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Analysis of Student Learning Outcomes on Biology of The Blood Circulation System in Senior High School

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Abstract: The importance of analyzing the learning process becomes a very significant impetus when it is considered a process of changing student behavior. Evaluation is the process of collecting, assessing, and interpreting data to ensure the level of achievement of a student's learning goals. This study aims to determine student learning outcomes on circulatory system biology material class XI Senior High School. The method used in this study is the quantitative descriptive method. The result of this study is that the average score obtained by students after doing the question is 30.54 with the highest score of 56 points and the lowest score of 12 points. Of the 11 students who did 25 test questions, three students with the highest rankings and three students with the lowest rankings were obtained. Based on the results of research that has been carried out, it can be concluded that students have a good interest in learning the material of the circulatory system. However, some students are still unable to understand the material due to the lack of precise selection of learning methods and media applied by teachers in the learning process.

Keywords: Evaluation, student learning outcomes, blood circulation system

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INTRODUCTION

The progress of a nation is very dependent on education; therefore, the government is increasingly focusing on this education sector. The educational process includes components of spiritual and material reality, as well as the individual, society, or national community of people. Education is a deliberate attempt to pass on some cultural heritage to future generations. Through education, this generation becomes an example of the lessons learned by previous generations. Due to its complex nature and the fact that humans are its main focus, education has so far not been able to properly explain its importance in life. It is often referred to as the science of education because of its complexity. The continuation of education is science education. Scientific thinking is prioritized in educational theory, which is more closely related to educational science. Education and scientific education are related theoretically and practically. As a result, both contribute to overall human life (A. Rahman et al., 2022).

A person's efforts to achieve learning goals, also known as learning outcomes, which are a type of behavior change that is generally long-lasting, are referred to as learning (Greenberg et al., 2017). In school, learning is a diverse and complex process. Evaluation is carried out at the end of a learning process to ensure the direction and results of student learning (Zeng et al., 2018). The teacher is the person most responsible for learning outcomes for students during learning, especially in the classroom. Teachers often make subjective determinations about the consequences and progress of student learning at the end of each topic, mid-semester, and end of the semester, commonly known as summative evaluation. The purpose of this summative evaluation is to track the development of students' learning abilities and their learning outcomes (A. Buzzetto-More, 2010). A teacher must be able to assess both student learning outcomes and their progress in that learning. To find out deficiencies and developments in students' learning abilities, teachers should analyze student learning outcomes (Amelia *et al*., 2016).

The success of a lesson can be assessed by looking at the learning outcomes, which show whether students understand the topic taught by the teacher or not (Heritage, 2007). Students often get learning results that are not optimal because they lack mastery of the learning material that has been presented, for example, in subjects that require special reasoning, such as biology. Biology is a science subject studied at all levels of education, from elementary school to university, and has an impact on every aspect of natural life (Fauzan, 2021). Humans benefit greatly from biological knowledge as a result of this education's capacity to explain the mysteries of life and increase piety and belief in the

majesty of God Almighty as the creator of the universe (Nengsih, 2016). Biological boundaries are quite broad and have an impact on every area of human life, not only biological aspects but also non-biological ones such as educational, social, and cultural factors.

According Wahyu Lalu in Aulia *et al*. (2020), The teacher's or educator's learning assessment system really determines student growth and development during the learning process in class. Why not, considering that the learning evaluation system allows educators in a school to monitor student growth? If teacher-led learning is successful in realizing student potential, this gives the teacher or educator a reason to be proud of their work. So what student learning evaluation system should teachers or educators use? This is usually achieved through evaluations or measurements of student progress made by educators or teachers. Teachers usually use a learning evaluation system through exams and other assessments in the learning evaluation process.

The importance of evaluation in education is as important as the learning process. The importance of analyzing the learning process becomes a very significant encouragement when it is considered as a process of changing student behavior (Dörnyei, 2000). Evaluation is the process of collecting, assessing, and interpreting data to ensure the level of achievement of student learning goals. A good ranking system will be able to create an image of the quality of learning so that it can be reused and help teachers in planning learning strategies. For students, a good ranking system will keep them inspired to improve their abilities (Magdalena *et al*., 2020).

The function of evaluation is very important and cannot be separated from the learning process; therefore, evaluation should be carried out at the end of each lesson so that, with evaluation, teachers can assess the effectiveness of the learning design and determine whether or not the models, sources, media, and learning approaches used are appropriate. However, not all teachers can still implement evaluation well. Based on these conditions, the researcher wants to find out the extent of the analysis of student learning outcomes carried out in high school, especially on the circulatory system material.

METHOD

The method used in this research is a quantitative descriptive method. Sari *et al*., (2019) states that the quantitative descriptive method is a positive psychology-based research technique used to examine certain groups or samples, collect data using research tools, and analyze quantitative or statistical data to evaluate pre-existing hypotheses. The quantitative

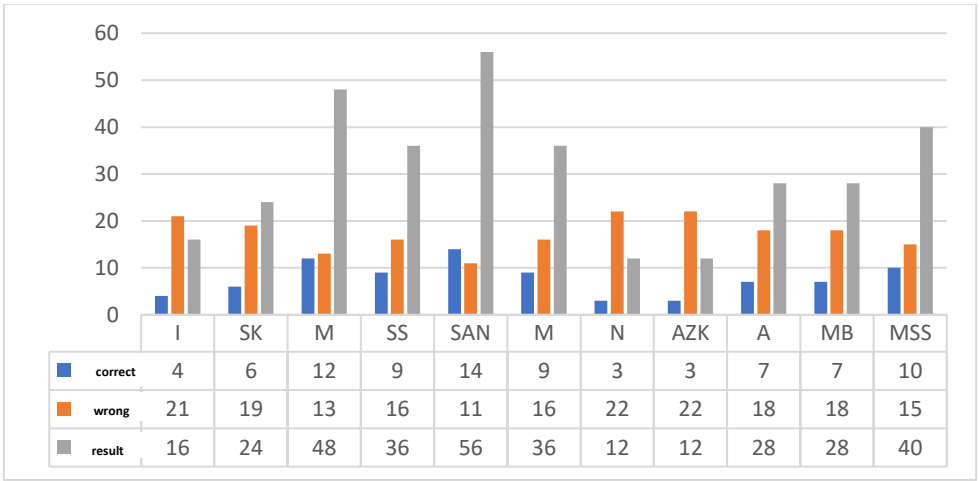
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approach used is also known as the traditional approach because it has been the standard research methodology for a very long time.

The population in this study was class XI high school students in the odd semester, totaling 11 students in one high school. The entire population in this study will be used as the research sample. This research was carried out by providing test and non-test instruments. The test instrument used contains 25 test questions in the form of multiple choices with material on the circulatory system. Meanwhile, the non-test instrument used was a questionnaire about students' interest in learning about biology lessons, especially on the subject of the circulatory system. The data analysis technique used in this research is assessing the average achievement of students' scores. The test instruments used are also analyzed for the level of difficulty using the Anates application. Anates is a special software used to analyze questions based on test details.

FINDING AND DISCUSSION

Based on the purpose of this research, the results obtained after distributing test and non-test instruments are the value of student learning outcomes in the circulatory system material as well as the analysis of student learning outcomes in biology learning. The average scores obtained by the 11 students sampled in this study are shown in **Figure 1**.



	I	SK	M	SS	SAN	M	N	AZK	A	MB	MSS
correct	4	6	12	9	14	9	3	3	7	7	10
wrong	21	19	13	16	11	16	22	22	18	18	15
result	16	24	48	36	56	36	12	12	28	28	40

Figure 1. Student Learning Results

The data presented in **Figure 1** shows that there are significant differences in student learning outcomes after working on the test questions that have been distributed. The average score obtained by students after working on these questions was 30.54, with the highest score being 56 points and the lowest score being 12 points. Of the 11 students who worked on the 25 test questions, three students with the highest rankings and three students with the lowest rankings were obtained. The three students who were able to answer the test questions well

were SAN, M, and MSS. Meanwhile, the three students with the lowest results after answering the test questions were I, N, and AZK.

The three students with the highest ranking were able to answer the questions well. It can be assumed that these three students were able to understand the questions given. Meanwhile, the three students with the lowest rankings were not able to answer the questions well due to the students' inability to understand the material provided. The factor that causes students' lack of understanding of the material is most likely to occur during the learning process, namely that students pay less attention when the teacher explains the material.

Students' lack of attention to their teachers during the learning process can also be caused by the teacher's lack of ability to apply interesting learning models and media, so that students are less motivated in the learning process. This is in line with the results of Triyono's research, as outlined in Asriyanti & Purwati (2020), Triyono said that interest and motivation will influence the student's learning process. Lack of student interest and motivation in a lesson will cause low learning outcomes for these students.

The importance of learning motivation was also expressed by Aprijal *et al*., (2020) in his research. Aprijal stated that motivation is something that is really needed by a student because, without motivation, students will not carry out learning activities. If students have a goal, then they will look for strong motivation to carry out activities to achieve their goal.

This low result was also based on the category of questions given having very strong reliability and the level of difficulty of the questions given being relatively high. The results of the analysis of questions on the test instrument related to student learning outcomes concluded that the students' abilities in studying the circulatory system material were still classified as being less able to understand the material, even though there were some students who got higher scores than their friends.

After analyzing the results of the test questions, an analysis of the non-test questions consisting of 20 statement items was carried out with the aim of finding out students' interest in studying the biology of the circulatory system. The non-test questions were distributed to students, and the level of interest in learning for the 11 students in the circulatory system material was obtained as shown in **Figure 2**.

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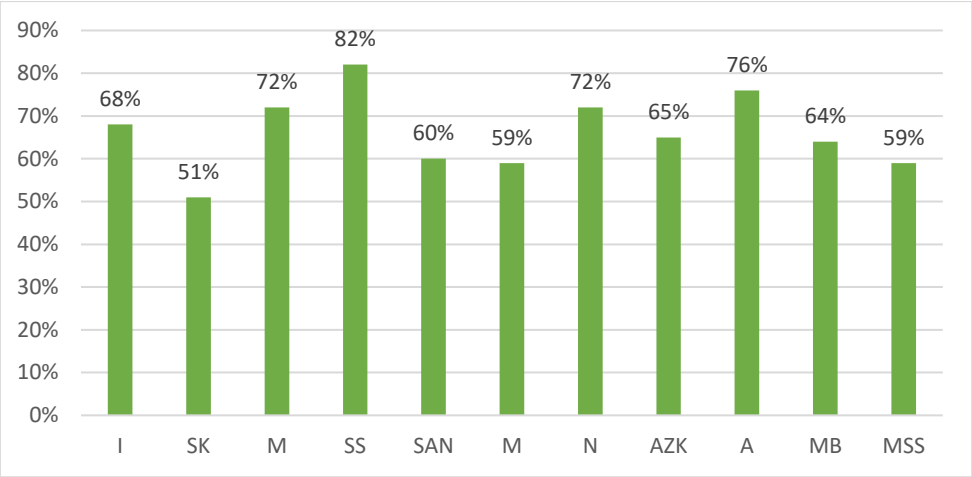


Figure 2. Percentage of Student Interest in Learning

From the data presented in **Figure 2**, it shows that the level of student interest in learning biology lessons on the circulatory system material meets criteria of interest with an average percentage of 66%. By carrying out a non-test analysis, it can be seen that students have a level of interest in the circulatory system material, but they still do not fully understand the material in question. Both of them not going straight can be caused by several factors, including a lack of motivation to learn, so that students pay less attention to the teacher when presenting the material. Another factor that can influence this is the use of learning models applied by teachers that seem monotonous, so that they are less able to attract students' attention.

If it is related to student learning outcomes, students who have a high interest in learning get lower grades. This happens because the students in question have a high level of liking for learning, but their learning patterns are still not channeled well during learning. The choice of media in the learning process will also influence the students' own interest in learning. This is supported by the theory put forward by Pradani (2022) which revealed that innovation and creativity in the use of learning media in the classroom need to be carried out so that it can have a positive effect on increasing students' interest in learning (Nurfitriah, 2023).

Some students have a good level of interest in learning, which is directly proportional to their results. This happens because students with these criteria are interested in the learning process, and then the knowledge they gain from the learning process can be applied to solving existing problems. In line with research conducted by Friantini & Winata (2019) which states that students have a willingness to be active in learning activities, which will increase their interest and feelings during the learning process. In this way, students will make every effort to realize their desire to learn and achieve the goals they set. The realization of the

understanding that one has will then be expressed in a problem-solving process that is in accordance with known theoretical concepts and will impact good learning outcomes as well.

The circulatory system material in biology learning is material that has a fairly deep level of complexity because there are still many working mechanisms and foreign terms used. This material also generally requires in-depth visualization so that students can understand the aims and objectives to be achieved after studying the circulatory system material. Based on the results of research conducted by Orkha *et al.* (2020) it was also found that the circulatory system material is one of the materials that is difficult for students to understand because it is still abstract.

In fact, there are still many students who are unable to understand the material in question, which is indicated by their results after working on the test questions given. Students' lack of ability to understand the material can also be caused by the application of incorrect learning methods to this material. Most teachers, in delivering material, still use monotonous methods such as lectures, discussions, and questions and answers. This can make students less motivated to understand and deepen the circulatory system material. For this reason, teachers are expected to provide a good learning experience to their students by choosing learning methods and media that are appropriate to the material they teach so that students are able to be motivated. With motivation, students will be encouraged to learn to understand the aims and objectives of learning activities, which can improve student learning outcomes (S. Rahman, 2021).

In this regard, (Nurrita, 2018) revealed that learning media is said to be able to increase student motivation and learning outcomes because, with the use of learning media, the teaching and learning process will be more interesting for students; it can also provide experience for students in the learning process so that students will be directly involved in the learning process; and it will help students become more concentrated in their learning activities.

CONCLUSION

Based on the results of the research that has been carried out, the average learning outcomes in the circulatory system material in class XI are in the low category, but students' interest in learning is in the good category. Students' weaknesses in understanding the material could be caused by monotonous learning. It is hoped that in the future, teachers in implementing biology material will make more use of creative and innovative media and

learning models so that students can gain useful knowledge and skills and be able to compete in the era of society.

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