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The effectiveness of biology learning in the materials of the respiration system based on integrated multimedia character education at SMAN 2 Percut sSi Tuan T.P 2021/2022

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ABSTRACT

This study aims to determine the effectiveness of learning biology on the respiratory system material based on integrated multimedia character education at SMAN 2 Percut Sei Tuan TP 2021/2022. The sample used in this study was one class (40 people). This research is quantitative descriptive. The instruments used to collect data are multiple choice tests and questionnaires. The data collection method used in this study was observation, interviews, questionnaires and tests (multiple choice) as a result of student learning given a score. The percentage of students' learning completeness (80%) or 24 students are said to be complete because they get a score that exceeds the KKM limit and (20%) or 6 students are not complete because the student is not able to get a score above the KKM limit. Thus, it can be concluded that learning biology on the material of the multimedia-based respiratory system integrated character education at SMAN 2 Percut Sei Tuan TP 2021/2022 is quite effective.

Keywords: Respiratory System , Multimedia, Character Education

INTRODUCTION

Biology is one of the basic sciences that determines the progress and development of science and technology, because by studying biology we will have the ability to think logically, systematically and creatively in solving problems. The objectives of teaching Biology include: (1) developing scientific thinking through research and experimentation; (2) develop practical knowledge of Biological methods to solve individual and social life problems; (3) stimulate further studies in the field of Biology and other fields related to Biology, and (4) arouse understanding and affection for living things (Soemarwoto, 1990).

Biology is part of natural science learning so that at the elementary and junior high school levels, biology lessons are combined into science lessons (SCIENCE) while at the high school level this lesson has been devoted separately, namely biology which is part of science enthusiasts or students majoring in Mathematics.

According to Dahar (2011) that "The nature of learning biology has the aim of helping students develop scientific skills in using general reasoning patterns and obtaining scientific biological concepts". To be able to achieve the objectives of learning biology, the learning process is designed to be student-centered.

In the implementation of high school level biology learning on the human respiratory system material, it is still problematic in terms of student learning outcomes. This is evidenced by the results of interviews conducted by researchers with Sabrina Hotnauli Sianipar as a biology teacher at SMA Negeri 2 Percut Sei Tuan class XI-MIPA that "student learning outcomes through daily assessments of learning the human respiratory system are still many who do not complete or do not pass the KKM" . The problem is because students still do not understand the material of the respiratory system.

Other causes that cause students' learning outcomes to have problems with the human respiratory system material are: a). The strategies, teaching factors or learning techniques used are not in accordance with the material being taught (Safrina, 2014). In learning activities, teachers do not use learning media as teaching aids (Hanifah, 2014). The incompatibility of the selection of learning strategies or methods and the application of learning media in the learning process will make students

passive and unenthusiastic about the respiratory system material so that students' learning activities are less or students will feel bored while learning.

To overcome this problem so that it is not sustainable, it is necessary to provide learning media, this is applied to create student interest in the material of the human respiratory system. Multimedia is the use of a computer as a learning medium. Multimedia is not only interpreted as the use of more than one media in learning, but multimedia is more defined as the use of computers that combine text, graphics, animation, audio, images and video by combining links and tools that allow users to navigate, interact and communicate in learning. Suyantiningsih, 2016).

Every time he teaches the teacher must include character values so that learning is active, creative, innovative, fun, and beneficial for the development of the student's character in a better direction. Based on the explanation above, the writer needs to conduct a research entitled "The Effectiveness of Biology Learning on Integrated Multimedia-Based Respiratory System Material at SMAN 2 Percut Sei Tuan TP 2021/2022".

RESEARCH METHOD

This research was conducted at SMA Negeri 2 Percut Sei Tuan, which is located on Jalan Pendidikan Pasar XII, Bandar Klippa Village. The population in this study were all students of class XI MIA SMA Negeri 2 Percut Sei Tuan. The sampling technique was carried out by purposive sampling so that the research sample was class XI MIA 1.

The type of research used is descriptive quantitative research. The data collection method used in this study was observation, interviews, questionnaires and tests (multiple choice) as a result of student learning given a score, the results of student answers obtained from learning outcomes to determine the implementation of biology learning on the material of the human respiratory system.

Data collection tools used are non-test in the form of interviews, questionnaires and tests (multiple choice) as a result of student learning. The instrument in this study was a test instrument on the material of the respiratory system in biology learning. This test instrument aims to determine student learning outcomes. The data obtained were analyzed based on: student learning completeness, mastery of student material, increased learning outcomes (N-Gain Score analysis), presentation of increased learning outcomes (N-Gain Score analysis).

RESULTS AND DISCUSSION

Learning outcomes

Based on the results of the research conducted, it shows that the value of student learning outcomes on the respiratory system material at SMA Negeri 2 Persut Sei Tuan obtained an average score of 82.86, for the highest score of students was 98, while the lowest score of students was 66. The average value of students when given the pre-test was 39.13 and the average score of the students when given the post-test was 82.86 (Table 1).

Table 1 Average, Maximum and Minimum values on

Statistics			
		Pretest	**Posttest**
N	**Valid**	30	30
	Missing	0	0
mean		39.1333	82.8667
Minimum		34.00	66.00
Maximum		50.00	98.00

Student Learning Mastery

The level of completeness of student learning is known from the results of the post-test. In analyzing student learning mastery, there are two things that must be considered, namely individual learning mastery if students achieve a score of 75 and classical learning completeness if the class is declared complete with 80% or more of the total students successfully completing learning. The percentage of learning completeness on the respiratory system material in humans can be seen in Table 2.

Table 2. Percentage of student learning completeness level

No	Test Score	Level of Completeness	Many Students	% Total students
1	< 75	Not Complete	6	20%
2	75	Complete	24	80%

Student Mastery Level

The level of student mastery of learning materials is one of the criteria for the effectiveness of learning that has taken place. The level of student mastery of learning materials can be measured by looking at the high and low raw scores obtained by students. Calculation of the level of mastery of students' material can be seen in Table 3.

Table 3. Percentage of Students' Material Mastery Level

No	Student Material Mastery Criteria	Category	Many Students	% Total students
1	0-54	Very low	-	-
2	55-64	Low	-	-
3	65-79	Currently	12	40%
4	80-89	Tall	8	27%
5	90-100	Very high	10	33%

Percentage of Improvement in Learning Outcomes (N-Gain Analysis)

The increase in student learning outcomes is calculated using pre-test and post-test scores based on descriptive statistics using SPSS 25. The average N-Gain obtained is 0.7255 with high improvement criteria while the N-Gain Percent is 72.55%, based on the interpretation of effectiveness. N-Gain shows that Learning Biology in the Materials of the Integrated Multimedia-Based Respiratory System Character Education is Quite Effective.

Discussion

Student learning outcomes are obtained from the results of the pre-test and post-test that have been done by students. The learning outcomes obtained by students before being taught the material on the respiratory system were 39.13. The low learning outcomes are caused by students who have not been taught the material on the human respiratory system so that students have not been able to answer the tests given at the pre-test. While the results obtained by students after being taught the material on the respiratory system in humans were 82.86. The increase in the average learning outcomes was due to the students being taught the material on the human respiratory system.

Based on the results of the study, it can be seen that as many as 24 students (80%) are said to be complete in individual learning because they get scores that pass the KKM limit. There were 6 students (20%) who did not complete individually, this was because these students were not able to get scores above the KKM limit.

The level of student mastery that has been obtained is, there are no students who have a low and very low level of mastery (0%), 12 students (40%) have a moderate level of mastery, 8 students (27%) have a high level of mastery , and 10 students (33%) have a very high level of mastery.

Based on the N-gain statistical test on the data, the average value was 0.7255. So based on the criteria for the interpretation of the effectiveness of the N-gain percent that 72.55% is in the quite effective category. So it was concluded that learning biology on the material of the integrated multimedia-based respiratory system character education was quite effective.

CONCLUSION

Based on the research that has been done, the following conclusions are obtained learning biology on the respiratory system material is quite effective, where student learning outcomes get a score of 82.86 with the highest score of students being 98, and the lowest score of students being 66. The effectiveness of learning biology on the respiratory system material seen from the completeness of student learning belongs to the complete category. Based on the results of the study, 24 students (80%)

were said to be complete because they obtained scores that passed the KKM limit. There are 6 students (20%) who did not complete because these students were not able to get a score above the KKM limit.

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