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Application of Active Learning Strategies to Improve Learning Outcomes 0f Natural Science Subject at SMP Negeri 3 Namohalu Esiwa Academic Years 2015/2016

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Abstract: This study is a class action that aims to improve student-learning outcomes through the application of learning models Active Learning in Natural Science subjects. By using a sample of eighth grade students of SMP Negeri 3 Namohalu Esiwa on the subjects of Natural Science. Researchers conducted the study using two cycles of action. In practice, the study of this class action is repeated by following a predetermined cycle stages so that the attainment of the objectives of learning methods Active Learning through group and individual assessment. Indicators of improving student learning outcomes can be seen from the improvement of student learning outcomes obtained after a process of learning by using learning methods Active Learning. The study states that the application of learning methods Active Learning Team has a positive influence on improving student learning outcomes.
Keywords: Active learning, Learning Outcome.

INTRODUCTION

Education is a planned way to create an atmosphere of learning and the learning process so that students are actively developing her potential. Education has the objective to change the character of students in order to have the knowledge, skills in dealing with the development of science and technology in the present and future.

In the development of science and technology and improving the quality of education, the Indonesian government in this case the Ministry of National Education has to reform the education system since 2003 as stipulated in Law No. 20/2003 on the National Education demanding quality improvement. National Education Standards the Indonesian government has tried hard to develop some standard one teacher as stipulated in Law No. 14/2005 on Teachers and Lecturers.

Minister of National Education and in particular the Directorate General of Quality Improvement of Teachers and Education Personnel and the Directorate General of Higher Education who seeks to enhance the professional capability of teachers either individually or jointly through teacher training activities. In addition, teachers are required to be able to educate students to this country a land that is smart and not underestimated by other States.

To improve the effectiveness of student learning and the quality of student learning, teachers are expected to have been a professional in the field. A teacher performing their duties in accordance with the mechanisms and procedures that could affect learning activities by creating a conducive environment in which to understand the existence, diversity and other things that affect the outcome of learning of each student.

The use of appropriate strategies in the learning process is very important, where the appropriate learning strategies to foster the spirit of student learning. One effort to increase student's motivation to learn is by applying the Active Learning Strategy, which has many variations to improve the students actively in learning. Active learning strategies engage students in learning activities related to cognitive assimilation in achieving knowledge, sikp and skill formation. This learning strategy according Glasgow is a learning strategy that stimulates students to study hard work in taking a great responsibility in their own learning process. They take a more dynamic role in deciding what and how they need to know, what they should do and how they will do it. Their role then more widely in self-management and motivate yourself to be a greater force.

LITERATURE REVIEW

Constructivism View of Learning

The central heart of constructivism is the source of knowledge. According to this tradition,

knowledge is not represents something that an independent world, or something that only stands by itself which come from out of there. However, knowledge is represents something that relate to our self's, our experiential life as human being that it could be dealing with physical object and ways of thinking with abstract concepts [1]. So, knowledge is regarded as being constructed by human, such that human creates meaning of the world rather than discover meaning from the world [2].

Knowledge may be received from any sources, but the strongest and deepest ways of knowing come from individual's active construction of meaning through their interaction with physical and social environment. Therefore, learning is an active process of knowledge construction and sense making, and constructing knowledge will give the ways to building conceptual understanding, which considered as an important factor for problems solving [3].

Active learning denotes learning activities in which students have considerable autonomy and control of the direction of learning activities. How do teachers move from passive learning to active learning, and to find better ways of engaging students in learning process, guided by the model below, which offers a way of conceptualizing the learning process in a way that may assist teachers in identifying meaningful forms of active learning? [4].

This model suggests that all learning activities involve some kinds of experience or some kinds of dialogue are dialogue with self and dialogue with others. Dialogue with self happens when a learner thinks reflectively about a topic. Whereas, dialogue with others can and does come in many forms. A much more dynamic and active form of dialogue occurs when a teacher create an intense small group discussion on a topic. Sometimes teacher can also finds creative ways to involve students in dialogue situation with people other than students

The other two main kinds of experience are observing and doing. Observing occurs whenever a learner watch or listens to someone else doing something that relate to what they are learning about. This might be such things as observing one's teachers do something, listening to others professional perform, or observing the phenomena studied. On the other hand, doing refers to any learning activity where the learner actually does something such as investigate local historical resources.

Engaging students in active learning and give them autonomy in their learning and constructing knowledge, teachers do not have to be information provider for students. Since students do not record information, but create new knowledge by themselves and with others, learning is much more complex. Therefore, teacher roles are even more important than they were once believed to be.

Promoting Students Active Involvement In learning

The most important step involving students in the learning process is to design lesson intended to involve students in learning as much as possible. According to Jacobsen *et al.;* [5], there are three aspects of instruction, which relate to this purposes. These are the need to clear goal, the role of high quality representation of content and the important of teacher questioning. Being able to guide students with question is the most important teaching skills that teacher can possess. Research support this assertion [6], effective teachers ask more questions than they less effective colleagues, and a large number questions are indicator of effective organization and clear goals.

Recent development to teaching approach for better students understanding underlines the power of teaching by asking instead by telling. According to Garlikof [7], teaching students by asking questions to them and let them to answer questions, not only show the students capacity in answering question correctly in a varieties of ways, but also show the students motivation in learning. Students are eager to solve the problems encountered to them, and involve in learning maximally.

Classroom Learning Environment for Engaging Student Active Involvement in Learning

Constructivist learning requires that students feel free to offer conclusions, conjectures, and evidence without fear of criticism or embarrassments. It also requires students who are willing to listen to each other, wait they turn, and consider and reconsider their own ideas while others are talking. Creating productive learning environment can promote as much learning as possible and develop students' ability to manage and direct their own learning [8]. A responsibility model of management helps students make appropriate choices and learn from their action and decision. Therefore, managing productive learning environment for students is important task that teacher must pay attention for that.

Frazee and Rudnitski [9] suggest that the following steps can help teacher to establish that environment. These are: establish rule and procedures, avoid using questioning as a form of punishment, use a variety of instructional strategies in order to keep students interest, encourage students-to students interaction, encourage and promote thinking through modeling, and use small group for questioning.

RESEARCH METHODS

The research was conducted in class VIII SMP Negeri 3 Namohalu Esiwa in academic year 2015/2016. This research is the Classroom Action Research (CAR), which aims to solve the problems that arise in the classroom and improve the quality of the learning process and results. Procedures and measures used in carrying out this study follow the model developed by Kemmis and Mc Taggart is the spiral model. Planning system uses a spiral of self-reflection that begins with an action plan (planning), action (acting), observation (observing) and reflection (reflecting). This activity is called with one cycle of problem-solving activities. Issues raised in this study are the lack of science process skills of students. To overcome these problems, action is taken in the form of the use of Active Learning instructional strategies to improve science process skills, and accompanied by increasing learning outcomes in line with the increasing science process skills.

The analysis conducted in this research is descriptive qualitative. The technique is done because most of the data collected in the study in the form of descriptive terms about the development process, namely the improvement of science process skills of students through the application of active learning. The analysis refers to the analysis model Miles and Huberman [10] done in three components: data reduction, data presentation, and conclusion or verification. Application of active learning is conducted in two cycles where the application of learning in the first cycle and the second cycle, only the reflection of the actions of each cycle is different. The follow-up on the first cycle and the second cycle is done so that the learning process can obtain maximum results through the application of active learning.

FINDINGS AND DISCUSSION

Research Preparation

This research is located in SMP Negeri 3 Namohalu Esiwa, located in the village of the District Hilibanua Namohalu Esiwa, North Nias. The subjects were students of class VIII SMP Negeri 3 Namohalu Esiwa learning year 2015/2016, amounting to 35 people. In carrying out this study, researchers collaborated with subject teachers of Integrated Sciences and held during school hours in class VIII Integrated Sciences. Implementation of this study consists of four phases: planning, action, observation and reflection. Integrated science subjects teachers serve as an observer during the learning process. Research was conducted collaboratively by using observer participation namely Integrated Science subject teachers in class VIII, which assist in the implementation of observation during the study, so that the activities of this research can be done well and controlled. The research activities carried out on the clock Integrated science subjects and will not disturb the process of implementation of other learning.

The research instruments were piloted in SMP Negeri 3 Namohalu Esiwa in Class VII is the achievement test in the first cycle, the number of respondents as many as 26 people. Data obtained based on these trials as follows:

- Validity of Test Results Test Results Learning: Based on the results of test score data instrument using product moment correlation formula with n = 26 on a significant level of 5%. Shows that every valid test items so that it can be used as a research instrument.
- Test Reliability Test Results: Based on the results of test score data with the instrument using alpha formula. by dk = N-1 = 26-1 = 25 with significant level of 5%, the test is declared reliable.
- Trouble Level Test Results: The results of trials studying the test results, it turns out in accordance with the level of difficulty of the test grating tests that have been developed previously. The results of calculation about the level of difficulty are: question 1 = 0.46 is relatively easy; 2 = 0.43 is classified; 3 = 0.64 is relatively easy; 4 = 0.31 relatively difficult; and 5 = 0.46 moderate.
- Test Results differentiator Power: Power differentiator student's ability to learn based on the test results indicate that the question number 1-5 having distinguishing good so that matter can be used properly.

Implementation of Classroom Action Research Cycle I

In the first cycle of learning with the material motion system of several stages from the planning phase for preparing a lesson plan with active learning strategies, set a time of implementation, prepare observation sheets, preparing student worksheets, preparing the script tests the students' learning outcomes. After the planning stage, the next stage in the form of actions which the whole process of learning by applying active learning strategies. The next stage is the observation, during which the learning process takes place teacher of Integrated Sciences acted as observers and fill out the observations that have been provided, and after its done reflection.

Meeting 1

At the first meeting I cycle there are some students who are not active in the learning process and carry out other activities such as drowsiness, doing other tasks, noisy, and out of the classroom, teasing, dreamy, scratch paper, and then interrupted during the learning process. The average observed students who are not actively reach 51.42%. At the meeting I cycle I

also observed that the activities students actively in the learning process in the form of interest, attention, participation and presentation. Based on the observation sheet of students who are actively involved in the learning process are 62.31% active in learning activities. The observation of the learning process the teacher respondents reached 76.25%.

Meeting 2

The average observed students who are not actively reach 34.28%. Learners have started active but there are students who are sleepy, noisy, and out of the classroom, teasing, scratch paper, and then interrupted during the learning process. The average observation that engages students actively participating in the learning reached 67.85%, and has improved from the first meeting. The results of the observation of the learning process of teacher respondents reached 83.75%.

The End of the First Cycle

The average student learning outcomes 68.02 with enough categories and the percentage of students learning completeness reached 65.71%. This happens because there are still students who lack understanding of learning materials for the learning process takes place when there are students who are not active, learning quality questionnaire results reached 79.39% with enough categories.

Based on the interviews have been conducted, we conclude that they are quite happy with the learning they have attended, because they are easy to understand and in doing so they were more active role in learning and exchanging ideas with fellow members of the group. However, there are still students who are less able to participate in the learning process due to the less familiar in applied learning models.

Cycle II

Meeting 1

The average observation inactive students reached 22.85%, although there are still some students are noisy, and out of the classroom and teasing while learning. On average the observations of students actively participating in the learning reached 87.67% and have undergone a good change of cycle I. The observation of the learning process the teacher respondents reached 91.25%.

Meeting 2

The average observation inactive students reached 14.28%, the students who are not actively been reduced. On average the observations of students actively participating in the learning reach 97.67. Interest, attention, participation and presentations of students have improved during the learning process takes place. The observation of the learning process of teachers reached 97.5% of respondents.

The End of the Cycle II

The average student learning outcomes 82.43 with good category and the percentage of students learning completeness reached 88.57%, because the students have to understand and know the material identified during the learning process. The questionnaire results the quality of learning reached 89.84% with a good category, this was due to deficiencies contained in the first cycle has been improved.

Based on the interviews have been conducted, we conclude that they are quite happy with the learning they have attended, because they are easy to understand and in doing so they are more motivated to learn so that they are active and creative and more effective in learning and exchanging ideas with peers.

Reflection Cycle I

Meeting Reflection I Cycle I

Learning at a meeting I cycle I still do not get the expected results where the percentage of students who are not active in the learning process reaches 51.42%. Student engagement in learning activities is still classified as a category sufficient 62.31. Similarly, the ability of researchers who act as teachers in active learning strategy is still classified as a category sufficient with an average of 76.25%. Learning conditions in the first meeting of the first cycle is still lacking is not as expected due to the researcher acting as a teacher still not optimally applying active learning instructional strategies. The students are still learning difficulties with learning strategies that they did. To improve learning conditions at the first meeting, the first cycle in the first cycle II meeting researchers better prepare themselves to implementing learning by applying active learning instructional strategies. Some ways researchers namely: establish good communication with students, giving attention and guidance to students who are still not active in learning as drowsiness, doing other tasks, dreamy, scribble paper during the lesson. As well as asking for help to subject teachers to guide students who were indifferent in the learning process.

Reflection II Meeting of the cycle I

Learning at the meeting II cycle I've experienced a positive change in the learning although still having shortcomings and weaknesses. The average observation of students who are not actively begin to decrease reached 34.28% although there are no students were sleepy, noisy, and out of the classroom, teasing and scratch paper during the learning process. Student engagement in learning is starting to show results reached 67.85% has improved from the previous

meeting. Similarly, the ability of researchers who act as teachers in applying active learning strategies increased to 83.75%. Learning activities in the second meeting of the first cycle already shown encouraging results compared with the first meeting of the first cycle though still not meet the expected target. There are still some weaknesses and lack of the meeting II silkus I, which is expected to be fixed in the cycle II.

Final Reflection Cycle I

At the end of the first cycle calculated the average percentage of students who are not involved active of the first meeting and the second meeting of 42.85%. The average percentage of students who are actively involved in learning activities ie 65.08 with enough categories. It is not yet meet the expected target is based on the ability of researchers who act as teachers in implementing the learning strategy is not yet maximal active learning. This is also confirmed by the results of a questionnaire quality of teaching in the first cycle only reached 79.39% with enough categories. The average results of study in the first cycle ie 68.02 with enough categories and the percentage of completeness of students in the first cycle only 65.71%. It is still not meet the target set fatherly learning outcomes, which is an average of at least a good learning outcomes and student learning completeness percentage of at least 75%. Based on the interviews have been conducted, we conclude that they are quite happy with the learning they have attended, because they are easy to understand and in doing so they were more active role in learning and exchanging ideas with fellow members of the group. However, there are still some students who are not able to follow the learning process due to the less familiar in applied learning models. The first cycle of reflection turns the expected target still does not meet the maximum results. Therefore, the researchers concluded to continue in the second cycle. To overcome some of the weaknesses derived from reflection I, and then there is some improvement efforts include:

- Conduct learning as well as possible in accordance with the steps in the Active Learning Strategies Learning.
- To motivate students to be more active during the learning process.
- Research more intensive guiding students experiencing difficulties during the learning process takes place.
- Keeping the learning process can motivate students to be more active in learning so that the percentage of completeness achieves the set targets and the average student learning outcomes in subjects of Natural Science.
- Researcher presents awards / prizes for the group good presentation.

Reflection Cycle II

Meeting Reflection I Cycle II

Learning at the first meeting of the second cycle is much better where the percentage of students who are not actively involved in the learning activity begins to decline approximately 22.85% although there are still some students are noisy, and out of the classroom, and annoy your friends while learning. Involvement of students in the learning process also increased to 87.67%. Similarly, the ability of researchers who act as teachers in applying active learning strategies (active learning) reached an average of 91.25%. Learning conditions in the first cycle II meeting has been good despite not showing maximum results. Therefore, continued in the second cycle II meeting.

Reflection Meeting II Cycle II

Learning at a meeting of the second cycle II is already well where the percentage of students who are not actively involved in the learning process is reduced only 14.28%. Involvement of students who are actively involved in the learning process reached 97.67% with a good category. Similarly, the ability of researchers who act as teachers in applying active learning strategies reached 97.5%.

Final Reflection Cycle II

The average results of the reflection on the second cycle increased from the results of the previous cycle, namely 81.31% Based on observations on the second cycle, it appears that the learning process goes well, the presentation of students who are involved actively more active 96.67% increase from the previous cycle and the average student learning outcomes pertained 82.43 splendidly and completeness percentage reached 88.57%, this shows that it has reached the set target.

The results of the implementation of the study showed that students who are actively involved in all the first cycle were 65.08% and in the second cycle to increase to 96.67%. Increased activity of students in learning can happen with an increased ability of teachers in applying the Active Learning Strategies Learning. It can be known based on the observation of the teacher in the first cycle to the average observation reached 80.00% and in cycle-II reached 94.37%. Along with an increase in activity of student learning, it resulted in an increase in student learning outcomes. This can be determined by student learning outcomes in the first cycle to achieve an average value = 68.02 with mastery learning students reached 65.71% and in the second cycle to achieve an average value = 82.43 with learning completeness reached 88.57%.

In this research, the findings include: adopting a strategy of active learning is the learning process

becomes better, students are more active and motivated in the learning process because they are actively involved in the implementation of learning, so that in the learning process feeling bored and tired of learning that are found in the students can be overcome, and the students were motivated to be more active and creative in finding, solving problems and find their own answers from an existing problems. Learning strategy emphasizes active learning to the student's activity to the maximum to find, solve and find, is to put the student as a subject of study.

The success of the research findings in fact not absolute, it is due to a number of limitations. For the limitations of this study need to be expressed mainly in the aspects of the analysis and interpretation of research findings. Based on the above, then the following limitations of the study revealed that the readers have a common view of the researcher. Some of the limitations are met: (1) The strategy of active learning (active learning) can improve student learning outcomes it is possible that not all teachers to implement active learning strategies (active learning) in improving student learning outcomes, (2) strategy of active learning (active learning) used in this study, but it still has many weaknesses. If there is a model other study used the possibility of getting different results, (3) The average value of the test result of learning is likely to be different results if implemented learning model others, and (4) The percentage value learning completeness students will likely be different results if implemented models other learning.

CONCLUSSION AND RECOMMENDATION

Active learning strategy is one that is easy to implement learning strategies in learning activities and is expected to be applied to the learning process in the future even better. In the process of learning expected of teachers can enhance the activity and creativity of students in the learning process Integrated Sciences by applying active learning strategies in accordance with the material being discussed. Teacher of Natural Science is never bored correct weaknesses in learning as well as more creative in planning / designing and conducting the learning process. To the researchers continued to use strategies / other instructional models tailored to the varied learning materials, instrument research and statistical testing more thorough and accurate.

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