ISSN: 2614-6754 (print)
ISSN: 2614-3097(online)

Halaman 17722-17729
Volume 8 Nomor 2 Tahun 2024

Scramble Type Cooperative Learning Model and Its Influence on Biology Learning Outcomes: Experimentation on Tondano 1 Public High School Students

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Abstrak

Tujuan penelitian adalah untuk mengetahui bagaimana Model Pembelajaran Kooperatif Tipe Scramble di SMA Negeri 1 Tondano mempengaruhi hasil belajar biologi siswa. Penelitian ini dilaksanakan di kelas X SMA Negeri 1 Tondano pada tahun ajaran 2023–2024. Sampel penelitian terdiri dari 26 siswa kelas X-4 dan 25 siswa kelas X-3. Dengan nilai t tabel sebesar 1,676 maka nilai t hitung sebesar 4,847 sesuai dengan data pengujian hipotesis uji t. Selanjutnya, n1+n2-2 (25+26–2) = 49 derajat kebebasan digunakan, dan ambang batas signifikansi ditetapkan sebesar 0,05. Hal ini dapat ditentukan dengan membandingkan nilai t_{hitung} dan t_{tabel} yaitu $t_{hitung} > t_{tabel}$, maka H_0 ditolak dan H_1 disetujui. Oleh karena itu, dapat dikatakan bahwa model pembelajaran koperatif tipe scrambel berpengaruh terhadap hasil belajar siswa pada pembelajaran biologi.

Kata Kunci: *Model Pembelajaran, Scramble, Kooperatif, Hasil Belajar, Biologi*

Abstract

The purpose of the study is to ascertain how the Scramble Type Cooperative Learning Model at SMA Negeri 1 Tondano affects student learning outcomes in biology. This study was carried out in SMA Negeri 1 Tondano's class X during the 2023–2024 academic year. The research samples consisted of 26 students from class X-4 and 25 students from class X-3. With a t-table value of 1.676, the t-count value was 4.847 according to the t-test hypothesis testing data. Furthermore, n1+n2-2 (25+26–2) = 49 degrees of freedom are employed, and the significance threshold is set at 0.05. It may be determined by comparing the values of t_{count}t and t_{table} that $t_{count} > t_{table}$, indicating that H_0 is rejected and H_1 is approved. Therefore, it can be said that the scrambler type cooperative learning model influences student learning outcomes in biology learning.

Keywords: *Learning Model, Scramble, Cooperative, Learning Outcomes, Biology*

INTRODUCTION

Education is a means in the process of cultural change to advance the culture of society and the nation. Cultural changes are expected to meet the demands of developing students' potential to the maximum, including intellectual, spiritual, social, moral, and artistic potential. Education will be provided through guidance, teaching and training as educational process activities. So that through these activities it will ensure the development of individual and community life, which ultimately forms maturity or a complete personality (Syafaruddin, et al., 2016; Judijanto et al., 2024).

Education plays a crucial role in enhancing the quality of human resources to achieve the goals of the Indonesian country, which include boosting overall well-being and fostering intellectual development. Special focus should be given to efforts aimed at enhancing human resource development through education. Education Law no. 20 of 2003 aims to cultivate students' potential to become individuals who have faith in and are dedicated to God, possess virtuous character, maintain good health, possess knowledge, demonstrate capability, exhibit creativity, foster independence, and uphold democratic values while being responsible.

Success in the learning process will be achieved if students and teachers are ready for the learning process. This is because the learning process requires good interaction between students and teachers, so society no longer believes that teachers are people who know everything. In contrast, students are people who do not know anything. However, learning is a two-way process, where students need feedback from the teacher and vice versa in order to obtain more effective learning results (Rusman, 2011; Mangelep, 2013).

The reality in the field shows that students need a higher willingness to learn, for example, in English or natural science subjects, especially biology. Many students feel bored in class and need help understanding the lessons their teachers teach. This shows that students need more motivation to learn. Students still consider learning activities unpleasant and choose other activities outside the learning context such as watching television, playing with gadgets and hanging out with friends (Mangelep, 2015; Febriani, 2021).

With the progress and demands of the times, teachers play an essential role in the learning process. Apart from conveying information to students, teachers must act professionally, creatively, and pleasantly by understanding and helping students face learning difficulties so that students' potential develops to the maximum (Tanjung, 2016; Mangelep, 2017).

Based on the results of interviews with teachers at SMA Negeri 1 Tondano, some students still need to reach the Minimum Completeness Criteria (KKM). Apart from the low level of learning completeness, students' motivation to study still needs to improve. This can be seen in students' need for preparation when the time comes for biology lessons to start. This is also supported in the learning process which is shown by the lack of questions and responses directed at the teacher, as well as the lack of learning models used by the teacher so that students do not have interest in learning in groups.

Learning strategies are needed to overcome these problems and improve cognitive learning outcomes. Rusman (2010) states that learning methods that can activate students are fun and effective and must be implemented to achieve learning goals. One learning

method that can be applied is cooperation. Slavin (1995) states that Cooperative Learning is a learning process where students work on tasks together and help each other in groups. The teacher's role in cooperative learning no longer dominates the learning process, but students must be more active in learning activities (Huda, 2011; Mangelep et al., 2020).

The learning model assists teachers in implementing teaching materials that need to be delivered to students. With the learning model, teachers get various alternative ways of conveying information to students (Wahab, 2005; Mangelep et al., 2023). A learning model is a conceptual framework that contains systematic procedures and organizes students' learning experiences to achieve specific learning goals (Wilson, 2013; Mangelep et al., 2023), which functions as a teacher guide (Mangelep et al., 2023).

METHOD

The type of research used in this research is experimental research. This research was divided into two groups, namely the experimental group and the control group. The reaction results of the two groups will be compared (Priyono, 2016; Mangelep et al., 2024). This research was conducted on students in two classes. As an experimental class, the first class uses the Scramble-Type Cooperative learning model. Meanwhile, as a control class, the second class uses a conventional learning model with the same material, namely Ecosystem Components and Their Interactions.

This research was carried out in the even semester of the 2023/2024 academic year at SMA Negeri 1 Tondano, located in West Tondano, Minahasa Regency, North Sulawesi. The population in this study were all class X students of SMA Negeri 1 Tondano. The research design used in this research is quasi-experimental or quasi experimental. The research design used was a pretest-posttest control group design.

Table 1. Pretest-posttest control group design

Group	Pretest	Treatment	Posttest
Experiment	O_1	X_1	O_2
Control	O_3	X_2	O_4

Information:
O1: Experimental Class Pretest Score
O2: Experimental Class Posttest Score
O3: Control Class Pretest Score
O4: Control Class Posttest Score
X1: Scramble Type Cooperative Learning Model
X2: Conventional Learning Model

The sampling technique uses simple random sampling because sampling members from the population is carried out randomly without paying attention to the population levels. The sample in this study was part of the randomly selected population, namely class X-3, totaling 25 students, as the experimental group and X-4, totaling 26 students, as the control group.

Data analysis comes from data collection. The aim is to compile the (quantitative) data that has been obtained. In quantitative research, the data analysis techniques are precise and directed at answering the problem formulation or testing the hypothesis formulated in the proposal. Because the data is quantitative, the data analysis technique uses available statistical methods.

RESULT AND DISCUSSION

The research data was taken from students in two classes, namely class X-3 and class X-4 at SMA Negeri 1 Tondano, with 25 students in class X-3 and 26 students in class X-4. Class X-3 is the experimental class, and class X-4 is the control class. The data taken was student learning outcomes on ecosystem components and their interactions. A summary of score data in the experimental and control classes can be seen in Table 2 and Table 3 below.

Table 2 Pretest and Posttest Learning Results for Experimental Class

Statistic	Statistic Value	
	Pre-test	***Post-test***
Total	840	1760
Minimum Score	10	50
Maximal Score	70	90
Averange	33,6	70,4
Standard Deviation	16,04	11,36
Variance	257,2816	129,0496

Table 3. Control Class Pretest and Posttest Learning Results

Statistic	Statistic Value	
	Pre-test	***Post-test***
Total	1280	1420
Minimum Score	20	30
Maximal Score	70	80
Averange	49,2	54,6
Standard Deviation	14,12	13,63
Variance	199,3744	185,7769

Data prerequisite tests are first carried out before testing the hypothesis using the t-test, namely the normality test and the variance homogeneity test. The data used are posttest scores from the learning outcomes of the experimental class and control class. After the prerequisite tests have been carried out, the next step is testing the hypothesis. This hypothesis test aims to see the comparison between student learning outcomes from the experimental class and the control class. The hypothesis test used is the T-test.

The results of the normality test calculation of the final test data (posttest) for the experimental group calculated using Microsoft Excel 2010 showed that L_{count} was 0.126. Based on the critical value table L_{table} of the Liliefors test at $\alpha = 0.05$ with $n = 25$, the L_{table}

value is 0.173. This means that L_{count} is smaller than L_{table}, namely L_{count} = 0.126 < L_{table} = 0.173. By the test criteria, if L_{count} < L_{table}, then H_0 is accepted. It can be concluded that the learning outcomes of experimental class students come from a normally distributed population.

The results of the normality test calculation of the control group's posttest data calculated using Microsoft Excel 2010 showed that L_{count} was 0.103. Based on the critical value table L_{table} of the Liliefors test at α = 0.05 with n = 26, the L_{table} value is 0.170. This means that L_{count} is smaller than L_{table}, namely L_{count} = 0.103 < L_{table} = 0.170. By the test criteria, if L_{count} < L_{table}, then H_0 is accepted. It can be concluded that the learning outcomes of control class students come from a normally distributed population.

Homogeneity testing aims to see the similarities between the two varieties in the experimental and control classes. Homogeneity testing is carried out using the F test, with the criterion that the variance of two classes is homogeneous if F_{count} < F_{table}.

Based on the calculation of the homogeneity test for the experimental class, Fcount = 2.025 and F_{table} = 4.260 with dk in the numerator = 1 and dk in the denominator n-1, so it can be seen that F_{count} < F_{table}. This shows that the population comes from homogeneous variance. Apart from that, based on the control class homogeneity test calculations, F_{count} = 1.073 and F_{table} = 4.242 with dk in the numerator = 1 and dk in the denominator n-1, so it can be seen that F_{count} < F_{table}. This shows that the population comes from homogeneous variance.

Table 4. Results of the t test for the experimental class and control class

Information	Experiment Class	Control Class
Average	70,4	54,6
Variance	127,0496	185,776
Number of Respondents	25	26
t_{count}	4,847	
t_{table}	2,060	
Conclusion	Reject H_0	

From the results of hypothesis testing with the t-test, t_{count} = 4.847, while the t_{table} value = 1.676. Because of the value of t_{count} > t_{table}, it can be concluded that the Scramble Type Cooperative learning model has a positive influence on student learning outcomes in class X reproductive system material at SMA Negeri 1 Tondano.

This research is a quantitative study to determine how the scramble cooperative learning model influences students' biology learning outcomes at SMA Negeri 1 Tondano. This research has one independent variable, namely the scramble-type cooperative learning model, and the dependent variable, namely learning outcomes.

From the results of data analysis, it was obtained that t_{count} was 4.847, when compared to t_{count} 4.847 > from t_{table} 1.676, which means that there was an influence of the application of the scramble type cooperative learning model on students' biology learning outcomes at SMA Negeri 1 Tondano. The results of this research are in line with research conducted by Sartika (2020), which shows that there is an influence of the scramble-

type cooperative learning model on students' biology learning outcomes with the results of the hypothesis test carried out obtained t_{count} = 16.58 while at the 5% significance level obtained t_{table} = 2 .02 means $t_{count} \geq t_{table}$.

In line with the results of research conducted by Noviana (2017), which shows that the research results obtained t_{count} = 7.27 and t_{table} (α = 0.05, 91) = 1.980 ($t_{count} > t_{table}$) so that H_o is rejected and H_a is accepted, which means There is a significant difference in the mathematical knowledge competency of the group of students who were taught using the scramble type cooperative learning model assisted by manipulative materials and the group of students who were not taught using the scramble type cooperative learning model.

Supported by Subandriyo (2019), the research results show that it is known that the r_{table} is 0.220 with a significance of 0.05. Comparing the two, r_{count} 0.741> r_{table} 0.220, it can be concluded that H_o is rejected and H_a is accepted, which means there is a significant positive influence between variable x and y.

This is also in line with Said (2015); the results of descriptive analysis show that the average value of physics learning outcomes for class and after being taught using the scramble type cooperative learning model was 13.92 and a standard deviation of 2.37 with an average Normalized Gain value of 0.54 in the medium category. From the results of the analysis, the scramble-type cooperative learning model can improve physics learning outcomes.

Supported by research by Apriyanti (2019), the final analysis result using the t-test was 16.369. The t distribution list with db = 22-1 = 21 and a level of 5% obtained 1.717 because the test criteria were smaller (>), so it was accepted. Based on the specified KKM, namely 70, the average learning outcomes of students treated by applying the scramble type learning model, namely 83.45, have reached the KKM.

Thus, applying the Scramble-type cooperative learning model influences student learning outcomes at SMA Negeri 1 Tondano. This can be seen in the higher learning outcomes of experimental class students compared to the control class. So, applying the Scramble-type cooperative learning model is effectively implemented at SMA Negeri 1 Tondano.

CONCLUSION

The Scramble-type cooperative learning model influences student biology learning outcomes at SMA Negeri 1 Tondano based on data analysis and hypothesis testing that researchers have carried out. This is based on the results of the t-test analysis taken from the average post-test value, so it is obtained that $t_{count} \geq t_{table}$ is 4.847 ≥ 1.676, so the results of hypothesis testing state that H_0 is rejected and H_1 is accepted.

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