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The Effect of Concept Sentence Learning Model on Students' Learning Outcomes

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Abstract: This study aims to determine the influence of using the Concept sentence learning model on the learning outcomes of Tamansiswa Pematangsiantar Middle School students. The method used in this study is an experimental method with a randomized control group pretest-posttest design. The research was carried out in three stages, namely the preparation stage, the implementation stage, and the final stage. Data analysis was carried out quantitatively, namely descriptive and comparative. The data analysis technique used is descriptive analysis and inferential statistical analysis. Data testing was carried out in two stages, namely the analysis requirements test (normality test and homogeneity test), and hypothesis testing was carried out by statistical t-test. Research data were analyzed using SPSS version 21.0. From the results of the study, the average value of the post-test for the experimental class was 88.68, while the average post-test for the control class was 85.13. From the results of testing the hypothesis obtained t_{count} (2.338) > t_{table} (1.992), then Ho is rejected and Ha is accepted meaning that there is a significant influence of applying the Concept Sentence learning model to student learning outcomes at Tamansiswa Pematangsiantar Middle School. It was concluded that there was an effect of applying the Concept Sentence learning model to the learning outcomes student of senior high school Tamansiswa Pematangsiantar.

Keywords: Concept Sentence; Learning Model; Learning Outcomes

Introduction

The learning and teaching process is an activity that can help students achieve predetermined educational goals (Asmara & Nindianti, 2019). The teaching and process learning can carry out effectively if all the urgent components in the process support each other to achieve the goal. These components ie students, teachers, curriculum, methods, facilities and infrastructure, and work environment (Melianah et al., 2020). The components, the most influential is the teacher or educator (Erlina & Ulfah, 2022).

The learning process can take place because there are students, teachers, and curricula where one is related to one another or is interconnected (Alam, 2022; Safar & Mulyasa, 2022). Students can learn well if the facilities and infrastructure for learning are adequate, the teacher's learning model is more interesting, make students more actively involved in the learning process so that students do not feel bored or bored when participating in class learning. Improving good learning outcomes is not only supported by students' willingness to want to study well, but the learning model used by teachers also influences student learning outcomes (Siswati et al., 2021; Sudargini & Purwanto, 2020).

The role of a teacher, apart from being a model or role model, is also a manager in the learning process (Efgivia et al., 2021; Purwanto, 2021; Marwanto, 20221). Teachers have a very important role in determining the quantity and quality of the process of educating students (Odilovich et al., 2020). In connection with the teacher's task as an educator, so that students understand and understand the lessons given, the teacher must think about and make good teaching and learning strategies. The selection of an interesting learning model can affect students themselves, namely by involving students to

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look more active in the learning process, so that the expected learning results are obtained.

However, the reality that is currently happening in the learning and teaching process is not like expected, especially with the current pandemic conditions, many students do not understand the subject matter if the teacher only sends material online, resulting in low student learning outcomes (Fajri et al., 2021; Said & Muslimah, 2021; Rasmitadila et al., 2020). Things that affect the low student learning outcomes include: (1) The teacher does not carry out a variety of learning models causing students to be bored and passive when the teacher provides material in the online teaching and learning process. (2) Lack of student activity and interest in learning. (3) Biology lessons that use a lot of scientific terms make students easily bored (Setiyarini, 2023; Trinidad, 2020). This weakness causes the inability of students to use the concept if they find problems in the teaching and learning process. As a result, every time there is a problem students cannot think critically in making decisions or solving problems.

Based on the results of the author's observations at Tamansiswa Pematangsiantar senior high school, not many teachers teach using varied learning models, especially biology teachers. Teachers still only use conventional learning models where learning models are less varied so that the activities carried out by students are only reading material, listening, paying attention, and taking notes. The monotonous learning process causes students to be passive and not challenged in solving biology problems which in turn affects the low student learning outcomes (Yusra et al., 2022; McGreevy & Church, 2020). In improving student learning outcomes, teachers need to design learning to streamline the teaching and learning process and generate student learning motivation to be able to foster interaction between students and other students, as well as between students and teachers. One solution to the above problems is face-to-face learning and applying learning models that can generate motivation and enable students to think critically. One of the innovative learning models that can be applied is the concept sentence learning model.

Concept sentence is a learning model that begins with conveying competence, presenting material, and forming heterogeneous groups, the teacher prepares keywords, according to teaching materials, and each group makes sentences based on keywords (Huda, 2013). A similar opinion was also expressed by Ristiawan (2016) that the general feature of the concept sentence model was a presentation with keywords (Suzana, 2021; Wang et al., 2016). The keywords given are adjusted to the learning objectives to be achieved in the lesson. The purpose of the learning model applied in learning is to improve students' abilities during learning. Without a real learning model, teachers often develop patterns based only on their past and intuition so that the concept of the learning material to be delivered is not channeled optimally and students have difficulty understanding it. The author hopes that there will be an increase in student learning outcomes by using the concept sentence learning model.

Based on the background above, the authors have conducted research on the effect of applying the concept sentence learning model on student learning outcomes in ecosystem material in class X Senior High School Taman Madya Tamansiswa Pematangsiantar.

Method

The research was conducted in class X Science at senior high school Tamansiswa Madya Pematangsiantar from April to June 2022. The population of this study was all students of class X Science at senior high school Tamansiswa Madya Tamansiswa Pematangsiantar. The sampling technique used random sampling which consisted of one experimental class and one control class, each class consisting of 38 people.

The method used in this research is an experimental method with a randomized control group pretest-posttest design (Ristanto & Darmawan 2020; Sugiyono, 2014), using two classes as research samples. One class, namely class X IPA-1 (38 people) was the experimental class which was treated with the concept sentence (EC) model, and one class, namely class X IPA-2 (38 people) was the control class which was taught by the conventional model (CC). Before learning was carried out, both classes were given a pretest, then the experimental class was taught with the concept sentence model and the control class was taught with the conventional model. After learning ended, both classes were given a post-test. The research design can be seen in table 1.

Table 1. Randomized Control Group Pretest-Postest Design

Class	Pre-Test	Treatment	Post Test
CE	T_1	X_E	T_2
CC	T_1	X_C	T_2

Note:
CE = Experiment Class
CC = Control Class
X_E = Learning with the concept sentence model
X_C = Learning with conventional models
T_1 = Pre-test Experiment Class and Control Class
T_1 = Post-test Experiment Class and Control Class

The research was carried out in three stages, namely (1) the preparatory stage involving the preparation of teaching materials and lesson plans and the preparation of research instruments, (2) the implementation stage involved determining the sample, giving pre-tests to the control class (class X IPA-2) and the experimental class

(class X IPA-1), teaching in the control class (class X IPA-2) with conventional models and experimental class (class X IPA-2) using the concept sentence learning model and giving post-tests to both classes after learning is finished (3) The final stage concerns data analysis and draws conclusions.

To find out the extent to which students' knowledge before and after learning, the authors provide a test that is divided into a pre-test (given before learning) and a post-test (given after learning). After the research data was obtained, it was then analyzed using SPSS version 21.0, so that a conclusion would be obtained whether there was an effect of applying the Concept Sentence learning model on student learning outcomes at Taman Siswa Pematangsiantar for the 2021/2022 academic year.

To obtain data about student learning outcomes, learning outcomes test instruments are used which have been tested to determine validity and reliability. Testing the validity and reliability of the student learning outcomes test instrument was carried out with the SPSS 21.0 program. The data obtained were analyzed using a quantitative descriptive method, then the results of the analysis were described and compared between the learning outcomes of the experimental class and the control class. Data testing was carried out in two stages, namely analysis requirements test (normality test and homogeneity test) and hypothesis testing using the t statistical test (Supena et al., 2021). In this study, data analysis used SPSS version 21.0. The statistical hypothesis tested (Uyanik, 2016).

$Ho: \mu 1 = \mu 2$ (1)
$Ha: \mu 1 \neq \mu 2$ (2)
Note:
Ho = Null hypothesis
Ha = Alternative hypothesis
μ1 = The average value of experimental class student learning outcomes
μ2 = The average value of student learning outcomes in the control class

Test criteria:

Accept Ho if tcount < ttable at significance level α = 0.5 degrees of freedom n1 + n2 - 2, which means that there is no significant effect of applying the concept sentence learning model to the learning outcomes of class X senior high school Taman Madya Tamansiswa Pematangsiantar students.

Accept Ha if tcount> ttable at the significance level α = 0.5 degrees of freedom n1 + n2 - 2 which means that there is a significant effect of applying the concept sentence learning model to the learning outcomes of class X senior high school Taman Madya Tamansiswa Pematangsiantar students.

Result and Discussion

The data obtained in this study are student learning outcomes using the Concept Sentence learning model on ecosystem material in class X senior high school Taman Madya Tamansiswa Pematangsiantar Academic Year 2021/2022.

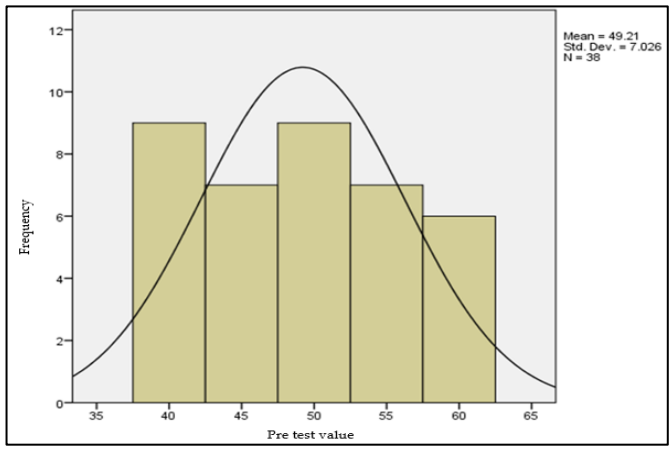

Figure 1. Histogram of Control Class Pre-test Data (X IPA 1)

Based on Figure 1, it can be seen that the average Pre-Test value for the control class was 49.21 and the Standard Deviation was 7.026 with a total sample of 38 people from the control class.

Based on Figure 2, it can be seen that the average value of the experimental class pre-test was 50.79 and the standard deviation was 8.181 with a total sample of 38 people. In accordance with minimum completeness criteria 75 in Biology subject, all control students (38 people) and experimental class (38 people) had not reached minimum completeness criteria (100%).

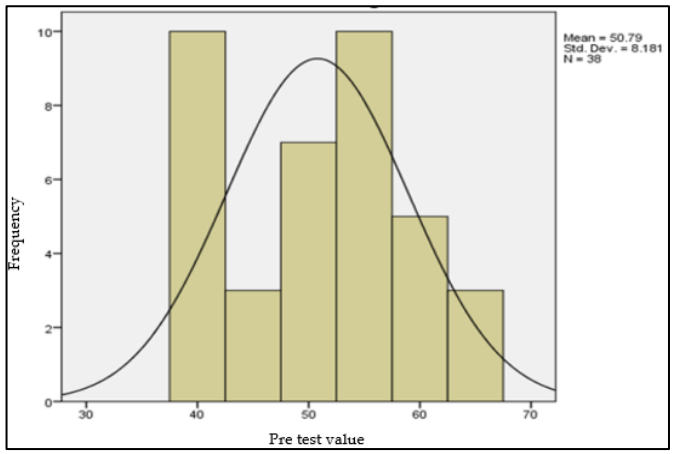

Figure 2. Histogram of Experiment Class Pre-test Data

Based on Figure 3, it can be seen that the average post-test value for the control class was 85.13 and the standard deviation was 6.626 with a total sample of 38 people. In accordance with minimum completeness criteria 75 in biology, all control class students (38

people) have achieved minimum completeness criteria (100%).

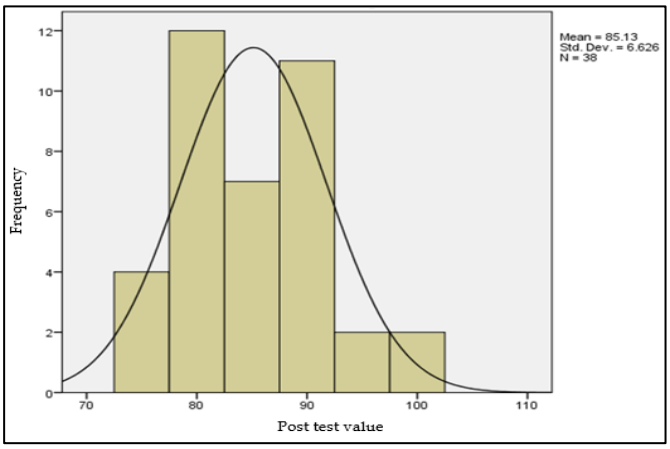

Figure 3. Histogram of Control Class Post-Test Data

In determining whether or not a data is normal, it can be seen from the significant value of Asymp.Sig. (2-tailed) in table 2. In this study, a significance level of α = 0.05 was used. The data is declared normally distributed if the Sig value is > 0.05 and vice versa the data is declared not normally distributed if the Sig value is <0.05. Based on table 2, a Sig value of 0.91 is obtained, so the Sig value (0.91) > 0.05 means that the Post-test data for the control class is declared to be normally distributed.

Table 2. Post-Test Data Normality Test Control Class (X IPA 1)

Parameters Test		Score
N		38
Normal Parameters[a,b]	Mean	85.13
	Std. Deviation	6.626
Most Extreme Differences	Absolute	0.202
	Positive	0.202
	Negative	-0.163
Kolmogorov-Smirnov Z		1.244
Asymp. Sig. (2-tailed)		0.091

a. Test distribution is Normal.
b. Calculated from data.

Based on Figure 4, it can be seen that the average post-test score for the experimental class was 88.68 and the standard deviation was 6.439 with a total sample of 38 people. In accordance with minimum completeness criteria 75 in biology, all experimental class students (38 people) have achieved minimum completeness criteria (100%).

In normal payment or not a data can be seen from the significant value of Asymp.Sig. (2-tailed) in table 3. This study uses a significance level of α = 0.05. The data is declared normally distributed if the Sig value is > 0.05 and vice versa the data is declared not normally distributed if the Sig value is <0.05. Based on table 3, the Sig value is 0.286, so the Sig value (0.286) > 0.05 means that the post-test data for the experimental class is declared to be normally distributed.

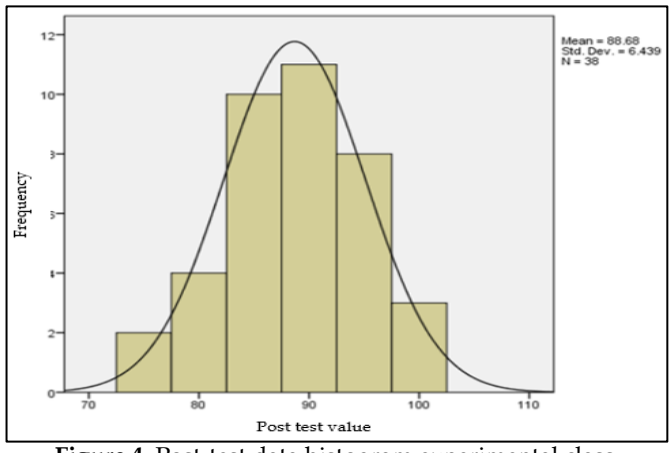

Figure 4. Post-test data histogram experimental class

Determining the variance of several populations in Table 4 is the same or not, can be seen from the significant value. In this study, the decision-making criterion is that if Sig > 0.05, it can be said that the data have the same variance. And if Sig < 0.05, it can be said that the data does not have the same variance. Based on table 4, the Sig value is 0.564, so Sig (0.564) > 0.05 means that the post-test data for the experimental class and the control class are declared to have the same or homogeneous variance.

Based on the results of testing the hypothesis using the t-test as shown in table 5. obtained t_(Count) (2.338) > t_(table)(1.992) at a significance level of a = 0.05 with degrees of freedom (dk) = 38+38– 2 = 74 then Ho is rejected and Ha is accepted, meaning that there is a significant effect of the application of the Concept Sentence learning model on student learning outcomes in ecosystem material in class X senior high school Taman Madya Tamansiswa Pematangsiantar.

Table 3. Normality Test of Post-Test Class Experiment Data

Parameters		Value
N		38
Normal Parameters[a,b]	Mean	88.68
	Std. Deviation	6.439
Most Extreme Differences	Absolute	0.160
	Positive	0.137
	Negative	-0.160
Kolmogorov-Smirnov Z		0.986
Asymp. Sig. (2-tailed)		0.286

a. Test distribution is Normal.
b. Calculated from data.

Table 4. Posttest Data Homogeneity Test for Control Class and Experiment Class

Levene Statistic	df1	df2	Sig.
0.79	5	32	0.56

Table 5. Hypothesis Testing (t-test)

		Paired Differences					T	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Data post-test kelas experiment (X IPA 2) - Data post-test kelas Control (X IPA 1)	3.553	9.366	1.519	0.474	6.631	2.338	37	.025

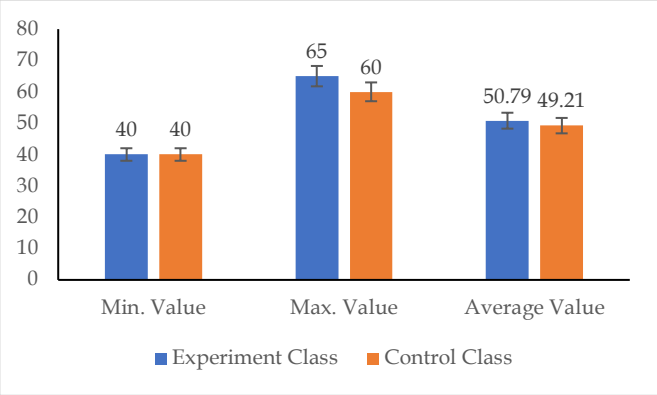

Figure 5. Pre-Test Value of Control Class and Experiment Class

Based on Figure 5, it can be seen that those who obtained the lowest score in the experimental class pre-test were 40 and the highest score was 65 with an average value of 50.79. Meanwhile, the lowest pre-test score for the control class was 40 and the highest score was 60 with an average value of 49.21. From these results it can be seen that according to minimum completeness criteria 75 in Biology subject, all students in the experimental class (38 people) and the control class (38 people) have not reached minimum completeness criteria (0%).

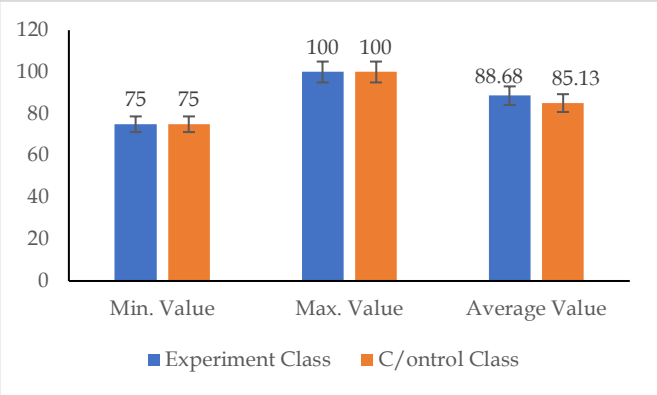

Figure 6. Post-Test Value of Control Class and Experimental Class

Based on Figure 6 it can be seen that the experimental class students who obtained the lowest score in the post-test were 75 and the highest score was 100 with an average score of 88.68. Meanwhile, the lowest post-test score for the control class was 75 and the highest score was 100 with an average value of 85.13. From these results it can be seen that the post-test score of the experimental class is higher than the post-test value of the control class with a difference in value of 3.55. In accordance with minimum completeness criteria 75 in Biology subject, all students in the experimental class (38 people) and the control class (38 people) have achieved the minimum completeness criteria score (100%).

Conclusion

Based on the results of the research and discussion, it can be concluded that there is an effect of applying the Concept Sentence learning model to student learning outcomes in ecosystem material in class X senior high school Taman Madya Tamansiswa Pematangsiantar Academic Year 2021/2022. Student learning outcomes in ecosystem material with the Concept Sentence learning model (88.68) are higher than student learning outcomes with conventional models (85.13), with a difference in learning outcomes of 3.55.

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