Unnes.J.Biol.Educ. 12 (3) (2023)

Journal of Biology Education

http://journal.unnes.ac.id/sju/index.php/ujbe

The Effectiveness of Discovery Blended Learning through The Ruangkelas Feature on The Ruangguru Application to Improve Student Learning Outcomes on Animal Tissues Material

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Article Info

Article History:

Received : August 2023

Accepted : August 2023

Published : November 2023

Keywords:

Discovery Blended learning, The Ruangkelas Feature, Ruangguru,Application, Student Learning Outcomes, Animal Tissues Material

Abstract

This study use a discovery learning model combined with blended learning through the Ruangkelas feature on the Ruangguru application with question and answer methods, discussions, group work, and experiments. The purpose of this study was to analyze the effectiveness of discovery learning blended learning through the Ruangkelas feature on the Ruangguru application to improve student learning outcomes on animal tissue material. Research preparation was carried out at the Department of Biology FMIPA UNNES while the implementation of the research was carried out at SMA Negeri 1 Petarukan. The sample used in this study was 72 students of class XI MIPA, using probability sampling technique. This research is a quasi-experimental research using pre-experimental design type one group pretest-posttest design. Data collection used interviews, questionnaires, tests, observation, and documentation. The data analysis technique consists of data analysis (1) learning outcomes in the cognitive domain which are determined based on classical completeness and N-gain; (2) affective domain learning outcomes are determined based on attitude criteria; and (3) learning outcomes in the psychomotor domain are determined based on skills. Learning outcomes in the cognitive domain are determined based on tests (pretest and posttest), LDS, and LKS. Affective domain learning outcomes are determined based on self-assessment and peer assessment, while psychomotor learning outcomes are determined based on performance. The results of this study are (1) student learning outcomes in the cognitive domain of class XI MIPA show classical completeness of 83.33% and an N-Gain value of 0.5 in the moderate category; (2) student learning outcomes in the affective domain show 54.17% in very good attitude criteria and 45.83% good attitude criteria; (3) student learning outcomes in the psychomotor domain show 55.56% in very good attitude criteria and 44.44% good attitude criteria. From the results of this study, it is concluded that discovery blended learning through the Ruangkelas feature is effective in improving student learning outcomes.

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p-ISSN 2252-6579

e-ISSN 2540-833X

INTRODUCTION

The implementation of the 2013 Curriculum according to Permendikbud Number 22 of 2016 concerning Process Standards uses a discovery learning model. Based on the results of interviews conducted with one of the Biology teachers at SMA Negeri 1 Petarukan, the teacher applied the discovery learning model with the lecture method. The existence of monotonous learning, tends to lecture, and without practicum causes students to lack interest and motivation in receiving material during lessons. Lack of understanding of the material will affect the learning outcomes obtained by students. According to Manik & Harahap (2021), the implementation of discovery learning can improve student learning outcomes in learning Biology on the structure and function of animal tissues.

The development of information and communication technology has made science develop rapidly. Students in the millennial generation like today, the majority learn to use the internet by themselves (Setiawan, 2021). One of the utilization of internet developments in education is the emergence of digital platforms. A digital platform is an application program developed to support the success of online learning (Assidiqi & Sumarni, 2020). One of the learning applications that received a positive assessment and a high level of assessment is the Ruangguru application. According to (Rizqiah, 2023), the use of the Ruangguru application can improve the learning outcomes of Biology Class XI students.

Blended learning directs students to utilize technology in their learning process. Blended learning is learning that combines face-to-face learning with online learning (Ahmad *et al.*, 2021). According to (Irwandi & Putri, 2023), the implementation of blended learning has an influence on high school students' Biology learning outcomes. One of the features in the Ruangguru application that is free and supports blended learning is the Ruangkelas feature. Ruangkelas is a learning management system (LMS) that facilitates the organization of lessons, student attendance, materials, assignments, and communication in class. Blended learning will be combined with discovery learning.

Based on the results of interviews conducted with one of the Biology teachers at SMA Negeri 1 Petarukan, said that of the several materials contained in the odd semester, the structure and function of animal tissue is classified as material that is difficult for students to understand. Based on questionnaires that have been filled out by 72 students from classes XI MIPA 1 and XI MIPA 3 SMA N 1 Petarukan using google form, it results that the learning material that is considered difficult by students is the structure and function of animal tissues. Lack of understanding of the material will affect the learning outcomes obtained by students. This is evident from some students who still have the ability to learn results that do not meet the requirements of the minimum completeness criteria (KKM). Student learning outcomes in animal tissue structure and function material have the lowest average of other materials. Based on the data above, it is necessary to change the learning methods used, interactive learning that can help students master the material. So far, there has been no learning using classroom-based Discovery Blended Learning that can help students master the material on the structure and function of animal tissues. Therefore, this study aims to analyze the effectiveness of discovery blended learning through the Ruangkelas feature in the Ruangguru application.

RESEARCH METHOD

This research was conducted at SMA N 1 Petarukan in the even semester of the 2022/2023 school year. The population of this study were all students of class XI MIPA SMA N 1 Petarukan as many as 216 students who were divided into 6 classes. The sampling technique used in this study was probability sampling technique. Of the six XI MIPA classes, two classes can be taken to be sampled by being given the same learning treatment. The samples used in this study were XI MIPA 1 and XI MIPA 3. This research is included in experimental research. The approach in experimental research uses a quantitative approach. The data in this study used quantitative data to test the hypothesis of the influence between the variables that would be studied. The research design is Pre-Experimental Design type One Group Pretest-Posttest Design. The data to be studied are student learning outcomes, namely the cognitive domain, affective domain and psychomotor domain.

RESULTS AND DISCUSSION

This study aims to determine the effectiveness of discovery blended learning through the Ruangkelas feature in the Ruangguru application to improve student learning outcomes on animal tissue material. This study was conducted four times face-to-face meetings - online. The results of the study include: (1) pretest and posttest data, (2) affective assessment observation data, (3) psychomotor assessment observation data, and (4) research documentation.

Cognitive Learning Outcomes

Data on students' cognitive learning outcomes in this study were obtained from multiple choice questions through pretest and posttest; as well as the results of student worksheet assessment and student discussion sheet assessment. Cognitive learning outcomes data aims to determine the improvement of students' cognitive learning outcomes after using discovery blended learning through the Ruangkelas feature on the Ruangguru application. Cognitive learning outcomes of students in class XI MIPA can be seen in Table 1.

Table 1 Recapitulation of students' cognitive learning outcomes

Variation	Class XI A	Class XI B	Total
Number of Students	36	36	72
Average	71.33	74.76	73.05
highest score	77.6	90.8	90.8
Lowest score	57	63	57
Average students that pass	28	32	60
Average students that do not pass	8	4	12
N-Gain	0.5245		
N-Gain(%)	52.45%		
Classical Completeness(%)	83.33%		

Table 4.1 shows a recapitulation of students' cognitive learning outcomes after using discovery blended learning through the Ruangkelas feature in the Ruangguru application. Based on the results of the analysis above, it is known that the N-Gain value studied reached 0.5 where the increase in student learning outcomes in learning was said to be effective because it obtained a moderate category with the magnitude of the g factor, namely between $0.3 \leq g \leq 0.7$. The classical completeness of the cognitive learning outcomes studied reached 83.33% where it can be said to be complete because the minimum classical completeness is 80%. The average student score is 73.03 where students can be said to be complete because they have reached above the KKM 70.

The results of the research described above show that the application of discovery blended learning using the Ruangkelas feature in the Ruangguru application is effective on the cognitive learning outcomes of grade XI MIPA students and improves student achievement. As in the research of manik & harahap (2021) reported that the implementation of discovery learning can improve student learning outcomes in learning Biology on the structure and function of animal tissues. (Irwandi & Putri, 2023) research shows that the implementation of blended learning has an influence on the learning outcomes of high school biology students. Research by (Rizqiah et al., 2023) which reported that the use of the Ruangguru application can improve the learning outcomes of Biology Class XI students.

Discovery learning is a learning process where students actively acquire knowledge that they do not already know through notification, but they find it themselves with the aim of helping students to learn concepts and practical analytical thinking skills (Sartunut, 2022). Learning that can make students more active, independent and cooperative in learning can be said to be student center learning (Froyd & Simpson, 2008). According to Priansa (2017), that the application of this discovery learning model has several advantages, namely (1) increasing students' ability to solve problems; (2) increasing student motivation; (3) encouraging the involvement of student activeness; (4) students are active in learning activities and use their abilities to find the final result; (5) a sense of satisfaction arises for students so that it encourages students to make discoveries again; (6) students will transfer their knowledge to various contexts; (7) training students to learn independently.

Blended learning has several advantages, namely learning is more effective and efficient because learning can be done anywhere and anytime. Abdullah (2018) research shows that the use of blended learning is a good alternative solution because it combines the advantages of both learning and covers the shortcomings of each learning. The Ruangguru application used also has several advantages including easy access; teachers or tutors are always available and interactive; teachers or tutors are experienced; learning is equipped with animated videos; learning materials are in accordance with the curriculum; and the cost is not too expensive and can be paid in installments (Rahmadani, N. S. & Setiawati, 2019)

The students were very enthusiastic during the discovery blended learning process using the Ruangkelas feature on the Ruangguru application. Students are very enthusiastic because the learning atmosphere in the classroom is student-centered so that students are more active, independent, confident and brave in expressing their opinions when participating in learning. This is in accordance with the research of (Nafrin & Hudaidah, 2021)which states that the existence of learning in this network makes students more independent and confident because learning is student-centered learning so that students are more courageous in expressing their opinions. Discovery blended learning using the Ruangkelas feature in the Ruangguru application is an innovation and variation of learning that can make students more active, independent and collaborative in learning so that learning can be student centered learning (Froyd & Simpson, 2008)

Affective Learning Outcomes

Data on students' affective learning outcomes in this study were obtained from the results of affective assessment observations in the form of affective assessment by students and affective assessment between students. Affective assessment observation data can be used to determine student attitudes during the discovery blended learning learning process using the Ruangkelas feature in the Ruangguru application. The affective learning results of students in class XI MIPA can be seen in Table 2.

Table 2 Criteria for student affective learning outcomes

Criteria	Class XI A	Class XI B	The Number of Students	The Number of Students (%)
Very Good	20 students	19 students	39 students	54.17
Good	16 students	17 students	33 students	45.83
Good Enough	-	-	-	-
Not Good	-	-	-	-

Table 2 shows the criteria for students' affective learning outcomes after using discovery blended learning through the Ruangkelas feature in the Ruangguru application. The research results that have been presented above show that students' affective learning outcomes have reached completeness, namely an average of very

good attitudes as much as 50% with a minimum target of 40% and good attitudes as much as 50% with a minimum target of 40%. The application of discovery blended learning using the Ruangkelas feature in the Ruangguru application on animal tissue material effectively improves affective learning outcomes. This is in accordance with (Adityawardhana, 2018) research which states that the application of the blended learning model can improve affective domain learning outcomes from cycle I to cycle II. According to research by Manik & Harahap (2021) reported that the implementation of discovery learning can improve student learning outcomes in learning Biology on the structure and function of animal tissues.

Psychomotor Learning Outcomes

Data on students' psychomotor learning outcomes in this study were obtained from the results of psychomotor assessment observations in the form of psychomotor assessment sheets during practicum. Psychomotor assessment observation data can be used to determine student skills during the discovery blended learning learning process using the Ruangkelas feature in the Ruangguru application. Student psychomotor learning outcomes in class XI MIPA can be seen in Table 3

Table 3 Criteria for student psychomotor learning outcomes

Criteria	Class XI A	Class XI B	The Number of Students	The Number of Students (%)
Very Good	15 students	15 students	30 students	41.67
Good	21 students	21 students	42 students	58.33
Good Enough	-	-	-	-
Not Good	-	-	-	-

Table 3 shows the criteria for students' psychomotor learning outcomes after using discovery blended learning through the Ruangkelas feature in the Ruangguru application. The research results presented above show that students' psychomotor learning outcomes achieved completeness, namely an average of 41.67% very good attitudes with a minimum target of 40% and 58.33% good attitudes with a minimum target of 40%. The application of discovery blended learning using the Ruangkelas feature in the Ruangguru application on animal tissue material effectively improves psychomotor learning outcomes. This is in accordance with the research of sya'idah *et al* (2020) which states that the blended learning model affects the skills aspect. According to research by (Pitaloka & Suyanto, 2019), blended learning is effective on student creativity because the learning process supports an environment that can foster student creativity. According to research by (Manik & Harahap, 2021) reported that the implementation of discovery learning can improve student learning outcomes in learning Biology on the structure and function of animal tissues.

CONCLUSION

Based on the results of the study "The Effectiveness of discovery blended learning through the Ruangkelas Feature in the Ruangguru Application to Improve Student Learning Outcomes on Animal Tissue Material" which has been carried out, it can be concluded that the hypothesis (Ha) in this study is accepted, namely that there is an effectiveness of discovery blended learning using the Ruangkelas feature in the Ruangguru application to improve student learning outcomes on animal tissue material. This research can be the basis of further research that can examine more deeply about discovery blended learning.

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