Implementation Wave Kit as Efforts to Increase Student Learning Skills

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ABSTRACT

The research is determining the increase science process skills on the subject of the waves. In this study apply the lesson study at each cycle consists of a Plan, Do, See and be done two cycles in learning based practical laboratory. An observation science process skill is performed at the learning science based experiments laboratory. The results of the study the average indicator of science process skills in the open class 1 is 2.8 (good) and the open class 2 is 3.1 (good). Based on the research that the use of the wave kit learning based practical laboratory effectively improve indicators skills of the student learning process, such as 1) Viewing Using the Five Senses, 2) Identifying and Using the tools, materials and resources to be used in the lab / learning, 3) Read, understand and perform procedures of work at laboratory, 4) Communicating, writing, ideas - the basic idea of the findings / observations.

Keywords: process skills, lesson study, wave kit

1 INTRODUCTION

One of the problems in our education is still weak learning process, students are less encouraged to develop thinking skills, while teachers still apply traditional teaching methods, oriented to students' cognitive measurements alone (Hayat, et al., 2011). Meanwhile in learning based curriculum 13 should be able to measure three aspects, namely cognitive, affective, and psychomotor. To achieve these three aspects, learning activities in the classroom is not enough just to apply the lecture method, because teachers can only give the material theoretically only, and students are not actively involved in the learning even students can not apply the material directly in the form of observations and experiments. Experience has shown that in general teachers in teaching science subjects much emphasis on the provision of information and is reluctant to carry out learning activities using props or take laboratory activities. Similar conditions also occur in SMA Negeri 3 Sragen. From the observations indicate that the teaching of physics in the school at this time tend to be taught in the classical style, inclined and less associated with daily life. Because the learning method used is less attractive, hinder the creativity of students and even students have difficulty understanding the material as well as the emerging notion that a physics lesson was difficult. Students' science process skills are underdeveloped because of student learning tends not engaged with a concrete object. Though skills are needed in the process of scientific work because the underlying pace of students on solving problems eventually that will take students on ability to expect (Widayanto, 2009). Based on the results of research conducted by Sujiman (1998) in one school Samarinda, East Kalimantan, stated that the use of the kit in science teaching in secondary school (SMP) can improve student learning activities. Nanik (2004) in his

research at the Elementary School District Purworejo, Pasuruan, East Java stated, no significant difference in learning achievement IPAsiswa SD taught by IPA kit with kit taught without IPA. Fauziyah (2001) in his research on the SD in one district in Central Java said the frequency of utilization of IPA in the learning kit is not optimal even tend to be low, namely 51.04%. Science process skills can also be defined as the ability or skill to perform an action resulting in learning science concepts, theories, principles, laws and facts or evidence. Teaches process skills in student's means giving them the opportunity to do something instead of just talking something about science. By developing skills acquisition process children will be able to discover and develop their own facts and concepts as well as grow and develop attitudes and values required. Thus, those skills become a cog discovery and development of facts and concepts, as well as the growth and development of attitudes and values (Semiawan, 1992). In the laboratory activities students can build knowledge or understanding of the concept of appropriate data and facts obtained through experiments. Laboratory activities have an important role in science education. Students are trained to read the data objectively, and from the data obtained in the form of facts, it can be concluded. Through experiments in laboratory activities students will carry out an active learning process gain direct experience so that students can develop psychomotor skills that are already inside the student. Kit is a set of equipment practicum that aims to improve student achievement with the conditions of a dynamic, creative, relevant to everyday life and assist teachers in teaching and learning as a media / tools to achieve teaching objectives in accordance with the curriculum (Fauziyah, 2001), Based on the description above, this research is important to do so can find out by using the media / learning lab kit is expected to improve students' science process skills.

2 METHODS

2.1 Research subject

Students SMAN 10 Jambi, class XI IPA1 academic year 2015/2016 which amounted to 26 students.

2.2 Techniques and Data Collection Instrument

The type of data observed in this study is qualitative data that is data on skills of the student learning process during the implementation of learning. Data were collected using observation sheet process skills of students during the learning activities and video recordings during the learning activities.

Factors Examined in this study include science process skills of students' items, namely: 1) Viewing Using the Five Senses, 2) Identifying and Using the tools, materials and resources that will be used in lab / learning, 3) Read, understand and perform work procedures lab, 4) communicating, writing, ideas - the basic idea of the findings / observations.

2.3 Implementation

In this study the sequence of learning in the classroom apply the lesson study, lesson study is not a strategy or method of learning, Lesson study was originally developed in Japan at the beginning of the 20th century and it was derived from the Japanese word ‖*jugyokenkyuu*‖, which can also be translated as ‒researching lesson‖- indicating the level of scrutiny applied to individual lessons (Suratno & Iskandar, 2010).

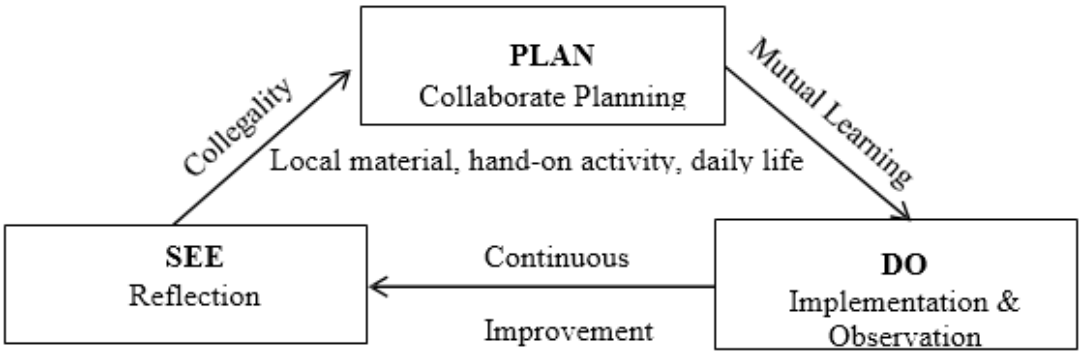

Figure 1. The Lesson Study Cycle (Suratno T. & Iskandar S, 2010)

In this research be done the implementation of lesson study in the classroom learning. The lesson study is the first step to improve the quality of learning. The quality of learning can be seen from teacher preparation before and after learning activity. According to Lewis (2002) "There are Several reasons lesson studies need to be implemented in the learning namely 1) the development of lesson study be done and based on the sharing of professional knowledge, the which is based on the practices and learning outcomes implemented on teachers, 2) emphasis is fundamental to the implementation of a lesson studies that students have quality learning, 3) the competencies expected of students to be the focus and the main interest in learning in class, 4) lesson study as the basis for the development of learning based on real experiences in the classroom ".

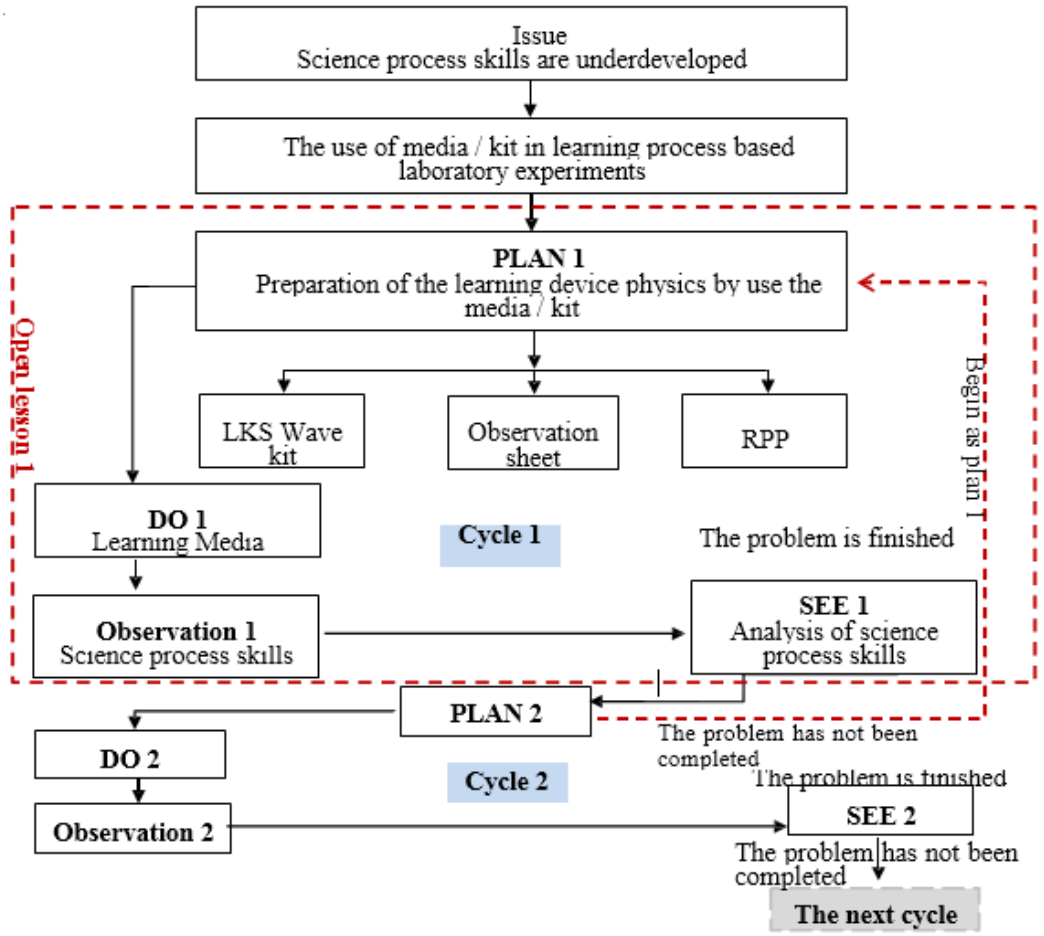

Figure 2. Flow chart research

Overall lines of research are shown in Figure 2. Stage of implementation includes activities to perform the initial observation, developed questionnaires initial conditions for students and teachers, arrange pieces of identification process skills, tested tools that will be used in teaching, in the open lesson 1 includes the stages of action planning, action, observation and reflection , Action planning activity consists of preparing lesson plan sub subject of waves on a string 1 with the aim to study the relationship between the frequency of wavelengths. And sub-item in the open lesson 2 is a wave on a string 2 with the aim of studying the relationship between wave propagation speeds with tension straps. In learning kit utilizes the wave as a medium of learning, preparing student worksheet (LKS) for the implementation of an experiment that serves to determine the development of students 'science process skills, preparing the observation sheet to identify students' science process skills. The implementation stage action includes teacher explains briefly about lesson plans that will be implemented, divide students into two groups, the teacher split worksheets on each student, before the experiment students observe instructional videos, and then the students conduct experiments according to the instructions contained in the worksheets, videos has been shown in early learning and teacher guiding the course of the experiment, while

doing the experiment the students to answer questions in LKS to measure students' science process skills, and students doing post cycle test I to evaluate the understanding of the concept. Students must collect experiment report. Stages of observation done by researchers and some observers from school teachers SMAN 10 Jambi observe the implementation of teaching and learning activities while filling the observation sheet to identify the basic science process skills of students during the learning takes place. Then come to the stage of reflection. The activities include analyzing the answers worksheets and reports student practicum done, whether the science process skills of students categorized as excellent, good, poor or very poor. Comparing whether the ability to understand students has increased compared to before action is taken, and analyzes the observation sheet to identify the basic science process skills of students. Phase II implementation cycle the same as in the first cycle, which consists of planning, implementing action, observation, and reflection. Planning on the second cycle based on the cycle of reflection I. the implementation of measures with improvements such as higher student involvement. At the end of the cycle teachers together researchers reflect on the data obtained from the records of teachers and all the findings of both the advantages and disadvantages.

3 RESULTS AND DISCUSSION

Data processing results of the observation skills of student learning in the classroom using a Likert scale. With provisions such as Table 1 below:

Table 1. Conversion Score Being Scale Likert Value 4

Score range	Grade	Category
x +1,5. SD ≤ xi ≥ x + 3,0. SD	A	Very Good
x + 0. SD≤ xi ≥ x + 1,5. SD	B C	Good
x -1,5. SD ≤ xi ≥ x + 0. SD	D	Not Good
x -3,0. SD ≤ xi ≥ x - 1,5. SD		Very Poor

Score range	Grade	Category
3,25 < Xi ≤ 4	A	Very Good
2,5 < Xi ≤ 3,25	B	Good
1,75 < Xi ≤ 2,5	C	Not Good
1 < Xi ≤ 1,75	D	Very Poor

Based on observations made during a laboratory experiment-based learning, the following chart Average votes - Average indicate science process skills each student has done in the open lesson 1 and lesson 2 open at SMAN 10 Jambi

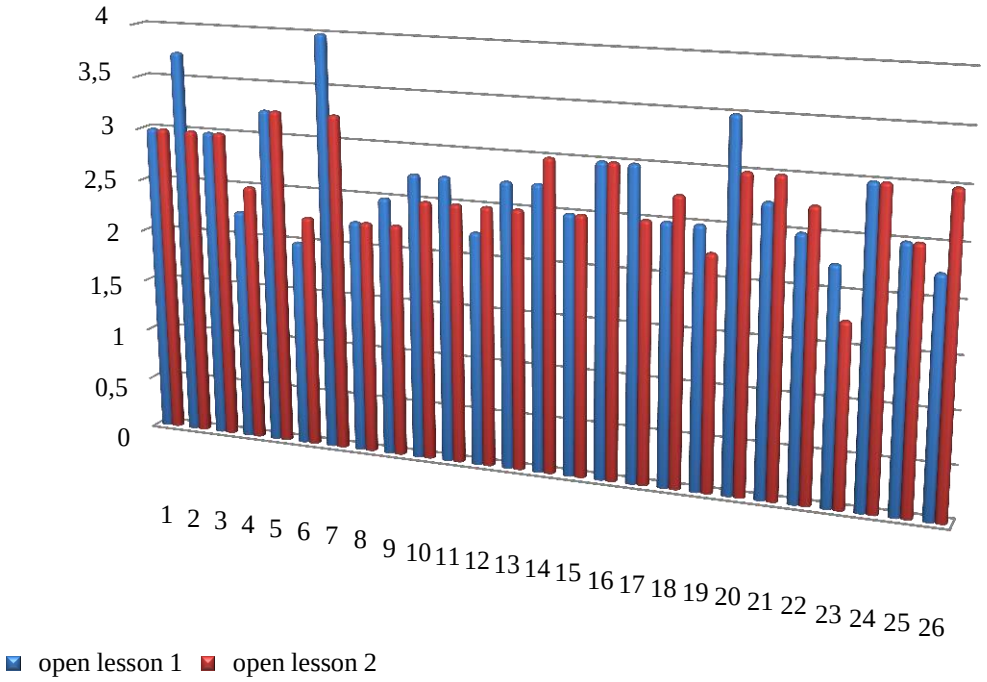

Figure 3. Chart indicators science process skills of each student

The graph in Figure 3 above, explains that the x-axis is the name of the student, while the y-axis is the indicator of science process skills. In the graph above shows the majority of students has increased indicators of science process skills for learning, although there were some students who do not achieve mastery assessment, with the value of science process skills mastery is> 2.5 according to the Linker scale. Figure 4 below the graphs the average - average overall science process skills 4 indicators were observed during the study

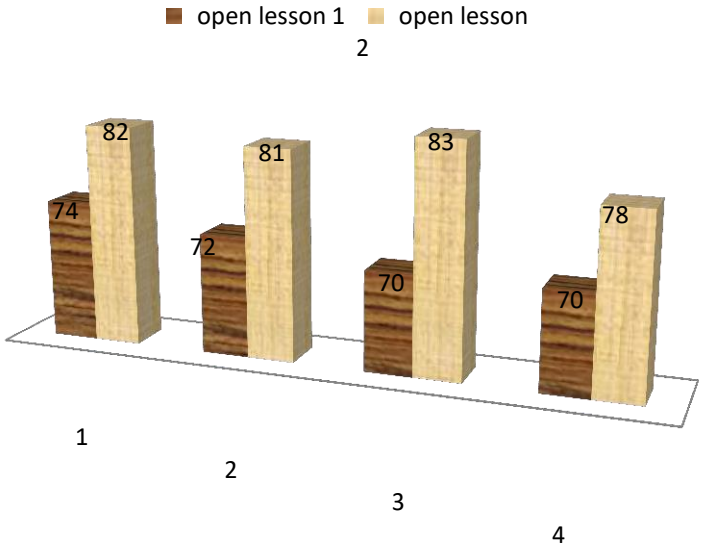

Figure 4. The average indicator of students' science process skills

4 CONCLUSION

The results of the study the average indicator of science process skills in the open class 1 is 2.8 (good) and the open class 2 is 3.1 (good). Based on the research that the use of the wave kit learning based practical laboratory effectively improve indicators skills of the student learning process, such as 1) Viewing Using the Five Senses, 2) Identifying and Using the tools, materials and resources to be used in the lab / learning, 3) Read, understand and perform procedures of work at laboratory, 4) Communicating, writing, ideas - the basic idea of the findings / observations.

5 ACKNOWLEDGEMENTS

Thanks are addressed to the Head of SMAN 10 Jambi City, Mr. Samuri, S. Pd. which has provided the opportunity to conduct research in this school, and the teachers SMAN 10 Jambi City who have taken the time to become an observer in the classroom learning.

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