Encouraging students' learning outcomes using the information search method

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Abstract: This study aims to determine the effect of the Information Search learning method on the learning outcomes of class VIII students in science subjects at SMP Negeri 9 Sorong City. The method used in this study was a quasi-experimental design with a non-equivalent control group design. Samples were Class VIII A1 (15 students) as the experimental group and class VIII D2 (15 students) as the control group. Before treatment, both classes were given a pre-test to see if there was a difference in learning outcomes between the experimental and control group. Both classes were given a post-test to see the effect of learning on learning outcomes. Data analysis in this study used statistical analysis consisting of three stages, namely normality test, homogeneity test, and hypothesis testing using a T-test. The calculation of gain from learning outcomes is also carried out. The results of this study indicate the effect of information search methods on improving student learning outcomes (sig. = 0.001 < 0.05). The experimental class gain is 37.33, and the control class is 17.33. This research concludes that the information research method can encourage student learning outcomes.

Keywords: Information search method, learning outcome, biology

Abstrak: Penelitian ini bertujuan untuk mengetahui pengaruh metode pembelajaran Information Search terhadap hasil belajar siswa kelas VIII pada mata pelajaran IPA di SMP Negeri 9 Kota Sorong. Metode yang digunakan dalam penelitian ini adalah eksperimen semu dengan desain nonequivalent control group design. Sampel adalah kelas VIII A1 (15 siswa) sebagai kelompok eksperimen dan kelas VIII D2 (15 siswa) sebagai kelompok kontrol. Sebelum dilakukan perlakuan, kedua kelas terlebih dahulu diberikan pre-test untuk melihat apakah ada perbedaan hasil belajar antara kelas eksperimen dan kelas kontrol, kemudian kedua kelas telah diberikan post-test untuk melihat efek pembelajaran terhadap hasil belajar. Analisis data dalam penelitian ini menggunakan analisis statistik yang terdiri dari tiga tahap, yaitu uji normalitas, uji homogenitas, dan pengujian hipotesis menggunakan uji-T. Dilakukan juga perhitungan gain dari hasil belajar. Hasil penelitian ini menunjukkan adanya pengaruh metode pencarian informasi terhadap peningkatan hasil belajar siswa (sig. = 0.001 < 0.05). Gain kelas eksperimen sebesar 37.33 dan kontrol sebesar 17.33. Riset ini menyimpulkan bahwa metode information research dapat mendorong hasil belajar siswa.

Kata kunci: Metode pembelajaran information search, hasil belajar, biologi

INTRODUCTION

Learning Biology as a part of science emphasizes mastery of concepts and their relation to other sciences. Biology is one of the subjects that deal with how to find out about nature systematically. Younger students understand biological concepts if they are actively seeking information, developing knowledge, and actively asking questions about things they don't know (Sogen et al., 2018; Zannah et al., 2022). The selection of learning methods used in the teaching process is expected to make things simpler for students to find information

and learn biological concepts. The learning method is an activity that instructors and students must engage in to attain learning goals successfully and efficiently (Husain et al., 2021; Musa et al., 2021).

Seeking information is a complex situation that has an impact on students' abilities (Aharony & Gazit, 2020). In the current era, students are faced with a lot of information, and the availability of the right information is very important (Baji et al., 2018). Students from various sources can obtain information, such as youtube (Fyfield et al., 2021), online learning applications (Aladesusi & Akindiya, 2021), flipbooks (Sumarmi et al., 2021), Augmented Reality (Damopolii et al., 2022), comics (Damopolii et al., 2021) and learning resources made by the teachers (Kasim et al., 2018; Rumalolas et al., 2021). However, all of them can be effectively used if the teacher can manage how students obtain the information through appropriate learning methods (Beluan et al., 2018; Obielodan et al., 2021; Rengiar et al., 2018). In order to achieve learning objectives, teachers must be able to facilitate students so that they are able to achieve all competencies in each biological material. However, students are often unable to achieve these competencies.

Many students fail to achieve the minimum completeness criteria in the competence of knowledge, attitudes, and skills. This is because students find it arduous to master the content delivered by the educator, so the designed learning objectives are not achieved. Biological materials are often seen as difficult for students to learn. According to Çimer (2012), biological material has complex concepts and problems; besides, many biological objects cannot be observed directly, are abstract, and often use Latin terms. Another thing that causes learning objectives are not achieved is the teacher does not understand the characteristics of the material being studied (Djaguna et al., 2021). This understanding is very important for teachers because it is closely related to the preparation of learning tools, including selecting effective learning strategies and methods for delivering material (Sudarisman, 2015).

Based on the results of observations made by researchers in the field, the low level of learning outcomes is faced by many students who do not have the motivation to learn, so the average value of science subjects is not satisfactory. It can be seen from the summative test results from 30 students that only 8 to 10 students can achieve the minimum standard in science subjects. Its because educators dominate the classroom instruction while students listen to lectures. In addition, the work of assignments only utilizes textbooks and is not given the opportunity to seek answers from other sources. As a result, students become bored because of monotonous learning. The lack of use of varied methods leads to less than optimal learning outcomes. For this reason, it is necessary to have a more interesting and fun learning method.

The pandemic has changed the way students learn and the way teachers teach online (Jaap et al., 2021). One alternative method that can be used to activate students in the classroom is the Information Search (IS) method. Happy online learning, the use of the IS

method makes learning flexible, students get information easily, and it is easier to complete assignments from the teacher (Abute & Aimang, 2021). The IS method can make students understand deeply about the material they are studying (Ammy, 2021). Pradja et al. (2019) also researched that the use of the IS method in distance learning can help students increase students LO compared to non-IS methods. The lack of motivation causes the low LO of students to learn, and the teaching method is boring, but the IS method can overcome this problem (Mutmainah, 2020). The difficulty of science material and students' inability to explain a scientific concept in the pandemic era can be overcome by using the IS method (Kairmo et al., 2021). The activities of students and teachers when the implementation of learning with the IS method improved to be good, even the increase in this activity was followed by increasing the LO of students to be good (Diana et al., 2018)

Based on the description of the problems above, it is necessary to conduct research on learning strategies or methods that emphasize the involvement of students in the teaching and learning process to improve student learning outcomes in the form of information search methods.

METHOD

This research was conducted with the aim of knowing the effect of the information search method on the learning outcomes (LO) of students in class VIII of SMP Negeri 9 Sorong City. The method used in this research is Quasi Experiment research using a Non-Equivalent Control Group Design. The population of this study was students of class VIII SMP Negeri 9 Sorong City. In this study, the sampling technique used was random sampling with a sample of 30 students (15 experiments and 15 controls).

The most critical part of any study is gathering data, and here is where the bulk of the work is done. In accordance with the plan in this study, the instrument used was lesson plans consisting of lesson plans for the control class and the experimental class, student worksheets, and learning outcomes test questions (pretest-posttest); before being used, these instruments have been validated by previous researchers. Researchers used test questions of learning outcomes in the form of multiple-choice as many as 20 items.

The test is a series of questions that are used to obtain data about the differences in student learning outcomes using the IS method and not using the IS method on the material structure and function of plants for class VIII students of SMP Negeri 9 Sorong City. The test was used with the aim of knowing the effect of student learning outcomes both before being given treatment in the form of a pre-test and after being given treatment in the form of a post-test.

The data that has been collected is then carried out with data analysis techniques; namely, the researcher tries to provide a description of the results of the study. In the data analysis, several stages were carried out: testing the analytical prerequisites (normality test and homogeneity test) and then continued with hypothesis testing using a t-test.

RESULTS AND DISCUSSION

Several findings have been obtained in this study. The IS method has been able to improve students' LO. The following presents the data that has been obtained during data collection.

Table 1. LO data description

	N	Mean	SD	SD Error Mean
Pre-test-LOE	15	39.00	10.72	2.77
Pre-test-LOC	15	30.33	9.15	2.36
Post-test-LOE	15	76.33	4.42	1.14
Post-test-LOC	15	47.67	14.25	3.68
Gain-LOE	15	37.33	12.52	3.23
Gain-LOC	15	17.33	16.89	4.36

Note: LOE = learning outcome of the experimental group; LOC = learning outcome of the control group

Table 1 indicates that the mean pretest-LO was at a score of <40 (experimental was 39.00 and control was 30.33). Both groups experienced an increase in LO scores where the experiment was 76.33, and the control was 47.67. The experimental group gain showed a higher score of 37.33, while the control group showed a lower score of 17.33.

Table 2. Data normality test results

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest-LOE	0.137	15	0.200	0.941	15	0.396
Pretest-LOC	0.181	15	0.199	0.906	15	0.117
Posttest-LOE	0.219	15	0.052	0.888	15	0.063
Posttest-LOC	0.168	15	0.200	0.946	15	0.461
Gain-LOE	0.216	15	0.059	0.893	15	0.075
Gain-LOC	0.135	15	0.200	0.931	15	0.283

Table 2 indicates that both groups' pre-test, post-test, and gain data are normal. This is indicated by the value of sig. > 0.005. Thus parametric analysis can be performed.

Table 3. Homogeneous test data and student LO difference test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig.
Pre-test-LO	Equal variances assumed	0.455	0.505	2.381	28	0.024
	Equal variances not assumed			2.381	27.327	0.025
Post-test-LO	Equal variances assumed	9.283	0.005	7.441	28	0.000
	Equal variances not assumed			7.441	16.667	0.000
Gain-LO	Equal variances assumed	2.016	0.167	3.685	28	0.001
	Equal variances not assumed			3.685	25.815	0.001

The study results support the hypothesis, which states that the use of the IS method affects the learning outcomes of class VIII students of SMP Negeri 9 Sorong City. This is indicated by a significance value of 0.001 < 0.05 for data gain. The test is hypothesized using gain data because the pre-test data of the two groups shows a difference. According to Sugihartono et al. (2007), the achievement of learning outcomes is influenced by two factors, namely internal factors and external factors or environmental factors. Environmental factors such as learning methods used in schools. Learning science using the IS method affects student learning outcomes. Students in the IS group obtained better learning outcomes. This can be proven by looking at the score of student learning outcomes, which increased by 37.33 after attending the class using the IS learning method.

Based on the test scores, students from the control group had a low score when compared to the experimental group. Student learning outcomes are still lacking this is because teachers teach using conventional learning. The teacher dominates learning, and the students passively participate in the learning. This action causes students' level of activity and learning outcomes in the Sorong control group to be low, namely 47.67, with a gain of 17.33. In line with the research results of Aco et al. (2021); Muhdar et al. (2019), in the control group that was treated with the conventional method, the learning outcomes were quite small compared to the non-conventional group. According to Bhure et al. (2021), the learning process is effective if all students are actively involved. The teacher provides learning opportunities for students to seek as much information as possible because it affects learning outcomes.

From the research conducted by researchers, it is true that the use of IS learning methods applied in learning, especially in class VIII A1, affects students' LO. In this learning, students seek and find their answers to questions given by the teacher. Students become more active and remember what they are learning more so that when given questions, students can answer with the correct answer compared to students in conventional learning. Learning that does not systematically direct students to seek information makes students weak in finding information (Amram et al., 2021) and makes students unable to distinguish which information is wrong (Auberry, 2018). The experiences provided to students teach them knowledge and skills (Ashcroft et al., 2021). In this research, IS provides opportunities for students to gain experience in finding information.

The learning process in the experimental class using the IS method teaching and learning activities occur in two directions, namely good communication between teachers and students. Students are allowed to explore and seek as much information as possible through various learning resources. Then students discuss it with group friends so as to make students more active and motivated in learning. This method is directly related to the teacher's efforts in presenting a teaching that follows the situation and conditions so that the maximum achievement of learning objectives is obtained. This method directs students to be able to find information to answer questions or problems given by the teacher using various learning resources such as books, newspapers, magazines, articles, journals, the internet, and others. This method was chosen so that students can understand a lesson directly, guide students to be independent, active and work hard to understand the material as a whole. Efforts to apply this method are expected to increase motivation in active, creative, and fun learning to learn in a better direction and have implications for improving student learning outcomes.

CONCLUSION

Based on the results of the study, it can be concluded that learning using the information search method in science subjects has an effect on the learning outcomes of class VIII students at SMP Negeri 9 Sorong City. Students in IS learning show greater gains than students in conventional learning.

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