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Optimizing respiratory system learning: The role of simple practicum teaching aids in improving cognitive and science process skills

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abstract

Learning that leads to the achievement of cognitive aspects and science process skills needs to be improved. This research aims to determine the effectiveness of practice-based Biology learning on cognitive learning outcomes, science process skills, and student responses to respiratory system material. The research was conducted at one of the high schools in Demak Regency. The approach used in this research is a quantitative approach using experimental methods. The research design used was a non-equivalent control group. Sampling was carried out using purposive sampling. The sample in this research was all 58 class XI Science students. Data was collected by providing test questions and observation sheets and distributing questionnaires. The research results show that applying simple respiratory system training aids greatly improves cognitive learning outcomes. Students construct knowledge through experience. Applying simple, practical teaching aids for the respiratory system effectively develops students' science process skills. Students care about carrying out the science process by referring to worksheets adapted to the syntax of learning practices. Students' responses to applying practical teaching aids to the simple respiratory system were very good. Using simple props in demonstrations can help students understand difficult and abstract material.

1. Introduction

The development of science and technology from year to year is increasing rapidly. Every country is competing to create the latest inventions in order to be able to compete in the era of society 5.0. This situation requires students to become qualified, skilled, creative and highly competitive human beings in order to be able to keep up with the times. Students are expected to master 21st century skills in order to compete in this sophisticated era. 21st century skills that must be mastered include the 4C (creativity, critical thinking, communication, collaboration) (Sari & Trisnawati, 2019; Septikasari & Frasandy, 2018). These skills can be obtained through the learning process that is within the scope of the school.

Efforts have been made by the government to improve skills, namely establishing the 2013 curriculum (Jalil et al., 2016). The implementation of the 2013 curriculum is designed to train students to be responsive to social phenomena and changes. Students are also trained to explore their potential so that they can compete and excel in world civilization. Permendikbud No. 65 of 2013 concerning Process Standards, explains that the 2013 curriculum applies a scientific approach as a reference in learning. This approach must be supported by various appropriate methods, such as disclosure-based learning methods (Discovery Learning), research-based learning methods (Inquiry Learning), and project-based learning methods (Project Based Learning) (Prihadi, 2014). The steps in scientific learning are: (1) observing; (2) asking questions; (3) collecting information; (4) reasoning; and (5) communicating (Abidin, 2014; Istikomah & Jana, 2018). Students are expected to be motivated to observe surrounding phenomena so that they can hone science process skills in students. This condition should train students to be more independent in collecting information (Asyhari & Hartati, 2015; Yofamella & Taufik, 2023).

One of the implementations of the scientific approach in learning is practicum. Practicum is an activity of applying the theory that has been obtained during the learning process in class. Practicum activities are considered very important because science does not only explain theories, concepts and facts but there needs to be a construction of knowledge and giving meaning through a real experience. Djajadisastra explained that there are 3 stages carried out in practicum learning, namely: (1) the preparation stage, the teacher checks and prepares all practicum needs and prepares practicum instructions for students; (2) the implementation stage, the teacher directs and supervises the practicum while observing the students' scientific attitude; (3) the follow-up stage, the teacher with the help of students checks and tidy up the tools and materials that have been used during practicum activities (Ulfa, 2016). After the practicum, students are asked to make a report on the results of the practicum and discuss the problems that occur during the practicum based on the worksheets that have been distributed by the teacher.

Dwijayanti and Ningsih stated that the practicum method was effective in improving science process skills because it contained aspects of psychomotor skills, cognitive skills and affective skills. Science process skills are obtained by students when carrying out an experiment (Sari et al., 2019). According to Trianto, science process skills have several roles, namely: training students in developing their creativity, honing students in innovation, giving satisfaction to an invention, improving memory, and helping students understand science concepts so that it will have an impact on improving cognitive learning outcomes in students (Suyaningsih, 2017; Lepiyanto, 2017).

Cognitive learning outcomes are a description of the level of mastery of students in a subject related to knowledge or theory and intellectual skills in understanding facts, procedural patterns and concepts (Subekti and Ariswan, 2019). The quality of student learning outcomes is influenced by several factors, namely internal factors, external factors, and learning approach factors. Internal factors consist of physiological aspects and psychological aspects in students. External factors include the social and non-social environment of students. The learning approach factor is the suitability of the learning strategies used by students in supporting the learning process (Rijal & Bachtiar, 2015). According to Bloom's revised taxonomy, cognitive aspects are divided into six levels consisting of remembering, understanding, applying, analyzing, evaluating, and creating (Majid, 2004).

Based on observations, the learning pattern that occurs often places the teacher as the main actor in the learning class, so that students tend to be passive because they only absorb the knowledge taught by the teacher without developing creative ideas. Teachers too often use monotonous learning methods and lack of action learning that can hone students' skills so that cognitive learning outcomes are less than satisfactory. The science process skills possessed by students are also

relatively low because they have never carried out experimental actions that are able to hone science process skills (Jayawardana, 2017; Aswadin et al., 2021).

Practicum activities in schools often experience several obstacles, including the location of the laboratory space which is far from the classroom, many practicum tools are damaged, and materials for practicum are not available. One of the reasons behind this problem is that there is no special allocation fund intended for laboratory development and there are no laboratory staff in charge of maintaining the laboratory. Teachers often replace practicum activities with lecture learning, as a result, students lose the opportunity to get a fun practicum experience. The results of previous research show that the practicum method is able to achieve science material achievement in class XI (Sijabat, 2023). The absence of practicum activities makes the inculcation of science process skills not carried out. Students will experience a decrease in cognitive learning outcomes because practicum will make lessons more meaningful, easy to understand and support understanding of abstract science material so that it needs to be concreted (Lafenasti, 2018; Anisa et al., 2020).

The material that will be tested in this study is the respiratory system. The reason for choosing the material is because the respiratory system is a material that is classified as difficult because what is taught is abstract. The teaching methods carried out by teachers are still rarely using practicum-based methods so that students have difficulty in studying the material. The material for the respiratory system also contains complex concepts and in order to make it easier for students to understand it requires direct experience through scientific activities. The purpose of this study was to determine the effectiveness of practicum-based Biology learning on cognitive learning outcomes, science process skills, and student responses to the respiratory system material.

2. Method

This research was conducted from 27 October 2021 to 28 March 2022 in one of the senior high schools in Demak Regency. The approach used in this study is a quantitative approach using experimental methods. The research design used is a non-equivalent control group. Before the treatment was carried out, the experimental and control groups both took pretest scores, then the experimental class was subjected to practicum-based learning, while the control class received learning using the lecture method. After completion, the second class takes the post value.

Sampling was carried out using purposive. The sample in this study were all students of class XI science, totaling 58 students. Based on these results, obtained class XI IPA 1 as the control class while XI IPA 2 as the experimental class. The experimental class was treated with the application of practicum-based Biology learning, while in the control class the learning process used the lecture method. The data collection method used was the provision of test instruments, observation sheets, and distributing questionnaires. The test instrument aims to determine the achievement of students' cognitive learning outcomes before and after the treatment. Observation sheets are used to determine the science process skills possessed by students during practicum activities. Meanwhile, the questionnaire was used to find out students' responses to the application of simple practicum props for respiratory system. Earning outcome is taken with 20 valid multiple choice questions. Science process skills data consists of 10 indicators, namely observing, grouping, interpreting, predicting, asking questions, hypothesizing, planning experiments, using tools and materials, applying concepts, and communicating (Asmorowati et al., 2021). Learning outcomes data were analyzed using hypothesis testing (independent t-test) and N-gain test. While the observation sheet data and response questionnaires were analyzed using descriptive percentage analysis. The test items tested consisted of 40 multiple choice questions with 53 students as respondents. The results of the calculation of the validity of the test instrument are presented in Table 1 using the SPSS application.

Table 1. Test the validity of the test instrument

No.	Item	Description	Total
1.	1, 3, 6, 7, 9, 10, 11, 12, 17, 19, 20, 21, 24, 25, 26, 31, 33, 34, 37, 39	Valid	20
2.	2, 4, 5, 8, 13, 14, 15, 16, 18, 22, 23, 27, 28, 29, 30, 32, 35, 36, 38, 40	Invalid	20

An item is declared valid if the significance value is ≤ 0.05. Valid in research states the degree of accuracy of an instrument in measuring what is being measured (Priyatno, 2018). Based on the table above, 20 valid items are obtained with item details number 1, 3, 6, 7, 9, 10, 11, 12, 17, 19, 20, 21, 24, 25, 26, 31, 33, 34, 37, and 39. Thus, the 20 valid items will be used for research.

The observation sheet is used to determine the science process skills possessed by students during the practicum activities. The following is the result of calculating the validity test of the observation sheet using the SPSS application:

Table 2. Test the validity of the observation sheet

No.	Validator	Score	Interpretation	Comment
1.	Validator 1	90.63 %	Very valid	a. The word "Item" is changed to "Aitem" b. Beginning of the sentence with a capital letter c. The word "indera" is changed to "panca indera"
2.	Validator 2	81.25%	Very valid	a. It is better for each indicator to have the same scale
3.	Validator 3	84.38%	Very valid	a. The wors "dilaksanakan" in the hint aspect is changed to "digunakan"
	Mean	85.42%	Very valid	

Table 2 presents the results of expert validation and several inputs for improving the observation sheet. The first and third validators provide input related to writing. The previous instrument still had a lot of errors in writing and there was a choice of words that were still not right. Therefore, after getting some input from the validator, the instrument was repaired again according to the validator's directions. The second validator provides input that each indicator should have the same score. This is intended to facilitate the assessment. Initially, each indicator has a different maximum score. After getting input from the validator, the instrument was repaired again by equalizing the scoring on the indicator part of the instrument. For the 10 existing indicators, the scoring scores are equated with a maximum of 3 scores for each indicator to make the assessment easier.

The results of the assessment of the three validators above obtained an average value of 85.42%. A validity score of >81% indicates that the instrument is very valid (Arikunto, 2013). Thus, the observation sheet in this study was stated to be very valid so that it was feasible to be used as a research instrument. The use of a questionnaire in this study aims to determine student responses to the application of simple practicum props for respiratory system. The following is the result of calculating the validity test of the observation sheet using the SPSS application:

Table 3. Test the validity of the questionnaire instrument

No.	Validator	Description	Comment
1.	Validator 1	Valid	a. Add the sentences "*keterampilan proses sains*" in some item
2.	Validator 2	Valid	a. Add a scoring grid b. Revision on some word usage
3.	Validator 3	Valid	a. Valid without revision

Table 3 presents the results of expert validation with several improvements. The first validator provided input to add the sentence "science process skills" to several items. This aims to further clarify the aspects of the skills being studied. The previous questionnaire did not include this sentence. After being given input by the first validator, the questionnaire was revised again by adding the sentence "keterampilan proses sains" to several statements. The second validator suggested adding a grid as a guide for scoring and revising some of the word usage. After getting input from the second validator, the questionnaire was again improved by adding a grid that was used as a reference when conducting an assessment. In addition, the questionnaire also improved its writing and use of sentences. Example: the sentence "Pembelajaran berbasis praktikum" is changed to "pembelajaran metode praktikum". The third validator did not provide any input regarding the questionnaire instrument. It is possible that this is because the questionnaire has undergone several improvements and directions from the previous validator. The third validator concluded that the questionnaire was declared valid without revision. In this study, the cognitive learning outcomes test instrument was tested using the Split-Half method because the data to be tested was binary data. Meanwhile, testing the observation sheets and student response questionnaires uses the Cronbach's Alpha method because the data to be tested is non-binary data. The reliability results of the cognitive test instrument are presented in Table 4.

Table 4. Test the reliability of the test instrument

No	Type of Instrument	Analytical Method	Total items	Reliability
1.	Multiple choice questions	Split-Half	20	0,873
2.	Observation sheets	Cronbach' Alpha	10	0,730
3.	Student response questionnaires	Cronbach's Alpha	20	0,916

The results of the validity test of multiple choice questions obtained 20 items which were declared valid. These items were then analyzed for reliability testing. This reliability test is used to determine the feasibility of an instrument before it is used for research. Based on the table above, the reliability value for the instrument questions was 0.873, the observation sheet reliability was 0.730, and the student response questionnaire reliability was 0.916. The instrument is declared reliable if the score from the analysis results reaches > 0.60 (Budiastuti & Bandur, 2018). So, it can be concluded that all instruments are said to be reliable because the reliability analysis score is > 0.60. Thus, all instruments were declared fit for use in research.

3. Result and Discussion

Analysis of Student Learning Outcome Data

The learning process takes place by applying the constructivism method. This method trains students to explore knowledge independently and then develops the knowledge concepts they acquire through learning experiences (Saputra et al., 2016). Based on the research results, data on student learning outcomes in the experimental class is shown in Table 5

Table 5. Student pretest posttest data

	N	Min	Max	Mean	Std. Deviation
Experimental pretest	28	20	65	50	11.13
Experimental postest	28	60	95	82.67	8.33
Control pretest	30	40	70	54.83	8.75
Control post	30	60	85	76.50	5.59

From the calculation results, the average value of students experienced a number of increases. The data obtained showed a significant increase in value, especially in the experimental class. The increase in value indicates if there is an effect of the application of practicum learning on the cognitive learning outcomes of students. The hypothesis test used in this study is the Independent t-test . The purpose of using the t-test is to compare the average of the experimental class with the control class.

Table 6. Independent t-test results

t-count	t table	Sig. (2-tailed)	df
3,336	2,003	0.002	56

Based on the table 6, from 56 respondents obtained the value of sig. (2-tailed) is 0.002 with t count 3.336 and t table 2.003. According to Wiratna, if the value of sig. (2-tailed) < 0.05 then Ho is rejected which means there is a difference in the average value between the two samples (Sujarweni, 2021). Thus, it can be concluded that there is a difference in the average value of learning outcomes between the experimental class and the control class. This is because the experimental class is treated in the form of the application of practicum-based Biology learning while in the control class learning only uses the lecture method. According to Kurniawati et al. (2015), during practicum learning students will experience direct involvement in observing the symptoms and processes of science, developing scientific thinking skills, instilling scientific attitudes and identifying problem solving through the scientific method. Practicum activities will also make students believe in facts more than just listening to teacher explanations or reading books, adding more experience, developing science process skills and sharpening memory on a material (Harlen, 2010; Aydogyu, 2015). During practicum learning, students also look more enthusiastic and enthusiastic about participating in learning. They directly said that practicum learning was very fun, not boring, and made it easier for them to understand the material because they were directly involved in the process of proving the theory. This is what causes an increase in the value of student learning outcomes in the experimental class. N-gain test was performed to determine the increase before and after treatment. Based on the results of data processing using SPSS version 20.0, the following results were obtained:

Table 7. N-gain test results

No.	Class	Average	Standard Deviation	Minimum Value	Maximum Value	Range
1.	Experiment	64.03	19.33	12.50	91.67	79.17
2.	Control	46.63	13.06	27.27	72.73	45.45

Based on the table 7, the data obtained regarding the results of the N-gain test for student learning outcomes in the experimental class, obtained an average N-gain value of 64.03 with a standard deviation of 19.33; minimum value 12.50; maximum value 91.67; and a range of 79.17.

According to Nurussaniah et al. (2017), the average N-gain with a score of 56 – 75 is included in the quite effective category. Thus, it can be concluded that the application of practicum-based Biology learning is quite effective in improving students' cognitive learning outcomes.

Discussion of Student Learning Outcomes Data

Based on Table 7 regarding hypothesis testing, it can be concluded that there are differences in the average learning outcomes of students between the experimental class and the control class. Table 5 and Table 6 regarding data on students' pre-test and post-test scores, it was found that the average learning outcomes of the experimental class were higher than those of the control class. This is because the experimental class was given treatment in the form of applying lab-based Biology learning while in the control class learning only used the lecture method. According to Lilis et al., during practicum learning students will experience direct involvement in observing scientific phenomena and processes, developing scientific thinking skills, instilling a scientific attitude and identifying problem solving through the scientific method. Practicum activities will also make students believe in facts more than just listening to teacher explanations or reading books, add more experience, develop science process skills and sharpen memory on a material. During practicum learning, students also looked more enthusiastic and eager to take part in learning. They directly said that practicum learning was very fun, not boring, and made it easier for them to understand the material because they were directly involved in the process of proving the theory. That is what causes an increase in the value of student learning outcomes in the experimental class. The results of the N-gain test in Table 4.12 also state that the application of lab-based Biology learning is quite effective in improving students' cognitive learning outcomes.

The results of this study are in line with research conducted by Kasmawati et al. (2015) entitled The Effect of Practicum Methods on Student Learning Outcomes on Growth and Development Material in Class XII IPA SMAN 11 Sinjai. The results of the study obtained an average score of experimental class learning outcomes of 83.96 while the average control class score 71.75. Thus, it can be concluded that there is an influence of the practicum method on student learning outcomes

Analysis of Students' Science Process Skills

Process skills are physical and mental skills related to fundamental abilities that are owned, mastered and applied in a scientific activity. Process skills are needed by students to apply the concepts, principles and laws of science (Lepiyanto, 2017). According to Rustaman, the following types/aspects of science process skills and the indicators contained there in:

Table 8. Aspects of science process skills and their indicators

No.	Aspect of Science Process Skills	Indicators
1.	Observing	a. Use as many senses as possible b. Gather relevant facts
2.	Classifying	a. Record each observation separately b. Look for differences and similarities c. Contrasting features d. Compare e. Looking for the basis of grouping or classification
3.	Interpreting	a. Correlate the results of observations b. Finding patterns/regularities in a series of observations c. Conclude

No.	Aspect of Science Process Skills	Indicators
4.	Predicting	a. Using patterns of observations b. State what might happen in situations that have not been observed
5.	Asking questions	a. Ask what, how, and why b. Ask for an explanation c. Ask questions with a hypothetical background
6.	Hypothesizing	a. Recognizing that there is more than one possible explanation for an event b. Recognizing that an explanation needs to be verified in order to obtain more evidence or to do a problem solving
7.	Planning experiment	a. Determine the tools/materials/sources to be used b. Determining variables or determinants c. Determine what will be measured, observed, and recorded d. Define work steps
8.	Using tools and materials	a. Using tools and materials b. Know the reasons for using tools and materials c. Know how to use tools and materials
9.	Applying concept	a. Apply the concepts that have been learned in new situations b. Using concepts from new experiences to explain what is happening c. Be able to identify concepts that will be used as a reference for experiments
10.	Communicating	a. Prepare and submit reports systematically b. Explain the results of an experiment or research c. Discuss the results of activities

The scientific process skills instrument in this study was in the form of a observation sheet. The observed skills consist of 10 aspects with three indicators each. The assessment of the observation sheet is carried out by two observers when learning with the practicum method takes place. Based on data analysis , the average value of students' science process skills was 78.30 with a minimum score of 60; maximum value of 95; and standard deviation 8.47. According to Malik (2017), the average skill score ranges from 61% - 80% including in the good skill category. So, it can be concluded that the average experimental class students have science process skills which are in the good category.

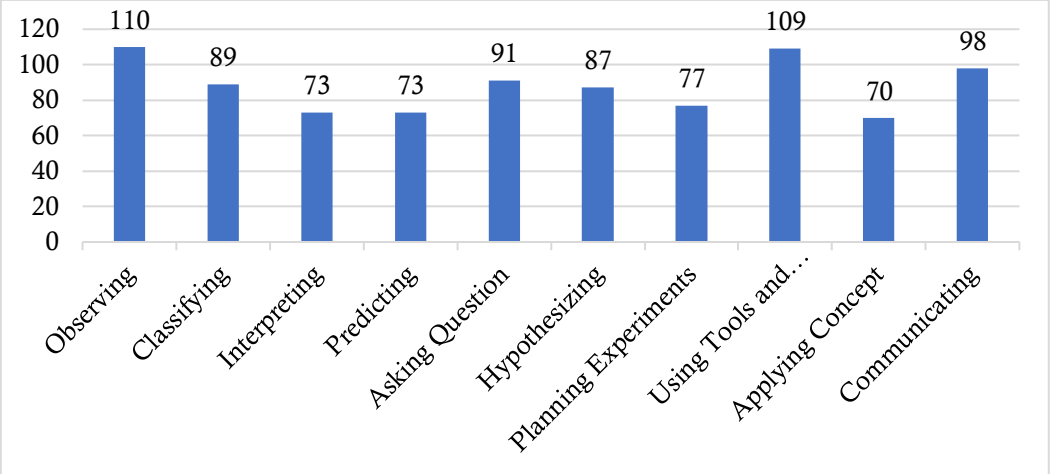

Figure 1. Percentage of students' science process skills

Based on the Figure 1 the percentage of the average results of the ten aspects of science process skills is obtained. The highest percentage of scores is found in observing skills and skills in using tools and materials. Based on Figure 1, students' observing skills get the highest percentage in the very good category. According to Monhardt & Monhardt (2006), the aspect of observing is a basic aspect of science process skills. During science experiment activities in the aspect of observing students will use the various senses they have. This will train students to develop higher order thinking skills (Jones et al., 2003). The indicators observed in this study include maximizing the use of the five senses, observing the practicum stages carefully, and understanding the practicum course. This skill was manifested when they observed the change in the color of the lime water after being blown, the visible change in the color of the glass surface after being blown, and the color of the cotton after being exposed to cigarette smoke. During the practicum, students observe carefully each stage of the experiment so that it is hoped that students will actually get proof of the theory they have studied before. So, it can be concluded that learning with practicum methods is very effective for honing observing skills in students.

Based on the Figure 1, students' skills in using tools and materials are included in the very good category. According to Bundu (2006), classifying skills are skills to sort various object events based on their special properties. Students are said to be skilled if they are able to use tools and materials according to procedures so that they will get accurate results while still paying attention to work safety during scientific activities. In this study, students did not find it difficult to use tools and materials for practicum. This is because the teacher chooses tools and materials that are often found in everyday life so they are easy to apply. The reason for using simple tools and materials is to save costs and students can easily get them. In addition, this is also an alternative form of practicum because the necessary tools and materials are not available in the laboratory. Even though it uses simple tools and materials, it is hoped that it will still be able to support students' understanding of the material to be practiced. When designing teaching aids for how the lungs work students use simple tools and materials such as plastic bottles, rubber, balloons, wax glue, and plasticine. So, it can be concluded that learning with practicum methods is very effective for honing students' skills in using tools and materials.

Based on the Figure 1 there are 6 aspects with good category and 4 aspects with very good skills. Aspects included in the good category are classifying, interpreting, predicting, hypothesizing, planning experiments, and applying concepts. Aspects included in the very good category are observing, asking questions, using tools and materials, and communicating. According to Zulfiani et al. (2009), interpreting skills are students' skills in interpreting the results of observations so that a conclusion can be obtained. Thus, it can be concluded that learning with practicum methods is

effective in developing students' science process skills. The results of this study are in line with research conducted by Sisca et al. (2014) entitled The Effectiveness of Practicum-Based Learning on Science Process Skills and Scientific Attitudes of Students. The results showed that the pre-test average was 39.09, the post-test average was 73.85, the N-gain average was 0.16, and the scientific process skills observation average was 81.67 which is included in the high category. Thus, it can be concluded that practicum-based learning is effective in improving students' science process skills and scientific attitudes.

Student Response Questionnaire Analysis

The questionnaire used in this study consisted of 20 statements with 10 favorable statements and 10 unfavorable statements. The criteria for scoring the questionnaire are based on a Likert scale with four categories of answers. Questionnaires were given to all experimental class students after the end of the implementation of practicum-based learning. The distribution of the questionnaire aims to determine the response of students to practicum-based Biology learning. Based on data analysis, the average student response was 80.09 with a minimum score of 60, a maximum value of 95, and a standard deviation of 9.59. According to Riduan (2004), the average value with a percentage of 75% - 100% is included in the very satisfied assessment criteria. So, it can be concluded that practicum-based learning on the respiratory system material received a very satisfied response from students. Thus, the practicum method is considered very appropriate when applied to the respiratory system material.

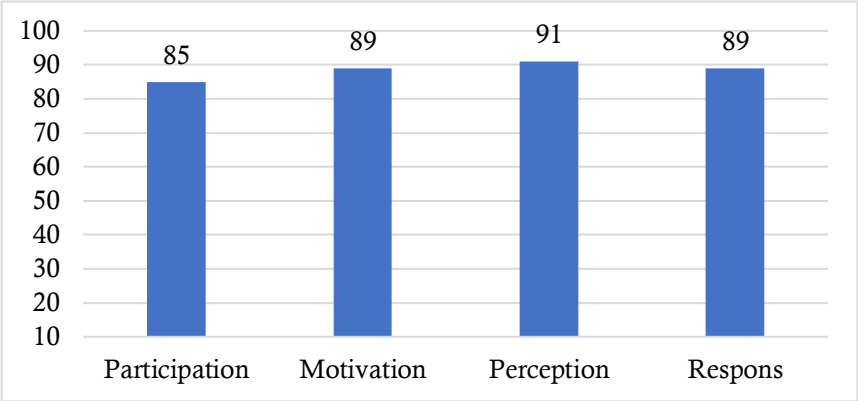

Figure 2. Student responses to practicum learning

Based on the Figure 2 overall students gave a good response in each assessment indicator. The highest score obtained is on the indicator of students' perceptions of practicum learning, while the lowest score is on the indicator of student participation in participating in practicum learning. The first indicator is the participation of students in participating in practicum learning. This participation can be seen from the percentage of student attendance which was originally 93% increased to 100% during the practicum learning schedule. During normal learning, students are often found who are late for class for various reasons. However, when the practicum learning schedule they have all prepared in class. All tools and materials have been prepared without waiting for instructions from the teacher. There are even some who bring extra material in order to anticipate failure in the practicum. Laboratory coats are immediately worn with self-awareness. They seemed very enthusiastic and enthusiastic about participating in practicum learning.

The second indicator is the motivation of students in participating in learning. Almost all students are very interested in the practicum activities. This is evidenced by their activeness during the practicum. When experimenting, not a few of them experienced several obstacles. Even so, they are still enthusiastic about trying again and trying their best to obtain accurate data. From this,

it can be seen that the science process skills of students in carrying out practicum activities. In addition, the scientific attitude of students in responding to various problems is also seen.

The third indicator is the students' perception of practicum learning. Almost all students gave good responses to practicum learning. They think that practicum activities are very fun and not boring. Practicum activities are referred to as learning that should be done often so that they do not feel bored with a material. In addition, they also stated that the practicum activities carried out were relatively simple because they used materials that were easily available but could facilitate students in understanding abstract respiratory system material.

The fourth indicator is the response of students to practicum learning. During the practicum, the students gave a very good response. They look very enthusiastic and active in learning. This can be seen from their seriousness in carrying out the practicum stages that have been listed in the worksheet. All students become more active and able to work together in groups. Some students who are often sleepy when learning, also seem enthusiastic about doing experiments. During the practicum, students are also trained to develop their scientific process skills through the implementation of the stages of practicum activities. So, it can be concluded that based on the response questionnaires that have been distributed, a very good response was obtained from the students. They stated that the responses were categorized as satisfied and very satisfied with the practicum method that had been applied. The results of this study are in line with the research conducted by Murti et al. (2014), which stated that practicum-based learning received a very good response in plant anatomy lectures.

4. Conclusion

Based on the results of data analysis, it can be concluded that the application of simple practicum props for respiratory system is very effective on cognitive learning outcomes because it tries to construct knowledge (constructivism) through a real experience. The application of simple practicum props for respiratory system is very effective in developing students' science process skills. This is because students care about carrying out international actions by referring to worksheets that have been adapted to the syntax of learning practicum. The response the application of simple practicum props for respiratory system is very good because this simple demonstration can help them understand difficult and abstract material with easy simple material tools.

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