturer gives apperception and motivation. • Lecturer delivered today Lecturer learning goals with students learning strategy agreed with the model type of cooperative learning group investigation. • Lecturer designing student assignment will be done.
<p>Core Activities</p>	<p>2. Core Activities</p> <p>a. Indentify topic / select the topic (30 minutes)</p> <ul style="list-style-type: none"> • Lecturer provide outlines of the material and technical operations to be performed • Lecturer organize the students in the group. • Lecturers asked one student as a representative of each group that has joined with each group that had been formed previously to select the topic that will be in to investigation. • Lecturer divide Investigation Sheet (LI) In each group according to the selected topic <p>b. Investigates (10 minutes).</p> <ul style="list-style-type: none"> • Students in a group discussion on a topic that has been obtained and gather information from a source of learning. • Lecturer Supervise and guide students to discuss work activities LI <p>c. Prepare the Final Report (2 minutes)</p> <ul style="list-style-type: none"> • Each member of the group analyzed (double-check) and synthesize (add reply if there is a shortage and fix it if there is a mistake) so that the results can be presented with a good discussion • Lecturer in guiding the activities of students in the group. <p>d. Presentation Final Report (45 minutes)</p> <ul style="list-style-type: none"> • Lecturer asks each group to present / menyajikanhasil investigation to the class. • Lecturer observing group activities and provide assistance when experiencing difficulties and equate the concept. • From the class discussion of each group to evaluate the results of discussions with students working on Task Sheet (LTM).
<p>cover</p>	<p>3. Final Event</p> <p>Evaluation (10 minutes)</p> <ul style="list-style-type: none"> • Lecturer provide evaluation (post test)

	<ul style="list-style-type: none"> • Lecturer praised the investigative group of the best. • Lecturer provide reading material for the next task
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Table 2. Cooperative Learning Group Investigation Model Syntax.

Phase I Identifying topic and divide students into groups	Lecturers provide an opportunity for students to members contribute what they investigate, the Group established by the heterogeneity
Phase II Planning tasks	The group will share a sub-topic to all members. Then make a plan of the problem to be investigated, how the processes and resources that will be used.
Phase III Make an inquiry	Students gather, analyze and evaluate information, make inferences dn Meng apply new knowledge into their part in achieving the solution of problems
Phase IV Preparing for End of task	Each group will prepare a final project are presented in the classroom
Phase V Presentation of final	Students pesentation his work, another group followed
Phase VI Evaluation	Problem Deuteronomy covers all topics that have been diseliki and are presented

G.2.2. Relationship Between Cooperative Learning Model Investigation Basic Microbiology With Learning Outcomes.

Teaching and learning activities said to be efficient if the desired learning outcomes can be achieved with the least possible effort. Embodiment learning behavior can usually be seen from the changes in habits, skills, and knowledge, attitudes and skills that are usually referred to as learning outcomes. Learning outcomes is a measure of the success of teaching and learning activities. Learning outcomes can also be regarded as the end result of the process of learning as well as an embodiment of the optimal capability that after receiving lessons.

In addition to learning the results of a supporting factor of learning, teachers need teacher performance is measured by observation sheet observed during learning activities take place. Performance of teachers in presenting the material in the classroom is also an important factor for improving the quality of learning. The main task of the teacher in the learning environment is a condition in order to support the change towards the better. Skills observed in the observation sheet teacher performance is to open and close the lesson, asking questions, using a variation, explaining, teaching small groups and individuals, managing the classroom, guiding small groups, provide reinforcement to the valuation range 0-100.

The success of any learning process is determined and influenced by many important factors, both internal and external factors. The use of appropriate learning methods and effective is one of the external factors that need to be considered in improving the effectiveness of teaching and learning activities as well as student learning outcomes. Which one of these methods of learning is Investigasion Group (GI).

Group Investigatian use of cooperative learning (GI) is an action research aimed at understanding and active participation in the learning process, so as to improve student learning outcomes.

GI cooperative strategy has basic philosophy of constructivism. As noted above, the basic philosophy of constructivism learning, students construct their own knowledge and the role of teachers as facilitators. In GI cooperative strategy, the students are exposed to the problem, determine their own issues to be addressed, designing investigations, conducting investigations, analyzing data / information on the investigation, and draw conclusions. Each student is actively engaged both physically and mentally on every aspect of the activities that the students' understanding of the subject matter can be expected to be better. This supports the idea Slavin (1995) that the cooperative learning strategy GI increased ability to perform analysis and synthesis of all the information, so that mastery of the subject matter would be better. By looking at such a learning process, students can construct their own knowledge and directly use the knowledge to discuss the issues raised, so that learning becomes very meaningful.

GI cooperative method encourages cooperation among members of the group were very intense in all aspects of the activities that social relations among members of the group became very close. This supports the idea Slavin (1995) that the learning activities with GI cooperative strategy can enhance social skills and academic skills of students. Increased social skills will trigger better communication between group members. As a result, there was a very good exchange of knowledge that can ultimately improve the mastery of the material being studied so that the student learning outcomes can be improved.

Cooperative learning can provide benefits to both the students and the bottom of the group working together completing academic tasks. Student groups will be the tutor for the student groups, so the groups will receive special assistance from peers who have the same orientation and language, whereas the group of students will increase academic skills for providing services. As a tutor

they need more in-depth thinking about the relationship of ideas contained in the material.

According to the theory of cognitive elaboration, the cooperative learning strategies, smart students will give an explanation to the less intelligent students. As a result, the students' mastery of subject matter as well as less intelligent smart to be better (Slavin, 1995). According Haevey (1998) cooperative strategy can improve learning outcomes for all group members' motivation to increase thanks to a boost learning from each member of the group. Weak students will be motivated as each member of the group was challenged to express their ideas.

G.3. Hypothesis Measures

1. Application of Model Cooperative investigation group can improve learning outcomes Basic Microbiology course in biology education program students FKIP UR Pekanbaru
2. Cooperative Learning Group Investigation Model developed in this study can enhance students' understanding of the course on Basic Microbiology.
3. Increase student motivation and learning activities with the presentation of a variety of learning strategies appropriate lecture material. In the end, improve basic skills pedagogy and learning outcomes.
4. For faculty for innovation and improvement in teaching
5. As input to the Programme for the Study of Biological Education curriculum subjects smemperbaiki Basic Microbiology

F. METHODS

1. Form of Research

This study is the shape class action (PTK). Wardani (2002) suggested a class action research is research conducted by professors in the classroom through self-reflection in order to improve the performance as a lecturer, resulting in improved student learning.

2. Structuring Research

This learning improvement research is Classroom Action Research (CAR) conducted jointly by the team Basic Microbiology lecturer in biology education courses FKIP UNRI the regular students attending Basic Microbiology semester semester 2012/2013.

3. Research Instrument

Learning Tools used in this study consisted of:

1. Syllabus and assessment system
2. Lectures Events Unit (SAP)
3. Student Task Sheets (LTM)
4. Post test

4. Collection File Instruments

The required file in this study are data about the activities of students in the learning process and learning outcomes data base microbiology courses obtained after the learning process. Data student activities during the learning process are gathered using observation sheets.

5. Collection File Techniques.

The gathered file in this study using a task sheet and the test results of students learning basic microbiology. The observation was also made on the activities of faculty and students every meeting with observation sheets provided. While the Parameter and instruments in this study consisted of:

- 1) The ability of teachers to facilitate learning at each meeting, using the observation sheet.
- 2) Character Skills indicators direct observation, understanding, cooperation, Thorough, Tolerance, Confidence, Critical, responsibility, discipline
- 3) Using observation and assessment sheets LTM during the lesson.

6. Research Procedures

The procedure consisted of four main stages Classroom Action Research (Kemmis & Taggart, 1992), namely planning, action, observation, analysis and reflection:

Planning Phase

1. Establish regular classroom research that students who take courses in Basic Microbiology odd semester 2012/2013 Biology Faculty of Teacher Education Program UNRI.
2. Establish a schedule and the number of cycles is two cycles (study implementation schedule attached).
3. Setting the material in the learning process, namely: Cycle 1 World history Microorganisms and bacteria (Schyzophyta) (2x meetings), cycle 2 Mushrooms and Control Mikroorganismes (2 sessions).
4. Reconstructing learning devices (syllabus, lesson plans, LTM, and assessment sheet) in accordance with the learning model used in this case study investigation.
5. Setting guidelines for the assessment of learning and observation sheets, and test investigation.
6. Divide students into study groups.

Measures Implementation Phase

Stage of implementation of the action in the learning process include: Implementation of the learning process by teaching the application of Investigation FRAME model (Evi Suryawati et al, 2009).

Phase Observation / Evaluation

Observation / Evaluation held in conjunction with the implementation of measures to observe the activities of students and faculty in facilitating learning.

Phase Analysis and Reflection

Acquisition of data at every meeting in the first cycle were analyzed jointly by all members of the research team, the results are used as a reference for improvement measures on the second cycle.

7. Collection file techniques

Collected file in this study in the form of sheets file primery the Task Students and Post-test.

8. Analysis Techniques

Descriptive data analysis to get an overview of planning tasks, teamwork, Presented learning task and test results.

To determine the value of the application of group investigations and develop students of character observation and assessment sheets Student Task Sheet (LTM) is done individually and critical thinking through the test. The results are then classified based on a graduated scale set.

Further investigation of the application of the calculation of the value of the group as follows:

84-100 = Very good

74-83 = Good

64-73 = Enough

0-63 = Less

Furthermore, the scientific attitude of students with the application of cooperative learning model GI type sheets obtained by observation. Analyzed by the formula:

$$\text{Observations} = \frac{\text{Number of scores obtained} \times 100\%}{\text{Total maximum score}}$$

Data results of the scientific attitude observation sheets grouped by category:

84% - 100% = Very Good

74% - 83% = Good

64% - 73% = Enough

<64% = Less

Further absorption student views of post-test I, II, III, IV. Percentage of students the value obtained is analyzed by use these formulas:

$$\text{Absorptive capacity} = \frac{\text{Number of scores obtained} \times 100\%}{\text{Total maximum score}}$$

Power Absorption criteria established by rating category based on the results of the above study are:

84% - 100% = Very Good

74% - 83% = Good

64% - 73% = Enough

<64% = Less

G. DISCUSSION

I.1. Implementation of Measures

The research was carried out in third semester student of Biology Education Program Academic Year 2012/2013. Number of students 22 people consisting of 5 men and 17 women. The study began in early semester of the school year 2012 - 2013 on Basic Microbiology course. The subject of the first cycle in which bacteria and viruses and a second cycle of infection and infection control. Implementation practicum held 4 times post-test and 2 times daily tests. At the first meeting of the first cycle of the material is a virus while meeting 2 material is bacteria. Implementation at each end of the post test I conducted daily tests of learning and I at the end of the meeting cycle I. In the second cycle I was gathering material infection, gathering material II is infection control. Implementation at each end of the post test II conducted daily tests of learning and II at the end of the meeting the second cycle.

I.1.2. Implementation Cycle I

Cycle I held two meetings. The first meeting was held with a number of students who attended 21 people out of 22 students. Implementation of the action in accordance with the lesson plan. At these meetings students are less active, only a few students who ask and respond. Students also still confused by learning a new execution, because of low adaptive style and lack of knowledge of students with learning models or new teaching methods. However, the direct observation held, with a real object, the student has demonstrated activity and gradual manner. The second meeting held by the number of students who attended 20 people from 22 students. Because students will not be attending due to ill health data. In this meeting, students are shy and not confident to ask for his opinion. At this meeting the students have started not rigid in receiving lessons given by teachers, because students can already glimpse the first dipertemuan new learning.

The meeting I invited students to learn with the surrounding environment in other words, students with learning unintentionally been doing recently. More students can demonstrate learning behaviors that can develop patterns of think the students and work with friends.

Post test conducted every end of the meeting. Daily tests carried out after two meetings or complete the first cycle, the number of students who attended 22 people. In the first cycle students have attempted more or less spontaneously demonstrated their ability, with the understanding that is lacking and a pretty good learning outcomes.

I.1.3. Implementation Cycle II

Cycle II held two meetings. The first meeting was held with a number of students who attended 22 people out of 22 students. Implementation of the action in accordance with the lesson plan. At this meeting has begun brave and happy with the type of cooperative learning Group Investigation (GI).

Implementation of learning at the first meeting on the second cycle has involved students more spirit, because insufficient information obtained from sources of learning in discussion activities.

The second meeting held by the number of students who attended 15 people from 22 students. Implementation of the action in accordance with the lesson plan. At this meeting students had the courage to express their own opinions and to participate to provide input.

Post test conducted every end of the meeting. Daily tests carried out after two cycles or completed II The meeting, convened by the number of students who attended as many as 19 people.

In this second cycle students are quick to understand and easier to understand cooperative learning model GI type, with the demonstration of learning with this method a meeting on the first cycle I and II meetings. Students are very pleased with the innovation of new learning, which already changed the way that students learn during this very monotonous with a lecture and take notes, but on the second cycle has provided an opportunity for students to be more active.

I.2. Research

After learning the results obtained studying for 6 sessions consisting of two types of cooperative learning cycles with GI and each end of the meeting given post test.

I.2.1. Score Investigation Group

The results of the analysis and description of the development of the award cycle I and II after the application of cooperative learning model GI type on student class of 2011 Academic Year 2012/2013 can be seen in Table 3 below:

NO	Group	Cycle I		Cycle II		Total	Avarage	Catego ries
		1	2	1	2			
1	I	88	85	83	89	345	86,25	A
2	II	85	82	85	90	342	85,50	A
3	III	85	82	85	87	339	84,75	A
4	IV	90	80	86	90	346	86,50	A
5	V	90	85	86	90	351	87,75	A

From Table 3, it can be seen that the score of the group with the application of Cooperative Learning Model GI style very well. In cycle I, of the five groups that gained the group a very good value categories are all groups. An increase in the value obtained student progress during the learning process through the implementation of Cooperative Learning Model GI Study, shows that students are more motivated to improve learning outcomes for themselves and the group. Each student is trying to get a good result in order to contribute to the group's high score.

I.2.2. Analysis of Students' Scientific Attitude

I.2.2.1. Attitude Every Student Scientific Meeting

Based on the data analyzed in the appendix which obtained information about students' scientific attitude on the subject matter viruses and bacteria at the meeting I and II, while the infection and its control in the third and fourth

meetings through the implementation of Cooperative Learning Model GI Type Force on Student Life Pendidikan 2011. Scientific attitude score for each student every meeting can be seen in Table 4 as follows:

Table 4. Attitude Score Student Science Learning Through Group Investigation Model Application Each meeting

No	Categories	Meeting I (%)	Meeting II (%)	Meeting III (%)	Meeting IV (%)
1	Very Good	12 (49,78)	8 (33,52)	20 (82,68)	20 (83,77)
2	Good	2 (6,93)	12 (43,94)	-	-
3	Enough	4 (12,77)	-	-	-
4	Less	4 (9,31)	2 (3,03)	2 (3,03)	2 (3,03)
Average (%)		78,79	80,52	85,71	86,80
Categories		Good	Good	Very Good	Very Good

Based on information obtained Table 4 above the lowest student scientific attitude at the meeting I with an average of 78.79%, at a meeting of I students to get very good value category 12 people, 2 people, just 4 people, and less than 4 people. At the meeting II looks average increase students' scientific attitude than I encounter is 80.52%. This is due to students already familiar with cooperative learning model GI type, so that the scientific attitude students increased from 78.79% to 80.52% I to a meeting at the meeting II.

The average value at the confluence III was 85.71%. This proves that it is familiar with the type of GI koopertaif learning so that students become high scientific attitude. Meeting IV looks average student scientific attitude 86.80% higher than those from the meeting I, II meetings, and meetings III. This is because students are very familiar with the type of GI cooperative learning model, where all the students' scientific attitude is very good.

The increase in overall student scientific attitude because students are able to practice cooperation, curiosity, discipline, responsibility, tolerance, confidence, and precision work. There is an increasing scientific attitudes students are expected to increased student learning outcomes.

I.2.2.2. Each Student Scientific Attitude Indicator

Based on the data analyzed in the appendix which obtained information about students' scientific attitude on the subject matter viruses and bacteria at the meeting I and II, while the infection and its control in the third and fourth meetings through the implementation of Cooperative Learning Model GI Type Force on Student Life Education 2011. Score scientific attitude students each indicator can be seen in Table 5 below:

Table 5. Student Scientific Attitude Score by Model Learning Group Investigation on Each Indicator

N o	Attitude Indicator	Meeti ng I (%)	Meeting II (%)	Meeti ng III (%)	Meeti ng IV (%)	Total	Avera ge	Cate gorie s
1	Curiosity	95,45	90,91	93,94	93,94	374,24	93,56	VG
2	Cooperation	72,73	84,85	93,94	93,94	345,46	86,37	VG
3	Discipline	84,85	81,82	92,42	92,42	351,51	87,88	VG
4	Responsibility	78,79	86,36	87,88	89,39	342,42	85,61	VG
5	Tolerance	75,76	81,82	90,91	87,88	246,37	61,59	E
6	Confident	65.15	86,36	92,42	89,39	353,32	88,33	VG
7	Accuracy Working	78,79	51,52	48,48	60,61	239,4	59,85	E

Based on Table 5 above observations obtained information that the scientific attitude students through the application of cooperative learning model GI type during the learning process takes place in general showed an increase in students' scientific attitude for each indicator.

Based on the data in the table above it can be seen that the percentage of the average value of the scientific attitude III semester students at the highest elementary microbiology courses on aspects of curiosity is 93.56% and the indicator is 86.37% cooperation with the category very well. Followed indicator disciplinary 87.88%, 85.61% responsibility very good category. On the indicator of tolerance are decreased by an average of 61.59, and also on working with 59.85% accuracy. Nonetheless, based on the analysis of the scientific attitude is made as one piece of evidence that free third semester student of Biology Education Program taking courses in basic microbiology Academic Year 2012/2013 already has a scientific attitude with excellent category. The high component is thought to be one result or the effect of the learning approach used pengampu time faculty observation or observation takes place.

If the terms of any observable scientific attitude indicators which include curiosity, teamwork, discipline, responsibility, tolerance, confidence and precision work can be seen that all the components of the scientific attitude were observed to have very good category except the indicator to the tolerance and accuracy beerja have less category. All components are measured in the implementation of learning in basic microbiology course each meeting has a different percentage. The difference is caused by several things well it relates to the material being studied, while the implementation of the spirit of learning and student learning is sometimes dropped.

1. Curiosity

At the first meeting of curiosity indicator is 95.45%, the second meeting to be 90.91%. It can be seen that there is a slight decrease from the first indicator in the second meeting. This is because the student already knows the information about the material. At the third meeting increased to 93.94% and 93.94% at the fourth meeting.

In the visible indicator is active curiosity students to get answers to satisfy curiosity of students themselves. This is reflected in the activity students ask and answer questions, whether it be from a professor or from friends sekelompoknya. At curiosity indicators increased significantly at each meeting. This is due to learning biology is carried out through the application of cooperative learning model GI type makes students more provoked curiosity in the learning process. Efforts need to be made by the faculty to maintain these results is to always provide the questions that intrigued students.

2. Cooperation

Indicators of cooperation at the meeting I was 72.73%, 84.85% in the second meeting, gathering 93.94% III and IV remained at the meeting, namely 93.94%. Aspects of cooperation seen in the indicators is the ability to group students work with each other to get perfect knowledge. Seen from cooperation indicator data showed a continuous increase from the first to the fourth meeting. This is because the implementation of cooperative learning model GI type of student is required to cooperate in order to better understand the subject matter as a whole. Efforts need to be made by the faculty to further improve these results is to pay tribute to the group. Sudjana opinion (2002), faculty must develop and pay attention to the psychological aspects such as student mental condition to be more bold in their opinions and participate in the learning process.

3. Discipline

On indicators of discipline seen an increase in any of the meetings meetings I samapai IV. Where the meeting I 84.85%, 81.82% meeting II, III meeting 92.42%, and 92.42% at the fourth meeting. In the reference indicator discipline is discipline students in the use of time, in accordance with the specified time lecturer. From the data shown in the indicator is continuous, increased discipline. This is due to the awareness of students on the importance of discipline in the cooperative learning model GI type is that students can understand the subject matter as a whole. By increasing the more perfect, the lecturer can working on this by providing guidance and direct supervision of the student so that the student is always controlled in the learning activities. It is expected students will be disciplined nature appear within each student.

4. Responsibility

Scientific attitude indicator responsibility of students to look at the first meeting of 78.79%, 86.36% in the second meeting, the third meeting of 87.88% and 89.39% at the fourth meeting. In indicator is the reference liability is the attitude of students to be responsible for all the work he does, but it is also the responsibility of the student group. Data obtained from liability indicator shows continuous improvement. This is due to science learning biology is carried out through the implementation of cooperative learning model GI type makes students more responsible in the learning process. Efforts must be made by the faculty in order to enhance the scientific attitude is responsible, among others, by way of

giving confidence to students in the group, so expect a scientific attitude of responsibility will appear.

5. Tolerance

The indicator also continuously increased tolerance at each meeting. At the first meeting of 75.76%, 81.82% second meeting, the third meeting of 90.91%, and 87.88% at the fourth meeting. Aspects tolerance seen in the indicator is students can receive opinions from friends and not offend her. From the data shown increased tolerance indicator continuously. This is due to students already understand the importance of tolerance in type GI kooperatif learning model is to allow students to listen to or receive feedback from peers and not offend him in order to improve the more perfect, the faculty can provide direction and supervision to the students about the importance of tolerance trait peers and on the faculty in the learning process. It is expected students tolerance trait will be increased.

6. Confident

In the confidence indicator looks at the meeting I 65.159%, increase in the second meeting to be 86.36% and continues to rise at the third meeting, which was a meeting III at 92.42% and 89.39% IV meeting. Indicator confident that the reference is a student can do the work themselves without looking hassil his job. This is due to the awareness of the importance of student confidence in learning the student can work independently to increase confidence indicator, it can reduce the value of student teachers who caught her look work.

7. Accuracy Working

At the meeting I 78.79%, 51.52% at the second meeting, at the third meeting of 48.48% and 60.61% IV meeting. Indicator accuracy is the reference work is meticulous, serious, and not careless in doing the tasks assigned by the lecturer. Accuracy of the data indicator works seen improvement every meeting, this is due to more students work carefully, thoughtfully, and not reckless in the learning process so that students can understand the subject matter as a whole, and a job well done. For improved accuracy the indicators work, the teacher can provide oversight and guidance to students in order to perform the task well. Thus the expected nature of the precision work students will be increased within each student.

I.2.2. Student Learning Outcomes

I.2.2.1. Power Absorption Students

I.2.2.1.1. Power Absorption in Cycle I

The results of the analysis of the absorption of students at the meeting I after the implementation of cooperative learning model GI type in Biology Education class of 2011 students in basic microbiology course can be seen in Table 6 below:

Table 6. Students Absorb Power Cycle I to Content Viruses and Bacteria Through Test and Deuteronomy Daily Post

No	Interval	Categories	Post Test I N (%)	Post Test II N (%)	UH I
1	84-100	Very Good	5 (22,73)	14 (63,64)	19 (86,36)
2	74-83	Good	10 (45,45)	6 (27,27)	3 (13,64)
3	64-73	Enough	3 (13,64)	- (0)	- (0)
4	0-63	Less	4 (18,18)	2 (9,09)	- (0)
Total			22 (100,00)	22 (100,00)	22 (100,00)
Average			71,55	73,18	83,68
Categories			Enough	Enough	Good

Table 6 above it can be seen that the average absorption of the value of post test students after the implementation of cooperative learning model GI type I in post test was 71.55%, and then increased at a meeting II to 73.18%, and the average daily test I prestudy is 83.68%.

In the post test I and sub subject virus, the number of students is excellent category 5 people (22.73%), the value of a good 10 people (45.45%), the value of pretty 3 people (13.64%), less the value of 4 people (18.18%). The average absorption student at post test I 71.55% in category pretty. This is due to a meeting I did not attend the student learning process well because students still do not seem familiar with the implementation of cooperative learning model GI type and this is due to students not used to try for themselves without thinking of another friend. Selfishness is what is carried in the learning process. In the post test II with sub subject virus, the number of students who attended by 22 students. The number of students is excellent value category by 14 people (63.64%), the value of either 6 (27.27%), none of which gained enough value, the value of no less than 2 people (9.09%). At the second meeting post test values have increased by an average value of 73.18, it is because students have started actively working and not thinking of himself or the students have started to interact with their friends in completing the task.

I.2.2.1.2. Power Absorption in Cycle II

The results of the analysis of the absorption of students in meeting the second cycle after the application of cooperative learning model GI type in Biology Education class of 2011 students in basic microbiology course can be seen in Table 7 below:

Table 7. Students Absorb Power Cycle II to Content Infections and Infection Control Through Test and Deuteronomy Daily Post

No	Interval	Categories	Post Test I N (%)	Post Test II N (%)	UH II
1	84-100	Very Good	22 (100)	15 (68,18)	19 (86,36)
2	74-83	Good	-	-	-
3	64-73	Enough	-	-	-

4	0-63	Less	-	7 (31,82)	3 (13,64)
Total			22 (100,00)	22 (100,00)	22 (100,00)
Average			90,45	61,68	77,14
Categories			Very Good	Enough	Good

Table 7 above it can be seen that the average absorption of the value of post test students after the implementation of cooperative learning model GI type I in post test was 90.45%, and then decreased at the next meeting to 61.68%. This is because some students do not attend this meeting that promote the value of post test 0. To produce less rating category. In the second daily test average is 77.14% with a good category.

In the post test I and sub subject virus, the number of students is very good category by 22 people (100%). The average absorption student at post test I 90.45% in category pretty. This is due to the meeting of I students are more active in the learning and discussion activities that enhance the absorption of the material yield learning.

In the post test II with sub subject of infection control, the number of students who attended as many as 15 students. The number of students is excellent value category as many as 15 people (68.14%), none of which get good value and reasonably, less the value of 7 (31.82%). At the second meeting post test values decreased with an average value of 61.68.

I.2.2.1.3. Thoroughness of Student Learning

Results mastery learning students after implementation of cooperative learning model type Group Investigation (GI) can be seen from the daily tests I and II. The results of the analysis of mastery learning can be seen in table 8 below:

Table 8. Thoroughness of Student Learning

Cycle of learning	Average	Mastery Learning	
		Complied Total (%)	Incomplied Total (%)
Ulangan Harian I	83,68	22 (100,00)	-
Ulangan Harian II	77,14	19 (86,36)	3 (13,64)

In Table 8 it can be seen that the average student mastery learning cycle I 83.68% 77.14 while in the second cycle. This decrease occurred in the lecture that student attendance is not 100%. Completeness in the first cycle by the number of students reached 100% 22 people were in the fact that the GI model of learning can improve students' mastery learning.

In the second cycle student attendance 19 people as a whole also achieved mastery learning with a percentage of 86.36%. Students who do not tutas is on the second cycle by the number of 3 students because they do not follow the Daily Deuteronomy caused pain conditions, so the percentage of incomplete siwa

13.64%.

J. CONCLUSIONS AND RECOMMENDATIONS

J.1. CONCLUSION

From the results of this study concluded that the implementation of cooperative learning model of type Group Investigation (GI) can improve the scientific attitude and biology education student results third semester of the school year 2012/2013 where:

1. Score sheets investigation group in cycle I and II by category Very Good.
2. Scientific Attitude students every encounter with average 78.79 (both) at a meeting 1, 80.52 (both) at a meeting 2, 85.71 (very good) at a meeting 3, and 86.80 (very good) at a meeting 4. Further scientific attitude of students on each indicator curiosity 93.56 (very good), an indicator of cooperation 86.37 (very good), 87.56 (very good), indicator responsibility 85.61 (very good), the tolerance indicator 61, 59 (or less), confidence 88.33 (very good) and the precision indicator works 59.85 (or less).
3. Student absorption cycle I mean post test 1 71.55 (enough), and
4. on post-test 2 73.18 (enough) and the activities of daily tests I 83.68 (Good). While in the second cycle the average obtained in spost test 1 is 90.45 (very good), post test 2 61.68 (less), and Deuteronomy 77.14 Daily II (good).
5. Student mastery cycle I was 100% and the second cycle was 86, 36%.

J.2. ADVICE

GI type of cooperative learning can be used as an alternative to learning biology because it can enhance the scientific attitude and student learning outcomes in basic microbiology course

K. REFERENCES

- Arikunto, Suhardjono, Supardi, 2006, *Penelitian Tindakan Kelas*. Bumi Aksara, Jakarta.
- Arends. 1997. *Classroom Instruction And Management*. USA: The Mc.Graw-Hill
- Harvey, 1998. *Cooperative Learning Strategies and Children*. *EERIC Digest*. (Online). <http://ericae.net/edo/ED306003.htm>. Diakses 14 April 2012
- Mulyasa. 2006, *Prinsip-Prinsip dan Teknik Evaluasi Pengajaran*, Remaja Rosdakarya, Bandung.
- Slavin, R.E. 1995. *Cooperative Learning Theory Research and Practice* Second Edition. Boston: Allyn and Bacon
- Trianto. 2011. *Mendesain Model Pembelajaran Inovatif- Progresif; Konsep, Landasan, dan Implementasinya pada Kurikulum Tingkat Satuan Pendidikan(KTSP)*. Jakarta: Kencana Prenada Media Group.