

Application of the Sea Approach (Starter Experiment Approach) in Practicum Activities to Improve Academic Skills Students' in Biology Lessons At SMA Negeri 1 Banyuwangi

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Abstract

The results of preliminary observations on Biology practicum learning at SMA Negeri 1 Banyuwangi show that 80% of students have (academic skills academic skills) below 75. Based on these problems, efforts need to be made to improve (academic skills academic skills). students in biology practicum at SMA Negeri 1 Banyuwangi. This can be done by applying the SEA approach (Starter Experiment Approach). This research is a type of classroom action research conducted in two cycles. In general, the flow of the implementation of classroom research includes the stages of action planning, implementation of actions, observation and reflection of actions. From the research results, it is known that practicum learning by applying the SEA (Starter Experiment Approach) can improve (academic skills academic skills students') in biology practicum at SMA Negeri 1 Banyuwangi. There was an increase in the number of students who obtained practicum scores above 75 from the first cycle to the second cycle, where in the first cycle there were 78% of students who obtained above 75 and increased in the second cycle to 82%. This shows that learning SEA (Starter Experiment Approach) has a real impact on increasing student scores in terms of academic skills in learning biology practicum at SMA Negeri 1 Banyuwangi.

Keywords

SEA approach; practicum; academic skill



I. Introduction

One of the problems faced by the world of education is the low quality of the learning process. In the learning process, students are less encouraged to develop the ability to think. The learning process in the classroom is more directed to the ability of students to memorize information, where students are forced to remember and hoard various information without being required to understand the information they remember in depth. This causes students to be theoretically proficient but unable to have meaningful knowledge to be applied in everyday life.

Education is considered to have a very important role in promoting the civilization of a nation. Good quality education can encourage the creation of a quality society, creative and productive until finally able to achieve welfare. Through this national education system, the government should be able to ensure equal distribution of educational opportunities, as well as the relevance and efficiency of education management to face challenges in line with the changing demands of local, national and global life. The budget allocation system for education in Indonesia is heavily influenced by government policies. (Saputra, A. 2018)

Biology practical learning at SMA Negeri 1 Banyuwangi has been carried out well, it's just that when faced with complex problems that require creativity, systematic thinking, courage to express opinions, and performance skills, it appears that students' abilities are

still very lacking. Based on observations of students taking biology practicum at SMA Negeri 1 Banyuwangi, it appears that students have not achieved maximum learning outcomes. The low academic skill of students is a problem in learning. This is indicated by the condition that 80% of students have scores below 75.

Learning using the SEA (Starter Experiment Approach Approach) can train students to learn actively (Saputra, 2017). According to Agustini (2019) approach, experimental starter (Starter Experiment Approach) is an approach in which there is a process of learning the initial experiments, observation, hypothesis formulation, verification, application of concepts and evaluation activities. Thus, students will define their own concepts in accordance with the results obtained during the learning process, which in turn is expected to Academic skills (academic proficiency) students can grow and thrive.

According to Suratno (2005), learning with the SEA approach is able to improve the quality of biology learning in class II C SMP Negeri 2 Jember with an indication that there is an increase in motivation, learning activities, levels of fun and student learning outcomes. With the SEA approach, students gain direct experience in a real learning environment, are actively involved in developing scientific thinking concepts, are motivated to learn, and can apply concepts in their lives. In addition, this approach is also able to build academic skills, social skills and psychomotor skills students'.

Many factors affect student learning outcomes, one of which is influenced by the learning model used. The inaccuracy of the learning model used has an impact on the low quality and success of student learning (Slameto, 2010). The teacher acts as a facilitator and students are expected to be able to find their own concepts independently. In learning Biology or Science, experience through the scientific method is a stage that must be passed. According to Suyitno (2002), the scientific method includes observations, problem formulation, hypotheses, experiments and conclusions. So that if this stage is passed well, then Academic skills that instill knowledge, skills and attitudes to love living things can be achieved. Education is one way to produce quality Human Resources (HR) with experience changes in knowledge, skills and attitudes. These changes can be a capital to improve selfcompetence in facing the era of globalization that always undergoes the change (Sitorus et al, 2019). According to Astuti et al (2019) Education is an obligation of every human being that must be pursued to hold responsibilities and try to produce progress in knowledge and experience for the lives of every individual.

In order to solve the problems above, it is necessary to conduct classroom action research on biology practicum activities in SMA by applying the SEA (Starter Experiment Approach Approach) to improve the skills of academic students at SMA Negeri 1 Banyuwangi. aspect is Academic skill seen through the ability to formulate problems, look for data, hypotheses, observations and conclude. The success target is seen from 80% of the number of students sampled who have scored Academic skill above 75.

II. Research Methods

This research is a type of classroom action research conducted in two cycles. In general, the flow of classroom research includes the stages of action planning, implementation of actions, observation and reflection of actions (Soesatyo, 2017). This classroom action research was conducted in collaboration with the class XI biology teacher at SMA Negeri 1 Banyuwangi and the researcher as an observer in the learning process. This research was designed with two cycles (cycle I and cycle II). The location of this classroom action research was taken using purposive sampling technique. Purposive

sampling is the determination of the area that has been deliberately determined in advance. This class action research was carried out in class XI 1 of SMA Negeri 1 Banyuwangi.

Data analysis Academic skills were analyzed by descriptive statistical analysis. Academic skills in the form of results reports with assessed aspects: the ability to express problems; search for data through reference materials; formulate hypotheses; carry out experiments; draw conclusions (Mamu, 2014). These data were analyzed by calculating the percentage, then interpreted with qualitative sentences to determine the quality of academic skills student learning. There is also data supporting academic skills in the form of assessment of cognitive and affective aspects.

Students are considered complete learning if they have an score academic skill greater than or equal to 75. The study is said to be successful if the number of students who have an score academic skill greater than or equal to 75 reaches 80% of the total sample. To assess the percentage of student learning completeness used the following formula.

$$\text{Complete Learning} = x \ 100\%$$

III. Results and Discussion

From the results of observations during learning SEA (*Starter Experimental Approach*) and recapitulation of scores *academic skill* in cycle I and cycle II, it can be seen that students' completeness is in table 1.

Table 1. Summary of Mastery *Academic skill*

| Cycle | mastery | Category |
|----------|---------|-----------|
| Cycle I | 78% | Good |
| Cycle II | 82% | Excellent |

The results of the recapitulation show that the *Starter Experimental Approach* is able to improve students' academic abilities. This is in accordance with the opinion of Palendag (2004) which says that the learning *Starter Experimental Approach* helps the development of students' reasoning and is effectively applied in an effort to develop a positive attitude towards learning Biology.

During the SEA (learning process, the *Starter Experimental Approach*) researcher always communicates the learning objectives clearly so that students develop active and creative thinking patterns and control every activity that must be carried out during practicum activities. At the beginning of the Cycle I meeting based on information from the observer, the students were good enough to listen to every step the teacher did in delivering the material.

Observations at meeting 2 most of the students were still awkward to do practicum, seen in operating the microscope they were still hesitant because they were not used to it. In the process of slicing the prepared material, it takes quite a long time and must be repeated several times because the results of the incision cannot be observed on a microscope according to theory.

At meeting 3, each individual in the group presented the results of their observations. Students are able to express findings from observations and can relate theory to real situations, but there are 2 students who cannot do well. Based on the results of the reflection of the first cycle, improvements need to be made to be applied to the second cycle, where the teacher's role is maximized to help solve problems during practical

activities, and involve students more in real problems encountered by way of discussion. Cycle II shows that the atmosphere of practicum activities looks more conducive and students are motivated to be curious about practicum material. Students try to make and find their own preparation objects with the theory they have obtained at the previous meeting.

From the results of observations during SEA learning (*Starter Experimental Approach*) data obtained an increase in *Academic skills*, it can be seen from the SEA learning indicators which can be seen in table 2.

Table 2. Average valueIndicators *skill Academic* per cycle

| No | Indicator | Average Value | | Rating/ Value |
|---------------|--------------------------------------|---------------|----------|---------------|
| | | Cycle I | Cycle II | |
| 1. | The ability to express the problem | 71.6 | 78 | 8.21 |
| 2. | mencari data via reference materials | 71.1 | 75 | 5.2 |
| 3. | Formulating hypotheses, | 71.3 | 76 | 4.7 |
| 4. | How it works | 77 | 77 | - |
| 5. | Observation results | 74 | 78 | 4.0 |
| 6. | Drawing conclusions | 74 | 77 | 3.0 |
| Average value | | 73 | 77 | 4.0 |

From table 2, it can be seen that for the 1st indicator, namely formulating the problem, the average value increased by 8.21 from cycle I to cycle II. The increase in the ability to express this problem occurs because there is an emphasis from the teacher regarding the delivery of background writing, so that students are able to express the basic foundation which is finally able to bring up problems that must be solved.

In the second indicator of looking for reference materials there is an increase in the value of 5.2. The improvement in this indicator is shown by students being more creative in finding reference materials in the library and accessing the internet, so that in the bibliography section there is an addition to the reference list.

In the 3rd indicator, continuing the hypothesis, there is an increase in the value of 4.7. This increase is the impact of the teacher's efforts in motivating students in finding references, so that they are able to predict the possibilities that will be found in practical activities. In the 4th indicator of how to work there is no improvement, students have not been able to improve development in the way of working, so it is still in accordance with the procedures contained in the practicum guide book. From the observed indicators there is an increase in the value of 4, this increase occurs because during practicum activities the teacher conditions practicum activities by providing material and work procedures. In the implementation of practicum students are always given motivation so that there is a discussion process in groups when making observations.

The indicator for drawing conclusions has increased in value by 4, this increase is the impact of having a good understanding and reference on practical material, so that the conclusions put forward by students are in accordance with the objectives and hypotheses

formulated. Based on the results of the study the average value data *Academic skills* in biology lab indicate that learning SEA (*Starter Experiment Approach*) can improve *skills Academic* the practical Biology I class XI student at SMAN 1 Banyuwangi. This is in accordance with the theory expressed by Dewi (2014) that learning SEA (*Starter Experimental Approach*) is able to improve skills in designing, implementing, and reporting scientific research results; the ability to write scientific papers; the ability to transfer and apply research results to solve problems, both in the form of processes and products.

In addition to studies in the realm of *academic skills*, discussions were also carried out on supporting data about students' cognitive and affective aspects. The cognitive aspect during the learning process shows that the student's completeness data in the first cycle is 68% and in the second cycle it increases to 96%. The results of the recapitulation of cognitive aspects were carried out through a written test at the end of each cycle. There is an increase in student mastery by 26%, it can be seen in table 3.

Table 3. Completeness Recapitulation of Cognitive Aspects of

| Cycle | Completeness | Category |
|----------|--------------|-----------|
| Cycle I | 68 % | Enough |
| Cycle II | 96 % | Very good |

This excellent improvement in cognitive aspects is the impact of the teacher's efforts to increase the intensity of discussion during the process of practicum activities. This is also supported by the willingness of students to seek answers to questions given by the teacher before the implementation of the practicum.

Based on the results of the recapitulation of affective analysis values in table 4, it is known that the first cycle and second cycle showed very good criteria. This is also supported by observations which show that students who carry out practical activities have a high attendance rate, are not late, and are orderly when carrying out practical activities. High self-confidence is shown by students by asking when there are things that are not understood during the discussion. If there is information from other literature, students will present it as a comparison, so that the discussion process goes well. Students are confident in conveying their understanding of concepts in detail and critically in responding to problems that are considered not in accordance with the concepts they understand.

Table 4. Recapitulation of Completion of Affective Aspects of

| Cycle | Value Analysis | Category |
|----------|----------------|-----------|
| Cycle I | 93 % | Very Good |
| Cycle II | 96 % | Very Good |

Based on the data above, it can be concluded that SEA learning can attract students' interest in carrying out biology practicum activities, increase activity and creativity, get used to thinking and acting scientifically, showing the relationship between theory and the real environment so that practicum material becomes fun and not boring. If analyzed as a whole 3 aspects, the recapitulation is obtained as follows:

Table 5. Recapitulation of Completeness *Academic Skills*, Cognitive, and Affective

| Cycle | Academic Skills | Cognitive | Affective | Average |
|----------|-----------------|-----------|-----------|---------|
| Cycle I | 78% | 68 % | 93 % | 79.7 % |
| Cycle II | 82 % | 96 % | 96 % | 91.3% |

SEA learning in cycle II in biology practicum learning is of very high quality, where from the three aspects the results exceed the expected target and have an average completeness of 91.3%. The highest increase in completeness occurred in the cognitive aspect by 26%. Based on the results of observations, there were indeed changes in student attitudes in cycle II, students were more motivated to get the best observations and maximize the results of reports from all indicators, it was seen that there was an increase in students' effectiveness by 3%.

The success of increasing mastery *academic skills can be* students seen from the first cycle by 68%, increasing in the second cycle to 85%. This happened after a discussion based on the results of the reflection in the first cycle and used for improvement in the activities in the second cycle. In the process of practicum activities there is good collaboration between teachers and students, and the class atmosphere is very conducive. In practicum activities, students are motivated to be curious about practicum material. Students try to make and find their own objects in the preparation with the theory they have obtained at the previous meeting.

In accordance with the opinion of Suratno (2006) SEA learning (*Starter Experiment Approach*) is able to improve students' abilities in formulating problems, formulating hypotheses and concluding abilities as well as being able to develop scientific thinking concepts and be able to apply concepts in life.

IV. Conclusion

From the results of the study it is known that learning using the SEA approach can improve academic skills (Academic skills) in biology practicum activities for class XI 1 students at SMA Negeri 1 Banyuwangi, where there is an increase in student mastery in cycle I reaching 78% and increasing at cycle II to 82%.

SEA learning can be used as an alternative to biology practicum learning with the condition that educators must arrange practicum activities according to the abilities and habits of students. So that students will be motivated actively, critically and creatively in practical activities.

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