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Improving Biology Learning Outcomes Through the Application of Entry Behavior in Intervertebrate Material in Senior High Schools

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ABSTRACT

Purpose of the study: This research aims to determine the improvement in student Biology learning outcomes through the implementation of Entry Behavior in class X at Public High School 1 West Bajeng, Gowa Regency.

Methodology: This research is Classroom Action Research. The research location is at Public High School 1 West Bajeng which is located in Gowa Regency. The research subjects were 36 class X 4 students. This classroom action research procedure was carried out in two cycles, namely cycle I and cycle II. Each cycle consists of four stages, namely Planning, Action, Observation and Reflection.

Main Findings: Completeness of learning outcomes in cycle I was 61% which met the minimum completeness criteria and overall from 36 students the average score obtained was 73.88 or on a descriptive scale categorized as sufficient, and there was an increase in cycle II which was 92% which met the minimum completeness criteria and overall from the 36 students the average score obtained was 85 or on a descriptive scale categorized as good. Implementation of learning by applying Entry Behavior in general can improve Biology learning outcomes because it has met the Minimum Accomplishment Criteria specified in the Biology subject Animalia material in class X 4 of Public High School 1 West Bajeng, Gowa Regency.

Novelty/Originality of this study: The focus on the application of Entry Behavior (initial behavior) in Intervertebrate material in class X 4 at Public High School 1 West Bajeng, Gowa Regency.

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1. INTRODUCTION

Education is not just a process of teaching and learning activities, but a process of realizing the promise of humans as humans [1], [2]. In other words, education is an effort to humanize humans. Education influences all aspects of an individual's personality and life, including the physical, mental/mind, character, emotional, social and ethical development of children or students. Education can stimulate a person's intelligence and ability to be able to face the increasingly complex challenges of nature, society, technology and life, so that they can achieve national education goals. Education does not merely provide information and form skills, but rather includes efforts to realize individual desires, needs and abilities so that a pleasant personal and social lifestyle is achieved [3]–[5]. Education is not solely for present life but as a means of preparing for future life, so that proactively and even anticipatoryly we are able to answer the challenges of the times which are always changing.

Teaching and learning activities as an instructional system are interactions between students and 3 other components, and the teacher as the manager of the activity, the step to have this strategy is to master the techniques. Lesson presentation techniques are knowledge about teaching methods used by teachers or instructors for students in the classroom so that the lesson can be captured, understood and used by students well [6]–[8]. In reality, the teaching methods or presentation techniques used by teachers to convey information or verbal messages to students are different from the methods used to strengthen students in mastering knowledge, skills and attitudes.

Learning activities produce different things for an individual. Learning activities are not only determined by talents and interests but are also determined by methods or strategies and good ways of learning [9]–[11]. Therefore, students who are studying need evaluation and reflection about learning plans and activities. This evaluation is carried out to improve learning skills continuously. It can be confirmed that each student has behavior and characteristics that tend to be different [12], [13]. This condition is important in learning to pay attention to because by identifying the initial conditions of students when they are about to take part in learning, it can provide important information for teachers in selecting management strategies, which are related to how to organize teaching, especially the components of effective teaching strategies and in accordance with individual characteristics students so that learning will be more meaningful.

Initial abilities (Entry Behavior) are abilities that students have acquired before they acquire certain new terminal abilities [14], [15]. Initial abilities indicate the current status of students' knowledge and skills to move towards the future status that teachers want students to achieve. This ability can be determined from where teaching should start, terminal ability is the direction towards which teaching ends. So, teaching takes place from initial abilities to terminal abilities which is the teacher's responsibility. It is very necessary to identify students' initial abilities and characteristics in developing learning programs, namely to find out individual qualities so that they can be used as a guide in describing learning management strategies [16]–[18]. The aspects revealed in this activity can be talents, learning motivation, learning styles, thinking abilities, interests, and so on.

Based on the researcher's observations, students in class X 4 at Public High School 1 West Bajeng were found to have low levels of learning. This can be seen by the lack of students' ability regarding initial knowledge about previous material so that students are less focused in receiving the next lesson, students are less likely to participate in group learning and show their participation in the class as a whole. Students become passive in class and learning continues without evaluation to lead to the next lesson material. Students only receive lessons without any reciprocity from the students. The results of studying biology can be seen from the average value of the daily test results in Biology, of the 36 students, 16 students completed it while 20 students did not complete it. This means that only 44% of students fulfill the minimum completion criteria determined by the school, namely 75 and classical completion is 75%.

Previous research examining efforts to improve students' biology learning outcomes has been carried out by several researchers. Research by applying learning models to learning activities is one effort to improve student biology learning outcomes. In line with research results which state that the Student Team Achievement Division (STAD) learning model can improve students' Biology learning achievement [19]. Furthermore, the Make a Match learning model can improve students' biology learning outcomes [20]. Meanwhile, this research will make efforts to improve students' biology learning outcomes by implementing Entry behavior. The novelty of this research is that it focuses on the application of Entry Behavior to Intervertebrate material. This research has high urgency because it highlights the application of Entry Behavior in improving Biology learning outcomes in Intervertebrate material in class X Public High School 1 West Bajeng, Gowa Regency. In an educational context, Entry Behavior is an approach that emphasizes students' initial understanding before starting new learning, which is very important to ensure that each student has a strong foundation of knowledge.

Based on these various phenomena, one way to create learning outcomes that meet school standards is by implementing good learning strategies. One method that can be used is implementing Entry Behavior. Based on this background, the author is interested in conducting research with the aim of finding out improvements in students' Biology learning outcomes through the application of Entry Behavior in class X at Public High School 1 West Bajeng, Gowa Regency.

2. RESEARCH METHOD

2.1 Types of Research

This research is classroom action research. Meanwhile, the classroom action research model used is the model offered by Arikunto. This model consists of four components in each cycle, namely planning, implementation, observation and reflection [21], [22].

2.2 Research Subject

This research was carried out at Public High School 1 West Bajeng, which is located in Gowa district with research subjects being students in class X 4 even semester with a total of 36 students. The factors investigated were the application of entry behavior and students' biology learning outcomes. Classroom Action Research is

carried out in the form of an iterative cycle in which there are four main activity stages, namely planning, implementation, observation and reflection [23], [24].

2.3 Instrument of Research

The instruments in this research are test questions, observation and documentation. Research procedures include planning, implementation, observation and reflection stages. The data collection stage in this research was carried out by giving tests on biology learning outcomes at the end of each cycle in the learning process with treatment, namely teaching using Entry Behavior. Data collection on the results of this research was carried out by administering learning outcomes tests in the form of multiple choice sheets and observation sheets of student and teacher activities during the teaching and learning process.

2.4 Data Analysis

The collected data will then be analyzed descriptively statistically. Indicators of the success of this action research include process indicators and outcome indicators. The process indicator in this research is the increased activity of teachers and students in the learning process by implementing Entry Behavior patterns. The criteria used in determining the achievement of the learning process are:

Table 1. Learning Process Standard Categories

Implementation of Steps	Categorization
80% – 100%	Good
65% – 79%	Enough
< 65%	Not enough

The result indicator in this research is that if classically it shows that the level of achievement of completeness is 75% and has reached a value of 75 then the action has been successful, conversely if it has not reached 75% then the action has not been successful as determined by Public High School 1 West Bajeng, Gowa Regency. After applying the Entry Behavior patterns, in accordance with the Minimum Completeness Criteria, the class is considered classically completed. The measure of the indicator of improving student biology learning outcomes is that the student's test results show complete learning. Meanwhile, qualitative analysis is carried out according to trends in each cycle by conducting verbal research. Furthermore, for the category of student learning outcomes, the Minimum Completeness Criteria categorization is used so the class is considered classically complete. The criteria used to reveal students' abilities in mastering biology learning are in the following table:

Table 2. Student Success Format

Level of Success	Qualification
86 – 100	Very good
75 – 85	Good
56 – 74	Enough
41 – 55	Not enough
< 40	Very less

3. RESULTS AND DISCUSSION

3.1. Results

Based on the results of observations regarding the implementation of the Biology learning process carried out by the teacher, a description of student activities during teaching and learning activities was also obtained which can be seen in the table below:

Table 3. Description of Observation Results of Student Activities through the Implementation of Entry Behavior

Assessment criteria	First Meeting		Average	Percentage (%)
	1	2		
Students pay attention to the teacher's explanation.	25	32	29	80
Students think about a problem presented individually.	28	33	31	86
Students are active in discussion activities.	26	29	28	78
Students present the results of the discussion in front of the class.	23	24	24	67
Students listen to the results of presentations from their friends.	23	22	23	64
Students conclude the learning material.	20	24	22	61

Based on the table above, it can be described that the students' attention to the teacher's explanation during the lesson was 80% (29 students) and the remaining 20% (7 students) did not show attention (passive). Student activity when thinking about a problem given by the teacher during learning was 86% (31 students) and 14% (5 students) still did not respond to a problem given by the teacher. Students who were actively discussing in completing the student worksheet distributed by the teacher were 78% (28 students) and 22% (8 students) were still passively carrying out discussion activities in completing the student worksheet. Students who were confident in presenting discussion results in front of the class were 67% (24 students) while 33% (12 students) were not confident in presenting discussion results in front of the class. Students who listened to the results of the presentation were 64% (23 students) and 36% (13 students) who did not listen, and the last student activity was concluding the learning material with a percentage level of student activity of 61% (22 students) and 39% (14 students) does not provide conclusions on learning material.

Data on student learning outcomes at two meetings was obtained through test sheets at the end of cycle I. Based on this attachment, it is clear that of the 36 students in class X 4 in cycle I there were 22 students or 61% who met the Completeness Criteria. The minimum completeness criteria is 75 and overall from the 36 students the average score obtained was 73.88 or on a descriptive scale it was categorized as sufficient. As for individuals, the scores achieved by students are spread from the lowest score of 40 to the highest score of 100. Furthermore, to find out the frequency and percentage of student learning outcomes and the descriptive scale, it can be seen in the table below.

Table 4. Frequency Distribution and Percentage of Student Learning Outcome Values in Biology Subject Class X 4 Public High School 1 West Bajeng, Gowa Regency through the Implementation of Entry Behavior in Cycle I

No	Value Scale	Descriptive Scale	Frequency	Percentage (%)
1	86 – 100	Very good	7	9
2	75 – 85	Good	15	42
3	56 – 74	Enough	12	33
4	41 – 55	Not enough	1	3
5	< 40	Very less	11	3
Amount			36	100

Based on the data in the table above, it is clear that the Biology learning outcomes of class 33% were categorized as sufficient, 1 student or 3% was categorized as poor and 1 student or 3% was categorized as very poor. Based on data from cycle I actions, it can also be described the completeness of student learning outcomes in implementing cycle I actions which can be presented in the following table:

Table 5. Description of the Completeness of Student Learning Outcome Values in Biology Subject Class X 4 Public High School 1 West Bajeng, Gowa Regency through the Implementation of Entry Behavior in Cycle I

Category	Value Scale	Frequency	Percentage (%)	Information
Not Completed	0 – 74	16	39	
Complete	75 – 100	22	61	minimum completeness criteria = 75
Amount		36	100	

Based on the table above, it shows that in cycle I, the frequency of completion achieved by students was 22 people with a percentage of 61% and the percentage of students not completing was 14 people with a percentage of 39%. Based on the percentage of completeness of student learning outcomes, it can be concluded that the completeness of student learning outcomes has not reached the classical standard of completeness, namely 75%, so that the implementation of actions in the next cycle will continue.

Based on the analysis and reflection above and referring to the established criteria for completion, it was concluded that the learning for the first cycle of action was not successful because the students' success during the process and results were not in accordance with what the researchers expected, namely if the students classically reached a mastery level of 75%. In cycle I, the student achievement results were 61% so that the actions of cycle I were concluded to have not been successful and thus the learning activities in this research could be continued in the next cycle as an improvement on the previous cycle's learning.

Based on the results of observations regarding the implementation of the Biology learning process carried out by the teacher in cycle II, a description of student activities during teaching and learning activities was also obtained which can be seen in the table below:

Table 6. Description of Observation Results of Student Activities through the Application of Entry Behavior in Cycle II

Assessment criteria	First Meeting		Average	Percentage (%)
	1	2		
Students pay attention to the teacher's explanation.	30	32	31	86
Students think about a problem presented individually.	36	36	36	100
Students are active in discussion activities.	34	35	35	97
Students present the results of the discussion in front of the class.	32	36	34	94
Students listen to the results of presentations from their friends.	26	34	25	69
Students conclude the learning material.	25	34	30	83

Based on the table above, it can be described that students' attention to the teacher's explanation during the lesson was 86% (31 students) and the remaining 14% (5 students) did not show attention (passive). Student activity when thinking about a problem given by the teacher during learning was 100% (36 students). 97% (35 students) actively discussed students in completing the student worksheet distributed by the teacher and 3% (1 student) still passively carried out discussion activities in completing the student worksheet. Students who were confident in presenting discussion results in front of the class were 94% (34 students) while 6% (2 students) were not confident in presenting discussion results in front of the class. Students who listened to the results of the presentation were 69% (25 students) and 31% (11 students) who did not listen, and the last student activity was concluding the learning material with a percentage level of student activity of 83% (30 students) and 17% (6 students) does not provide conclusions on learning material.

Data on student learning outcomes at two meetings was obtained through test sheets at the end of cycle II. Based on this attachment, it is clear that of the 36 students in class X 4 in cycle II there were 33 students or 92% who met the Completeness Criteria. The minimum completeness criteria is 75 and overall from the 36 students the average score obtained is 85 or on a descriptive scale it is categorized as good. As for individuals, the scores achieved by students are spread from 60 to the highest score of 100. Next, to find out the frequency and percentage of student learning outcomes and the descriptive scale, you can see the table.

Table 7. Frequency Distribution and Percentage of Student Learning Outcome Values in Biology Subject Class X.4 Public High School 1 West Bajeng, Gowa Regency through the Implementation of Entry Behavior in Cycle II

No	Value Scale	Descriptive Scale	Frequency	Percentage (%)
1	86 – 100	Very good	18	50
2	75 – 85	Good	15	42
3	56 – 74	Enough	3	8
4	41 – 55	Not enough	0	0
5	< 40	Very less	0	0
Amount			36	100

Based on the data in table 7 above shows that the Biology learning outcomes of class categorized as sufficient. Based on data from cycle II actions, it can also be described the completeness of student learning outcomes in implementing cycle II actions which can be presented in the following table:

Table 8. Description of the Completeness of Student Learning Outcome Values in the Biology Subject Class X 4 of Public High School 1 West Bajeng, Gowa Regency Cycle II through the Implementation of Entry Behavior

Category	Value Scale	Frequency	Percentage (%)	Information
Not Completed	0 – 74	3	8	
Complete	75 – 100	33	92	minimum completeness criteria = 75
Amount		36	100	

Based on table 8 above, shows that in cycle II, the frequency of completion in Biology learning outcomes was 33 students with a percentage of 92% and the percentage of incompleteness in Biology learning outcomes was 3 students with a percentage of 8%. Based on the percentage of completeness of student learning outcomes, it can be concluded that the completeness of student learning outcomes has reached the classical standard of completeness, namely 75%. Based on the results of the data analysis and reflection above which refer to the specified success indicators, the results of the second cycle test show an increase or in other words the specified

success indicators have been achieved because all students who were research subjects have achieved a completion score of 92%, so it is concluded that the learning was successful. In this way the learning objectives have been achieved.

3.2. Discussion

The results of this research indicate significant progress in achieving student learning outcomes in Biology subjects, especially in the application of Entry Behavior in Animalia material in class X 4 of Public High School 1 West Bajeng, Gowa Regency. In cycle I, the learning outcome completion rate was 61% which met the minimum completeness criteria, representing a sufficient level of achievement. Overall, from 36 students, the average score obtained was 73.88. Descriptively, this is categorized as a sufficient result, indicating the students' ability to understand the material. However, there were prominent changes in cycle II. The percentage of completeness of learning outcomes increased to 92%, showing a significant increase in the achievement of students who met the minimum completeness criteria. Meanwhile, the average student score also increased significantly to 85. Descriptively, this change illustrates a very good increase in students' understanding and achievement of Animalia material.

The application of Entry Behavior in Biology learning has shown a significant role in improving student learning outcomes. One of the advantages of this approach is the preparation it provides students before they dive into more complex material [25]–[27] . By preparing the right "gateway" students can build a strong foundation of understanding before delving into more in-depth topics. This helps in reducing students' anxiety and provides a clear framework before they explore more complicated concepts in Biology. Implementing Entry Behavior also helps students to be more actively involved in the learning process. By preparing them with basic information or thought-provoking initial questions, it builds greater interest and motivation towards the topic to be studied. Students can be better mentally prepared and have a sufficient knowledge base to follow the material better, opening up space for deeper and more varied discussions and more productive interactions between teachers and students.

Apart from that, the implementation of Entry Behavior also has a positive impact on the level of student involvement in the learning process. By building initial awareness of the topic to be studied, students feel more confident to participate in class discussions, ask questions, and collaborate with classmates [28], [29] . This not only improves their understanding, but also improves communication and collaboration skills. The importance of implementing Entry Behavior in improving Biology learning outcomes is also reflected in measurable progress. The increase in the percentage of completeness of learning outcomes and the average student score indicates the effectiveness of this approach in increasing understanding of the material [30]–[32] . These data provide concrete evidence that this strategy not only improves overall student achievement but also opens up opportunities for further exploration of innovative ways of presenting and preparing students for complex material in Biology learning.

From the data collected, it can be concluded that the implementation of learning by implementing Entry Behavior has had a positive impact in improving Biology learning outcomes in class X 4 of Public High School 1 West Bajeng, Gowa Regency. The fact that this application is able to increase the minimum completion rate and average score significantly provides a strong indication that this strategy is effective in increasing students' understanding and achievement in complex material such as Animalia. Thus, this shows that the Entry Behavior approach has great potential as a successful learning strategy in improving learning outcomes in Biology subjects in this specific educational environment.

The first implication of this research is that this research can encourage teachers to adopt the Entry Behavior approach in their learning process, because it has been proven to be effective in improving students' understanding and learning outcomes. Second, schools can integrate these methods into their curricula and teacher training programs to ensure that these techniques are applied consistently and effectively across a variety of classes and subjects. Third, this research provides empirical evidence that can be used by educational policy makers to develop policies that support Entry Behavior-based learning approaches, which can improve the overall quality of education. In addition, the results of this study open opportunities for further research into the application of Entry Behavior in other subjects and at different educational levels, in order to further understand how this approach can be adapted and applied effectively in various educational contexts. Thus, this research not only provides a practical contribution to improving student learning outcomes in class X Public High School 1 West Bajeng, but also offers valuable insights for improving educational practices more broadly.

4. CONCLUSION

Based on the results of research carried out on class X4 students at Public High School 1 West Bajeng, Gowa Regency can conclude that the application of Entry Behavior can improve student learning outcomes in Biology subjects, if presented in the form of providing games with talking sticks. Student learning results in the Biology subject in cycle I show that of the 36 students in class categorized as sufficient. Biology learning results

in cycle II showed that of the 36 students in class This can be seen in Cycle II, the results of observations of teacher teaching activities and student learning activities are in the good category and student learning outcomes in the Biology subject are in the good category. Based on the research results, researchers recommend that teachers implement Entry Behavior using talking stick-based games in the Biology learning process to improve student learning outcomes.

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