The Effect of Contextual Teaching Learning (CTL) Model on Students' Achievement in Elementary School

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Abstract: This study aims to determine the effect of the CTL model on the learning outcomes of fifth-grade students at SD Negeri Peunaga Cut Ujong and to find out how much influence the CTL model has on the learning outcomes of fifth-grade students at SD Negeri Peunaga. Cut Ujong. The approach in this study uses a quantitative approach. This type of research uses a pre-experimental design. The population in this study were the fifth-grade students of SD Negeri Peunaga Cut Ujong, as many as 26 students. The sampling technique used in this research is intact-group comparison. The sample in this study was 13 students in the experimental class and as many as 13 students in the control class. The data collection techniques used in this study were observation, tests, and documentation. This study's instruments used to collect data consisted of observation sheets, test sheets, and validation sheets. The results of this study are from the analysis obtained tcount = 0.965 > ttable = 0.05, it is concluded that the hypothesis is accepted, the conclusion is that there is a difference or influence of the CTL model on student learning outcomes between students who are taught using the CTL with students who are taught by not using CTL model.

Abstrak: Penelitian ini bertujuan untuk mengetahui pengaruh model CTL terhadap hasil belajar siswa kelas V SD Negeri Peunaga Cut Ujong dan untuk mengetahui seberapa besar pengaruh model CTL terhadap hasil belajar siswa kelas V SD Negeri Peunaga Cut Ujong. Pendekatan dalam penelitian ini menggunakan pendekatan kuantitatif. Jenis penelitian ini menggunakan *pre eksperimen design.* Populasi dalam penelitian ini adalah siswa kelas V SD Negeri Peunaga Cut Ujong, sebanyak 26 siswa. Teknik pengambilan sampel yang digunakan dalam penelitian ini adalah *intact-Group Comparison.* Sampel dalam penelitian ini adalah sebanyak 13 siswa sebagai kelas eksperimen dan sebanyak 13 siswa sebagai kelas kontrol. Teknik pengumpulan data yang digunakan dalam penelitian ini adalah observasi, tes dan dokumentasi. Instrumen yang digunakan untuk mengumpulkan data dalam penelitian ini terdiri dari lembar observasi, lembar tes dan lembar validasi. Hasil penelitian ini adalah dari analisis diperoleh t_{hitung}= 0.965 > t_{tabel} = 0.05 maka disimpulkan bahwa hipotesis diterima, kesimpulan ada perbedaan atau pengaruh model CTL terhadap hasil belajar siswa antara siswa yang diajar menggunakan model CTL dengan siswa yang diajar dengan tidak menggunakan model CTL.

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A. Introduction

Education is the main pillar of establishing a nation or state by developing and improving quality human resources (Nur'aini et al., 2019). The existence of renewal in the world of education is carried out in a planned, directed, and sustainable manner to create superior human beings who are ready to compete in the intense global competition. Education is one of the first steps in entering a new world in the global competition so that it is not left behind by other countries and can catch up with countries that are already superior in terms of the quality of human resources (Beck, 2019; Bowen, 2013).

The achievement of learning objectives must be distinct from the main role of a teacher (Manurung & Sari, 2022). A teacher must convey knowledge and create a conducive learning atmosphere so the learning process can occur actively. Based on these considerations, a learning approach is needed to involve student participation so that certain students do not dominate the power of teaching and learning (Oktavia, 2022).

In the learning process, the teacher has yet to try to activate the ability to understand concepts fully. Everyone owns the ability to understand this concept, and it is just a matter of how to use it. This is also reinforced by Mulbar's statement by Kasmawati that currently, teachers in evaluating learning outcomes only emphasize cognitive goals without paying attention to the dimensions of cognitive processes, especially conceptual understanding and physics practicum skills. As a result, efforts to introduce these two dimensions still need to be addressed. Considering the above conditions, the author considers it necessary to carry out updates, innovations, or changes in the Mind Set movement toward achieving the above educational goals (Pucciarelli & Kaplan, 2016). Physics learning should use a variety of models to optimize students' potential. The teacher's efforts in managing and empowering various learning variables are important to students' success in achieving the planned goals. Therefore, the selection of methods, strategies, and approaches in designing learning models to achieve a meaningful active learning climate is a demand that teachers must meet (Hénard & Roseveare, 2012; Roehl et al., 2013).

Based on the results of researchers' observations on January 17, 2021, in class V at SD Negeri Peunaga Cut Ujong, researchers saw a need for improvement in the learning system carried out in the teaching and learning process in terms of exploring the potential of students. The learning model used in learning uses more lecture models and assignments. In this case, the class teacher explains in general on the blackboard, then students take notes based on the teacher's explanation on the blackboard, and then at the end of the lesson, are given assignments and collected and checked by the teacher. The learning model used by the teacher is good, but a method carried out continuously and monotonously will give negative responses to students, such as boredom, sleepiness, and even going in and out of class. In addition, the teacher only does direct practicum and demonstrates in front of the class.

Based on the problems above, researchers need to create an interesting and fun learning process to optimize learning so students' learning interests can increase. Even

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though there have been many effective learning models, such as the problem-solving model, the teacher still uses a teacher-centered learning model. To overcome the things mentioned above, the researcher views the need for the influence of a learning model that can create student activity in the teaching and learning process so that it can improve student learning outcomes. Therefore, researchers feel the right model is the Contextual Teaching and Learning (CTL) model.

CTL model is a learning model that emphasizes the full involvement of students to be able to find the material being studied and relate it to real-life situations to encourage students to be able to apply it in their lives (Baron, 2016; Hendawati et al., 2019; Tamur et al., 2020). CTL learning is a model that helps teachers and students connect subject content with the real world (Afni, 2020; Lotulung et al., 2018). This approach encourages teachers to focus on developing students' knowledge, understanding, skills, and contextual understanding (Dewi & Primayana, 2019).

The CTL model is a learning process that aims to help students work and apply knowledge by connecting lessons in real-life contexts (Selvianiresa & Prabawanto, 2017). Providing opportunities for students to experience processing and producing work so that students are active, creative, and quick in understanding the material the teacher has delivered. The contextual learning model is a holistic learning process and aims to help students understand the meaning of teaching materials and relate them to the context of their daily lives (personal, social, and cultural contexts) so that students have dynamic knowledge/skills and flexible to actively construct their understanding (Goodman & Goodman, 2013; Hwang et al., 2015; Ültay & Çalık, 2012).

B. Method

Research design is the method used to collect research data so that research results can be proven. This research is using experimental method. Experimental research is the complete quantitative research approach, which meets all the requirements for examining causal relationships. Experimental research methods are defined as methods used to find the effect of certain treatments on others under controlled conditions. Researchers used the Intact-Group Comparison research design. In this design, one group is used for research but is divided into two: half the experimental group (which is given treatment) and half the control group (which is not given treatment).

The population in this study were fifth-grade students at SD Negeri Peunaga Cut Ujong, totaling 26 students. The sampling technique used in this study was the Intact-Group Comparison sample. Namely, in this village, there was one group for the experimental class (which was given treatment) and half for the control group (which was not given treatment). The samples in this study were 13 students in the experimental class and 13 in the control class. The data collection technique used in this study was a test.

Test the validity of the test is a degree that states a test measures what should be measured. It aims to determine the extent to which the precision and accuracy of a

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measuring instrument in carrying out its measuring function. The pre-test is in the form of Choice, which consists of 10 items with a weight of 10 points, and the Post-test is in the form of Choice, which consists of 10 questions with a weight of 10 points.

The calculation of the price homogeneity of the variance must be carried out at the beginning of the data analysis activity. This is done to ensure that the assumption of homogeneity in each data category has been met. The researcher can carry out the next data analysis stage if the homogeneity assumption is proven. If it is not proven, the researcher must make methodological corrections, for example, increasing the number of samples, reducing price variability, and changing the research design (Tulus, 2016). This homogeneity test uses the Levene test on the SPSS 22 software for Windows. Furthermore, it is said to be homogeneous if, at the output of the Levene test, the price of the coefficient Sig > of the specified alpha value is 5% (0.05). On the other hand, if the output of the Levene test, the Sig coefficient is <0.05, then the data is not homogeneous.

The normality test was used to determine whether the sample used in this study came from a normally distributed population. This normality test uses one-sample Kolmogrof-Smirnov on SPSS 22 for window software. The data is said to be normally distributed if, at the Kolmogrof-Smirnov output, the asymptotic coefficient Sig > of the specified alpha value is 5% (0.05). On the other hand, if the output of the Levene test, the Sig coefficient is <0.05, then the data is declared abnormal.

The next data analysis is the analysis of the post-test value data, which is used to determine the learning outcomes of students between the experimental class and control classes. Data analysis used to determine differences in student learning outcomes is parametric statistics with t-test analysis for uncorrelated samples. This analysis was chosen because the scores or values of the two samples were obtained from different subjects to analyze the data presented in the calculations using the t-test formula in this study using the help of SPSS 22 for windows software.

C. Result and Discussion
Result

This research was conducted at SD Peunaga Cut Ujong in class V, with the Intact-Group Comparison research design. In this design, there was one group used for research, but divided into two, namely half the experimental group and half the control group, with the total number of students in class V (26 students). 13 students were used as the experimental class, and 13 students were used as the control class. This research began by giving sub-themes of various important events in life in the control class using the lecture learning model, while for the experimental class using the CTL model, the researcher could have conveyed more material. However, students were invited to actively understand the material by discussing it. It was expected that students could work alone and construct their knowledge and abilities. There is a question and answer session so that students can behave actively. After the explanation of the material is considered sufficient, the researcher gives

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practice questions to evaluate the material that has been studied. While working on the questions, students may discuss in small groups while the researcher supervises and assists. Then the researcher gave a quiz to be done by all students. At the end of learning, questions still need to be completed are discussed.

In closing, the researcher gave questions as homework as a stimulus so that students wanted to learn. The difference lies in using classroom teaching models when teaching in experimental classes. Researchers apply the CTL model to teach sub-themes of various important events in life. While in the control class, the researcher used the usual lecture model. While the initial score of the experimental class is presented in the following table:

Table 1. The Result of Experimental Class Pre-Test and Post-Test

No	Sample	Pre-test	Post-test
1.	S-1	30	80
2.	S-2	50	90
3.	S-3	40	70
4.	S-4	70	90
5.	S-5	50	80
6.	S-6	70	90
7.	S-7	80	100
8.	S-8	50	90
9.	S-9	70	90
10.	S-10	40	80
11.	S-11	70	100
12.	S-12	60	80
13.	S-13	70	100
	Total	750	1140
	Average	57,69	87,69

Based on the table above, the highest score from the pre-test given to the experimental group was 80, and the lowest score was 30, with an average of 57.69. While the highest score from the post-test given to the experimental group was 100, and the lowest score was 70, with an average of 87.69.

The control class is the group that was given treatment without using the CTL learning model but using the lecture model. Before the researchers gave the treatment, the control class was given a test. The number of students in the control class was 13 students, and 13 students took the test. While the initial score of the control class is presented in the following table:

Table 2. The Result of Control Class Pre-Test and Post-Test

No	Sample	Pretest	Posttest
1.	S-1	30	60
2.	S-2	40	60

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3.	S-3	40	50
4.	S-4	60	70
5.	S-5	40	60
6.	S-6	40	50
7.	S-7	60	70
8.	S-8	50	60
9.	S-9	70	90
10.	S-10	30	50
11.	S-11	50	60
12.	S-12	40	60
13.	S-13	30	50
	Total	580	790
	Average	44,61	60,76

Based on the table above, the highest score from the pre-test given to the control group was 70, and the lowest score was 30, with an average of 44.61. While the highest score from the post-test given to the experimental group was 90, and the lowest score was 50, with an average of 60.76.

Classic assumption test

Before testing the data regression on the research hypothesis, it is necessary to conduct a test to determine whether there is a violation of the classical assumptions. The best hypothesis testing results are tests that do not violate the classical assumptions that underlie the multiple linear regression model. The classic assumptions in this study include the normality test, homogeneity test, and hypothesis testing.

Normality test

The normality test using the Kolmogorov-Smirnov test was carried out on data on the influence of the CTL model on the learning outcomes of fifth-grade students at SD Negeri Peunaga Cut Ujong. To simplify and obtain accurate data calculations in the normality test in this study, researchers used SPSS 22 assistance. The interpretation of the Kolmogrov-Smirnov test using SPSS 22 is that if the significance value is more than 0.05, then the data distribution meets the normality assumption, and if the value is less than 0.05, it is interpreted as unnormal.

Table 3. Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Kelas Eksperimen	.250	13	.026	.908	13	.172
Kelas Kontrol	.258	13	.018	.893	13	.108

The significance value for the experimental class is 0.026, and the control class is 0.018, so both can be concluded to have a significance of more than 0.05, which means that the two variables are normally distributed.

Homogeneity Test

The homogeneity test between the experimental and control classes uses the F- test. However, to simplify and obtain accurate calculations for the test homogeneity, the researcher uses SPSS 22 assistance to help the SPSS for Windows computer program with the provision that if sig. > 0.05, then the data is homogeneous. The researcher can carry out the advanced analysis stage if homogeneity is fulfilled.

H_o : The variance of the two groups is homogeneous
H_1 : The variance of the two groups is not homogeneous

By using a significance level of 5% or 0.05, if the significance obtained is more than 0.05, then accept Ho, which means that the variance of each sample is the same (homogeneous). Moreover, if the significance obtained is less than 0.05, then reject Ho, which means that the variance of each sample is not the same (not homogeneous).

Table 4. Test of Homogeneity

		Levene Statistic	df1	df2	Sig.
Hasil Belajar Siswa	Based on Mean	.002	1	24	.965
	Based on Median	.000	1	24	1.000
	Based on Median and with adjusted df	.000	1	22.073	1.000
	Based on trimmed mean	.017	1	24	.896

Based on table 4, a significance value of 0.896 is obtained to conclude that it accepts Ho, which means that the variance of the two groups is homogeneous.

Hypothesis test

To find out how far influence the CTL model has on the learning outcomes of fifth-grade students at SD Negeri Peunaga Cut Ujong, it is necessary to test its significance using a t-test technical difference analysis. Following the aim of the researcher, namely to examine the effect of the CTL model on student learning outcomes, because the number of samples is $n_1 = n_2 = 26$ and the variance is homogeneous ($\sigma_1^2 = \sigma_2^2$) then the t-test formula can be used, either for separated or polledvarians, the t-test formula used by researchers in this study is.

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$$t - Test = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}}}$$

Note:

$\bar{x}$ = mean on sample distribution 1

$\bar{x}_2$ = mean on sample distribution 2

s_1^2 = the value of variance in the sample distribution 1

s_2^2 = the value of variance in the sample distribution 2

n_1 = number of samples 1

n_2 = number of samples 2

The data for calculating student learning outcomes (post-test) shows that the experimental class applied the CTL model has an average (mean) of 87.69. Whereas in the control class CTL model was not applied to student learning outcomes and had an average (mean) of 60.76. To simplify and obtain accurate calculations for the t-test, researchers used SPSS 22. The different test criteria for the t-test will conclude that there is an effect if the significance is less than or equal to 0.05.

Table 5. The Result of the T-test

			NILAI Equal variances assumed	NILAI Equal variances not assumed
Levene's Test for Equality of Variances	F		.002	
	Sig.		.965	
t-test for Equality of Means	T		6.695	6.695
	Df		24	23,223
	Sig. (2-tailed)		.000	.000
	Mean Difference		26.92308	26.92308
	Std. Error Difference		4.02164	4.02164
	95% Confidence Interval of the Difference	Lower	18.62282	18.60810
		Upper	35.22333	35.23805

Based on table 5, a significance value of 0.000 <0.05 is obtained, so the SPSS 22 calculation concludes that the CTL model influences student learning outcomes between students who are taught using the CTL model and those taught by not using the CTL model. So there is a positive and significant influence of the application of the influence of CTL model on the learning outcomes of fifth-grade students at SD Negeri Peunaga Cut Ujong.

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From the analysis obtained t_{count} = 0.965, t_{table} = 0.05, it is concluded that the hypothesis is accepted. This means that the use of the CTL model has a significant effect on student learning outcomes. Thus, the learning outcomes of students taught using the CTL model are better than those taught with the lecture learning model.

Data Analysis
Normality test

The normality test using the Kolmogorov-Smirnov test was carried out on data on the influence of the CTL model on the learning outcomes of fifth-grade students at SD Negeri Peunaga Cut Ujong. Obtained a significant value in the experimental class of 0.026 and the control class of 0.018 so that both can be concluded to have a significance of more than 0.05, which means that the two variables are normally distributed.

Homogeneity Test

The homogeneity test between the experimental and control classes used the F test. However, to simplify and obtain accurate calculations for the homogeneity test, the researcher used SPSS 22 assistance, for the assistance of the SPSS for Windows computer program with the provision that if sig. > 0.05, then the data is homogeneous. The researcher can carry out the advanced analysis stage if homogeneity is fulfilled. Obtained a significance value of 0.896. So receiving Ho means that the variance of the two groups is homogeneous.

Hypothesis Test

To find out how far influence the CTL model has on the learning outcomes of fifth-grade students at SD Negeri Peunaga Cut Ujong, it is necessary to test its significance using a t-test technical difference analysis. From the analysis obtained tcount = 0.965 ttable = 0.05, it is concluded that the hypothesis is accepted. This means that the use of the CTL model has a significant effect on student learning outcomes. Thus, the learning outcomes of students taught using the CTL model are better than those taught with the lecture learning model.

Determinant Coefficient

The coefficient of determination ($R2$) is a constant that shows the magnitude of the Yi variation every time one Xi unit changes. The coefficient of determination is used to determine the influence of the CTL model on the learning outcomes of fifth-grade students at SD Negeri Peunaga Cut Ujong.

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Table 6. Coefficient of Determination

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.779[a]	.607	.571	10.05750

Based on table 6 above, the value of R square = 0.607 x 100% = 0.607 or 60.7%. So the magnitude of the influence of the contextual teaching and learning (CTL) learning model on the learning outcomes of fifth-grade students at SD Negeri Peunaga Cut Ujong is 60.7%.

Discussion

The initial data that became material for discussing the CTL model on student learning outcomes in the sub-theme of various important events in life was that in the learning process, the two sample groups of the experimental class and the control class were given different treatments. After the teacher gave learning materials for the experimental class, students were given treatment using the CTL model, and the control class was given the lecture model treatment. At the beginning of the treatment, students were not used to learning activities using the CTL model, but in the learning process, they could work alone and construct their knowledge and abilities. Students paid attention to the teacher motivating students so that students found their knowledge and skills to be learned, and students paid attention to teachers presenting models of logic gate circuits and how they work as learning media. In the control class that used the lecture model, students were less active because they only heard explanations from the teacher, and only a few seemed active in learning.

From the analysis obtained t_{count} = 0.965 > t_{table} = 0.05, it is concluded that the hypothesis is accepted. This means that there is a significant influence between the use of the CTL model on student learning outcomes. Thus, the learning outcomes of students taught using the CTL model are better than the learning outcomes of students taught by the lecture learning model, and the magnitude of the influence of the CTL model on outcomes of student learning is 60.7%.

The results of student observations showed that a total score of 28 was obtained. Then the total score was changed first to a percentage. Thus the observed value was 4.00%. The results of student observations in the learning process are in the very good category, where aspects of the learning process activities can be fulfilled. The results of teacher's observations showed good results, were all rated 4 or very good, so based on the level of success of the action, it can be concluded that the learning activities in class V students of SD Negeri Peunaga Cut Ujong used the CTL model, in the lesson already good.

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D. Conclusion

From the analysis obtained t_{count} = 0.965 > t_{table} = 0.05, it is concluded that the hypothesis is accepted. The conclusion is that there is an influence of the CTL model on student learning outcomes between students who are taught using the CTL model with students being taught by not using the CTL model. So it can be concluded that there is a positive and significant influence from the application of the influence of CTL model on the learning outcomes of fifth-grade students at SD Negeri Peunaga Cut Ujong, and the magnitude of the influence of the CTL model on student learning outcomes was 60.7%.

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