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THE EFFECT OF CONTEXTUAL TEACHING AND LEARNING MODEL ON STUDENTS' MATHEMATICAL CRITICAL THINKING SKILLS

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ABSTRAK

Penelitian ini bertujuan untuk mengetahui Pengaruh Model Pembelajaran Contextual Teaching And Learning Terhadap Kemampuan Berpikir Kritis Matematis Siswa di SMP Swasta Cinta Rakyat 3 Pematangsiantar. Peneitian ini merupakan peneitian yang menggunakan pendekatan kuantitatif. Metode yang digunakan peneiti adalah metode eksperimen. Metode peneitian ini dipilih untuk meihat seberapa besar pengaruh mode pembeajaran Contextual Teaching and Learning terhadap kemampuan berpikir kritis matematis siswa pada materi bangun ruang sisi lengkung tabung di SMP Swasta Cinta Rakyat 3 Pematangsiantar. Berdasarkan hasil analisis data dan pembahasan dapat disimpukan bahwa terdapat pengaruh yang positif dan signifikan penggunaan mode pembeajaran Contextual Teaching and Learning terhadap kemampuan berpikir kritis matematis siswa pada materi bangun ruang sisi lengkung tabung keas IX SMP Swasta Cinta Rakyat 3 Pematangsiantar. Pengaruh itu ditunjukkan mealui persamaan regresi Y=22.457+0,743X dengan b = 0,743. Dengan mealui uji-t, yaitu t_hitung > t_tabel=(10.364 > 3.583) menunjukkan bahwa signifikansi dan dengan menggunakan koefisien determinasi dapat dilihat besar pengaruh yaitu 79,3%.

Keywords:
Learning Model, Contextual Teaching and Learning, Mathematical Critical Thinking

ABSTRACT

This study aims to determine the effect of the Contextual Teaching and Learning learning model on students' mathematical critical thinking skills at Cinta Rakyat 3 Private Junior High School, Pematangsiantar. This study uses a quantitative approach. The method used by the researcher is an experimental method. This research method was chosen to see how much influence the Contextual Teaching and Learning learning mode has on students' mathematical critical thinking skills on the material of curved cylinder side solids at Cinta Rakyat 3 Private Junior High School, Pematangsiantar. Based on the results of data analysis and discussion, it can be concluded that there is a positive and significant influence of the use of the Contextual Teaching and Learning learning mode on students' mathematical critical thinking skills on the material of curved cylinder side solids, grade IX of Cinta Rakyat 3 Private Junior High School, Pematangsiantar. This influence is shown through the regression equation Y = 22.457 + 0.743X with b = 0.743. By using the t-test, namely t_calculated

> t_table = (10,364 > 3,583) it shows that the significance and by using the coefficient of determination it can be seen that the influence is 79.3%.

1. Introduction

Education receives significant government attention because one indicator of a nation's progress is a high-quality education. However, educational challenges will always exist, reflected in the diverse educational challenges that demand continuous change. Therefore, education strives to consistently have a positive impact on the development of knowledge, insight, and skills, thereby enhancing talent and personality . Education is an effort to improve the quality of human life and aims to humanize humans (Yulinda et al., 2020). Therefore, education focuses on developing superior personalities, focusing on the process of maturing thinking, spirituality, morals, and religion. Education plays a crucial role in changing individual behavior and must, of course, have a goal to achieve (Harahap et al., 2021). One of the most important subjects in education is mathematics.

Mathematics is a vital subject in education. It is studied at every level and is a key indicator of student success. According to the Ministry of National Education, mathematics is a subject that should be taught to all students, starting with the development of critical thinking skills (Kosassy et al., 2021). These skills are essential for students to develop their ability to search for, manage, and use information in a constantly changing and evolving social environment. However, critical thinking skills in mathematics often receive insufficient attention from educators. Through sound mathematics education, students gain diverse skills to face the challenges of today's global era.

At every level of education, students are able to develop their thinking skills to be able to solve problems in learning (Kartikasari, 2022). In mathematics learning , the role of the teacher is not only limited to conveying or transferring knowledge and information to students, but also as a facilitator who encourages students to think actively in building mathematical concepts for thinking skills . Therefore, critical thinking skills are very important for students to achieve in school because critical thinking skills are a tool to measure the extent to which students have mastered the material taught by teachers, especially in mathematics lessons. According to (Kamilah et al., 2021), mathematical critical thinking skills can train students to be good at reading situations from each problem, evaluating and drawing conclusions about certain conditions so that the knowledge built by students is stronger and not easily forgotten.

Critical thinking is a person's ability to think deeply about something. According to (Ahrisya et al., 2019), teaching and developing critical thinking skills is seen as something very important to develop in schools so that students are able and accustomed to facing various problems around them. Meanwhile, according to (Zuhrie et al., 2018), critical thinking is important for building national character, students are required to be able to

start thinking critically, including in mathematics learning in the classroom, because mathematics can never be separated from our activities in everyday life. In mathematics learning, this critical thinking ability helps students to better understand learning, both material and formulas.

One of the subjects that can be used to develop critical thinking skills is geometry. At the junior high school (SMP) level, one of the subjects included in geometry is the material on curved-sided solids. According to (Awaludin et al., 2020) , geometry is an essential and important part to learn and use in studying mathematical topics. Curved-sided solids are solids that have at least one curved side. This material is not only important in terms of mathematical theory, but also has a close relationship with objects often found in everyday life such as trash cans, birthday hats and basketballs. According to (Ansori et al., 2020) this material is also important to learn because of its many applications in everyday life, for example calculating the volume of cooking oil or kerosene, calculating rice using liters. In addition, many shapes are found that match curved-sided solids such as balls, marbles, globes, milk cans, food cans, pendulums, asepan and so on. Students' understanding of curved-sided solids is essential so they are able to relate the subject matter to real-life experiences.

Therefore, educators need to implement learning models that can encourage students to think critically, especially in understanding material about geometry such as Curved Sided Solid Geometry. One type of curved sided solid geometry studied is the cylinder. A cylinder is a solid geometry bounded by two congruent sides in the form of circles and a curved side. The material on the cylinder includes identifying the properties of the cylinder, calculating the area of the cylinder, and calculating the volume of the cylinder. In general, the ability to think critically in mathematics, especially the material on cylinders in Junior High Schools (SMP), is relatively low, students still experience difficulties in thinking critically and applying the concept of cylinders due to a lack of mastery of prerequisite material.

According to research (Andriani et al., 2021) the difficulties experienced by many students in solving questions about cylinders, especially questions related to the shape of the cylinder, students still have difficulty distinguishing between cylinders and those that are not cylinders, students still consider a shape that has an elliptical base and roof or a circular base and roof but is not congruent as a cylinder. Students also experience difficulty in solving questions about the surface area and volume of cylinders, this is because many students forget the concept of area and perimeter of a flat plane that has been learned in grades VII and VIII.

Based on the results of the researcher's interview with the mathematics subject teacher, Mrs. Verayanti Ambarita at Cinta Rakyat 3 Private Middle School, Pematangsiantar on Tuesday, April 22, 2025 Information was obtained that in the learning process at school, teachers still apply teacher-centered learning. Ms. Verayanti Ambarita also revealed that students still have difficulty in solving problems given in essay-shaped evaluation questions that require in-depth thinking skills (Wahyunisari et al., 2018) . Through interviews conducted with the mathematics teacher, she also said that one of the

difficulties students at the school face is in the topic of Solid Geometry, including Curved Side Solid Geometry.

In addition to interviews, researchers were given the opportunity to meet directly with students and administer an initial test consisting of questions designed by the researcher based on critical thinking ability indicators. The researchers prepared two descriptive questions based on indicators cited in (Sari et al., 2017). namely, interpreting, analyzing, evaluating, and inferring. Then, the questions were given to students to answer, and the following results were obtained:

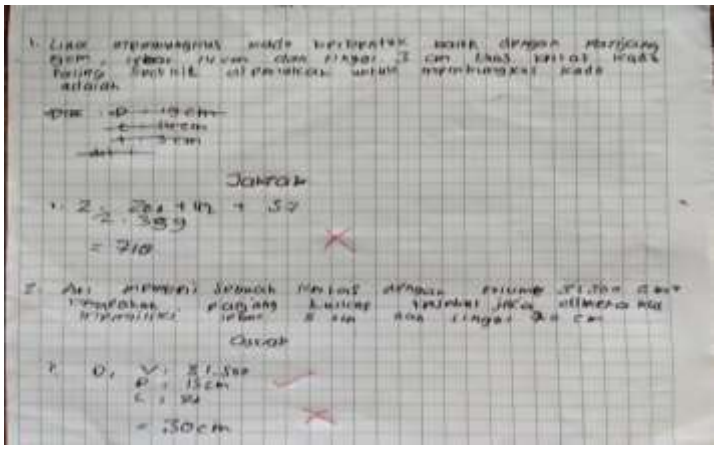

Figure 1. Observation Test Results (Student 1)

Based on the results of the initial ability test of 30 students in the class, the researcher obtained the results of question 1 as follows: 17 students (56.6%) were unable to interpret where students were expected to be able to understand the problem by noting what was known and asked in the question, 19 (63.3%) students were unable to analyze where students should be able to identify the relationship between questions and statements and problem concepts by writing mathematical models such as writing formulas correctly, 20 students (66.6%) were unable to evaluate where students were expected to be able to complete the questions given completely and correctly, 25 students (83.3%) were unable to infer where students should be able to write conclusions based on what was asked correctly. From the results of the initial ability test that the researcher gave, the researcher can conclude that there are still many students who are less able to solve the problem of curved side cylinder space using mathematical procedures and students are less able to draw conclusions from solving the problems that have been described. From the results of the initial test, the researcher concluded that the critical thinking skills of students at SMP Swasta Cinta Rakyat 3 Pematang iantar are still low.

To address this issue, educators play a crucial role in developing learning strategies that enable students to understand and master mathematics. Learning that encourages critical thinking involves the use of appropriate learning models (Novitri, 2022) . Implementing appropriate learning models facilitates student comprehension, fosters a more active role, reduces boredom and fatigue during the learning process, and enables students to achieve learning objectives. Learning models are expected to be an engaging solution for classroom practice, minimizing various learning barriers, thus optimizing critical thinking skills.

A learning model is a plan or pattern used as a guideline for planning classroom or tutorial learning. A learning model refers to the adopted learning method, including teaching objectives, stages of learning activities, the learning environment, classroom management, and so on (Mahardhika, 2019) . A learning model is a procedure that serves as a guideline for teachers in planning classroom learning in order to achieve a goal. From the several opinions above, it can be concluded that a learning model is a method used in planning classroom learning to achieve learning goals and success.

There are various learning models. One learning model that is considered capable of improving students' critical mathematical thinking skills is the *Contextual Teaching and Learning learning model* . *The Contextual Teaching and Learning* learning model is a learning concept that helps teachers connect the material being taught to students' real-world situations and encourages students to make connections between their knowledge and its application in their lives as family members and society. This means that students can play an active role in the teaching and learning process. In line with this, in Indonesia, *the Contextual Teaching and Learning model* is understood as a learning concept that helps teachers connect the learning material being taught to real-world situations for students, and helps connect students' knowledge with its application in everyday life (Mazidah & Sartika, 2023) . From this opinion, it can be concluded that the *Contextual Teaching and Learning learning model* is a learning concept that helps teachers connect the material being taught to students' real-world situations, thereby encouraging students to connect their knowledge with its application in their lives. So, by using the *Contextual Teaching and Learning learning model* , it is hoped that students can play an active role during the learning process so that they can improve their critical thinking skills, especially regarding the material on curved cylinders.

The results of previous research show that there are many positive influences of the *Contextual Teaching and Learning learning model* on students' mathematical critical thinking abilities conducted by (Sri Utamaningsih, 2019) concluded that *the contextual teaching and learning learning model* has an influence on critical thinking abilities where $t_{hitung} > t_{tabel}$(3.6 > 1.98) therefore there is an influence of the *Contextual Teaching And Learning learning model* on critical thinking abilities on integer material in class VII of Deli Murni Sukamaju Private Middle School in the 2024/2025 academic year. And research conducted by (Mulyani & Doyan, 2023) obtained from the test results t_{hitung}= 2.7661 and t_{tabel}= 2.0040, so that $t_{hitung} > t_{tabel}$which causesH_0 rejected and $H_a$accepted. Thus, it can be concluded that there is an influence of *the Contextual Teaching and Learning approach* on the mathematical critical thinking abilities of grade IX students of SMP Negeri 1 Sanga Desa. Based on the description above, researchers are encouraged to conduct research related to learning models. Therefore, a study entitled "The Influence of *the Contextual Teaching and Learning Learning Model* on Students' Mathematical Critical Thinking Abilities at SMP Negeri Cinta Rakyat 3 Pematangsiantar " was conducted.

2. Method

This research uses a quantitative approach. The method used by the researcher is an experimental method. This research method was chosen to determine the extent of the influence of the Contextual Teaching and Learning learning model on students' mathematical critical thinking skills in the material of curved cylinders at Cinta Rakyat 3 Private Junior High School, Pematangsiantar.

Haris (2020), there are several forms of experimental research design pre-experimental, true-experimental, factorial, and quasi-experimental. This study employed a pre-experimental design with a one-shot case study model. The purpose of a one-shot case study is to determine the effect of a treatment. There was no control class, and only one sample was given the treatment.

Based on the design, one measurement or test was conducted on class IX-B students of Cinta Rakyat 3 Private Middle School, Pematangsiantar. The measurement was a descriptive test to determine the level of mathematical critical thinking skills of class IX-B students after the application of the Contextual Teaching and Learning learning model by the researcher. In accordance with the title of this research, the location of the research was Cinta Rakyat 3 Private Middle School, Pematangsiantar, located at Jl. Kain Batik, Siantar Utara District, Pematangsiantar City, North Sumatra Province. The reason the researcher conducted the research at the school was because no research similar to this research had ever been conducted. This research was conducted for ±1 month in the odd semester of the 2025/2026 Academic Year.

The population in this study were all ninth-grade students of Cinta Rakyat 3 Private Middle School, Pematangsiantar, which consisted of 5 classes. In this study, the sampling technique used by the researcher was Probability Sampling. According to (Indahsari, 2020) , Probability Sampling is a sampling technique that provides an equal opportunity for each element (member) of the population to be selected as a sample member. And the type of technique that will be applied in this research population is Cluster Random Sampling. Where (Zulfa et al., 2020) explained that Cluster Random Sampling is a sampling technique used to determine samples when the object to be studied or the data source is very broad, then sampling is carried out randomly. If the researcher will only study a portion of the population, then the research is called sample research. In this study, the researcher took samples in the class (Tedeneke, 2022) . limits the extent of the research to be conducted.

Based on the above opinion, researchers can conclude that research variables are the treatments given and the aspects measured in a study. The variables included in this study include: One of the most important aspects of research is data collection, as it is closely related to the data needed to solve the research problem.

3. Result and Discussion

Research result

The description and analysis of data in this study are used to describe the results of quantitative data from the test instruments and student questionnaires that have been given to one class as a research sample that is useful for determining the effect of the

Contextual Teaching and Learning learning model on students' mathematical critical thinking skills on the material of curved side cylinder solids. This data description is useful for explaining and describing research data which includes data range, maximum value, minimum value, mean, and so on.

The sample in this study was one sample class, namely class IX-B. The learning carried out in this study took 3 meetings. The mathematical material taught in this study was the curved side of the cylinder. After being given treatment in the form of a *Contextual Teaching and Learning learning model* , then a perception questionnaire was given to be filled by students. After that, to see the level of students' mathematical critical thinking abilities, a mathematical critical thinking ability test was given consisting of 5 essay questions that had been tested beforehand in class IX-C. In this study, researchers obtained data from the results of the treatment questionnaire and tests conducted in class IX-B. The perception questionnaire is a questionnaire used to determine whether students have followed the learning well through the application of the *Contextual Teaching and Learning learning model* , while the test is a question given after receiving treatment. The results of the student perception questionnaire and the results of this test are used to determine whether *the Contextual Teaching and Learning learning model* has an effect on mathematical critical thinking abilities in the material of the curved side of the cylinder. The research instruments used in this study were a student perception questionnaire consisting of 30 statements and a mathematical critical thinking ability test consisting of 5 descriptive questions.

The test instrument is the result of a trial that has been analyzed for its characteristics, namely by testing validity, reliability, level of difficulty of the questions, and the discriminating power of the questions as well as improvements that have been made by researchers under the guidance of lecturers and mathematics teachers. Meanwhile, the student perception questionnaire instrument is the result of a trial that has been analyzed for its characteristics, namely by testing validity and reliability. After the trial was conducted, the next step was to take data on the student perception questionnaire scores regarding the application of *the Contextual Teaching and Learning learning model* and the mathematical critical thinking ability test scores using the questions that have been tested (RK Dewi & Wardani, 2020) .

Hypothesis Test Analysis

Simple Linear Regression Test Results

The simple linear regression test is an analysis used to measure the strength of the relationship between one independent variable (X) and one dependent variable (Y), and also to determine the direction of the relationship between the independent variable (X) and the dependent variable (Y).

Table 1. Simple Linear Regression Test Results

oefficients [a]

	nstandardized Coefficients		:andardized Coefficients		
:odel		:d. Error	eta		g.
Constant)	2,457	267		;,583	001
TL learning model	743	072	891	0,364	000

Dependent Variable: Mathematical Critical Thinking Skills

Based on the table with calculations using *SPSS 26.0,* the constant value obtained is 22.457, while the regression coefficient value is 0.743. The simple regression equation can be written as follows:

$$Y = 22.457 + 0{,}743X$$

Information:

Y= Mathematical Representation Ability

X= Student Perception Score of the *Contextual Teaching and Learning Model*

So it can be translated:

1. The constant of 22.457 is a number that has meaning if the *Contextual Teaching and Learning learning model* is the same as the value (Variable X = 0) then the value of the results of mathematical critical thinking ability (Y) is 22.457.
2. The regression coefficient value is 0, 743this number means that for every 1 additional score of the student perception questionnaire on the *Contextual Teaching and Learning learning model* , the students' mathematical critical thinking ability will increase by 0,743.
3. The value of b is >0, then there is a positive influence of variable (X) on variable (Y). So there is a positive influence of the *Contextual Teaching and Learning learning model* on students' mathematical critical thinking skills on the material of curved side cylinders of class IX SMP Swasta Cinta Rakyat 3 Pematangsiantar.

Results of the Coefficient of Determination

The coefficient of determination is a coefficient that states the percentage of influence that variable X has on variable Y.

Table 2. R Square Value

Model Summary

Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.891 [a]	0.793	).786	2,131

Based on the table, the correlation value/level of relationship between variables (R) is 0.891. Meanwhile, the coefficient of determination (R Square) is 0.793, so the percentage coefficient of determination can be formulated as follows:

$Kd = 0{,}793 \times 100\%$
$Kd = 79{,}3\%$

The percentage coefficient of determination shows that there is a positive influence of the variance of variable X (*Contextual Teaching and Learning*) on variable Y (students' mathematical critical thinking abilities).

t-Test Analysis Results

The t-test tests the regression coefficient, this test is carried out to determine the significance of the role between the independent variable and the dependent variable by assuming that the other variables are considered constant.

Table 3. Test Results with t-Test

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	22,457	6,267		3,583	0.001
	CTL learning model	0.743	0.072	0.891	10,364	0.000

a. Dependent Variable: Mathematical Critical Thinking Skills

Based on the table, the sig. value for the influence of variable X on variable Y is 0.001 <0.05. Given n = 30, then df = n – k = 30 – 2 = 28. With df = 28, then$t_{hitung} > t_{tabel} = 10.364 > 3.583$. So based on the significance value (Sig.) and the value t_{hitung}, the hypothesis is accepted, namely that there is an influence of H_1 *the Contextual Teaching and Learning* learning model on students' mathematical critical thinking abilities.

Discussion

This research was conducted at Cinta Rakyat 3 Private Junior High School, Pematangsiantar involving class IX. Where class IX-B is the class given the *Contextual Teaching and Learning learning model treatment* . Before conducting this research, a trial of the test instrument and questionnaire was conducted. This aims to determine whether the questions and questionnaire items have met the research standards or not. In this study, a trial of the mathematical critical thinking ability test and the student perception questionnaire was conducted in class IX-C. Then the questions were tested using validity, reliability, difficulty level, and discrimination tests. Based on the trial of the mathematical critical thinking ability test and the student perception questionnaire that had been carried out with the number of trial participants, N = 30 and a significance level of 5% was obtained $r_{tabel} = 0{,}361$. From the results of the validity test calculation on the student perception questionnaire and the mathematical critical thinking ability test, it was obtained that 5 items of mathematical critical thinking ability questions and 30 items of student perception questionnaires regarding the *Contextual Teaching and Learning*

learning model were declared valid. Then, for the criteria in the *Cronbach's Alpha technique* , if the value $r_{hitung} >$ 0.70of the mathematical critical thinking ability test and the student perception questionnaire can be used in research, it is said to be reliable. From the results of the reliability test that has been carried out, *the Cronbach's Alpha value* for the mathematical critical thinking ability test is 0.871. Because 0.871 >< 0.70, it can be concluded that this mathematical critical thinking ability test is reliable. Meanwhile, the results of the student perception questionnaire reliability test are 0.827. Because 0.827 >< 0.70, it can be concluded that the student perception questionnaire towards the *Contextual Teaching and Learning learning model* is reliable. (R. Dewi et al., 2018) .

After knowing that the student perception questionnaire on the application of *the Contextual Teaching and Learning learning model* and the mathematical critical thinking ability test that had been tested had met the research standards, the researcher then conducted research with the initial stage of providing treatment to the sample using the *Contextual Teaching and Learning learning model* . After completing the learning with the *Contextual Teaching and Learning model* , students were given a student perception questionnaire on the *Contextual Teaching and Learning learning model* to students to find out whether students had implemented the *Contextual Teaching and Learning learning model* that had been implemented. (Suanto et al., 2022) . After administering the student perception questionnaire, the researcher administered a mathematical critical thinking ability test on the curved side of a cylinder to determine students' mathematical critical thinking ability after being given the treatment. (Febrianti, 2019) .

After obtaining the student perception questionnaire scores and the students' mathematical critical thinking ability scores, the data were then analyzed. The results of the calculations obtained an average score for the student perception questionnaire regarding the implementation of the *Contextual Teaching and Learning learning model* of - and an average score for mathematical critical thinking ability of - (Konoras et al., 2022) .

There are normality tests and linearity tests as prerequisites before hypothesis testing. The normality test uses the *Kolmogorov-Smirnov model* in the *SPSS 26.0 program* with a Sig. 0.05 criterion >. The normality test of the student perception questionnaire data on *the Contextual Teaching and Learning learning model* is 0.064 >± 0.05, so the student perception questionnaire data on *the Contextual Teaching and Learning learning model* is normally distributed. Meanwhile, the significance (Sig.) result of the mathematical critical thinking ability test data is 0.195 >± 0.05, so the test question data is normally distributed. (Rohmah et al., 2022) .

After conducting the normality test, the researcher conducted a linearity test. In this linearity test using *the SPSS 26.0 program* , a significant result (Sig.) was obtained in *the Deviation from linearity row* of 0.083, meaning there is a linear relationship between the independent variable (X) and the dependent variable (Y). Therefore, it can be concluded that there is an influence of the *Contextual Teaching and Learning learning model* on mathematical critical thinking skills in the material of curved cylinder side solid shapes. (Nugraha, 2018) .

Furthermore, the researcher conducted a hypothesis test consisting of a simple linear regression test obtained a regression equation $Y = 22.457 + 0{,}743X$, meaning that for every additional score of the student's perception questionnaire on the *Contextual Teaching and Learning learning model* , the mathematical critical thinking ability will increase by 0.743. In addition, the sig. value obtained in the regression line is 0.000 <0.005, so H1 is accepted, meaning there is an influence of the *Contextual Teaching and Learning learning model* on students' mathematical critical thinking ability. Furthermore, the R Square value obtained is 0.793, so the contribution of the variance of the variable X (*Contextual Teaching and Learning learning model*) to the variable Y (mathematical critical thinking ability) of the curved side of the cylinder is 79.3%. Furthermore, the last hypothesis test is the t-test. The sig. value obtained for the influence of the variable X on the variable Y is 0.000 <0.005. Given n = 30, then df = n–k = 30–2 = 28. With df = 28, then$t_{hitung} > t_{tabel} = 10.364 > 3.583$. So based on the significance value (Sig.) and the value t_{hitung}, the hypothesis is accepted, namely that there is an influence of H_1*the Contextual Teaching and Learning* learning model on students' mathematical critical thinking abilities on the material of curved side cylinder geometric shapes. (Ronaldy et al., 2022) .

Based on the description above, it can be concluded that there is a positive influence of the *Contextual Teaching and Learning learning model* on students' mathematical critical thinking skills. The hypothesis stating that there is a positive and significant influence of the *Contextual Teaching and Learning learning model* on mathematical critical thinking skills on the material of curved cylinder side space shapes of class IX SMP Swasta Cinta Rakyat 3 Pematangsiantar is accepted as true or H1 is accepted.

4. Conclusion

Based on the results of data analysis and discussion, it can be concluded that there is a positive and significant influence of the use of Contextual Teaching and Learning learning mode on students' mathematical critical thinking skills on the material of curved side cylinders of grade IX SMP Swasta Cinta Rakyat 3 Pematangsiantar. This influence is shown through the regression equation Y = 22.457 + 0.743X with b = 0.743. By means of the t-test, namely t_hitung > t_tabel = (10.364 > 3.583) shows that the significance and by using the coefficient of determination can be seen the large influence is 79.3%.

Suggestion

By understanding that the Contextual Teaching and Learning learning mode influences students' mathematical critical thinking skills, teachers are expected to have learning strategies that best suit the characteristics of the students they teach in order to create a more active, effective, and efficient learning process. Therefore, the selection of the Contextual Teaching and Learning learning mode can be used as an alternative in the learning process at school.

For Students

By understanding how the Contextual Teaching and Learning (CTL) learning model influences students' critical mathematical thinking skills, it is hoped that students will expand their collection of problems, from the simplest to the most varied. Pay close

attention while the teacher is teaching. Determine effective and efficient learning methods, and students should be able to play an active role in teaching and learning activities so that the learning process can run smoothly.

For Further Research

For further researchers who want to conduct the same research, it is recommended to develop this research by preparing other material presentations and optimizing time to improve students' mathematical critical thinking skills

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