

THE EFFECT OF THE TPS (THINK PAIR SHARE) LEARNING MODEL USED BY THE GEOGEBRA APPLICATION ON THE ABILITY OF UNDERSTANDING MATHEMATICAL CONCEPTS OF GRADE X

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ABSTRAK

Mahasiswa yang memiliki pemahaman konseptual yang baik akan mampu menerapkan apa yang telah mereka pelajari di kelas untuk memecahkan masalah di dunia nyata tanpa harus menghafal rumus-rumus. Penelitian ini bertujuan untuk mengetahui pengaruh model pembelajaran TPS (Think Pair Share) yang dibantu aplikasi Geogebra terhadap kemampuan pemahaman konsep matematika siswa kelas X SMK Negeri 1 Siantar. Teknik pengambilan sampel yang digunakan dalam penelitian ini adalah Probability Sampling. Dalam penelitian ini, jenis penelitian eksperimental yang digunakan adalah Probability Sampling dengan jenis desain penelitian, yaitu One Shot Case Sturdy. Pada jenis desain ini, peneliti akan menggunakan satu unit kelas di mana peneliti akan memberikan solusi (perlakuan) kepada siswa selama beberapa periode. Berdasarkan hasil analisis dan diskusi data, dapat disimpulkan bahwa terdapat pengaruh positif dan signifikan dari model pembelajaran TPS (Think Pair Share) yang dibantu aplikasi Geogebra terhadap kemampuan pemahaman konsep matematika siswa kelas X SMK Negeri 1 Siantar. Pengaruh ini dapat dilihat dari persamaan regresi $Y = 63,570 + 1,271$ dengan koefisien regresi sebesar 1,271. Melalui uji t, terlihat bahwa $t_{hitung} > t_{tabel} = (11.361 > 6.742)$ menunjukkan signifikansi dan dengan menggunakan koefisien determinasi terlihat besarnya pengaruh sebesar 82,2%.

Keywords: Model Pembelajaran, TPS (Think Pair Share), Aplikasi Geogebra, Konsep Matematika

ABSTRACT

Students with a good level of conceptual understanding will be able to apply what they've learned in class to real-world problems without having to memorize formulas. This study aims to determine the effect of the TPS (Think Pair Share) learning model assisted by the Geogebra application on the mathematical concept understanding ability of class X students of SMK Negeri 1 Siantar. The sampling technique used in this study is Probability Sampling. In this study, the type of experimental research used is Probability Sampling with a type of research design, namely One Shot Case Sturdy. In

this type of design, the researcher will use a class unit where the researcher will provide a solution (treatment) to students for several periods. Based on the results of data analysis and discussion, it can be concluded that there is a positive and significant influence of the TPS (Think Pair Share) learning model assisted by the Geogebra application on the ability to understand mathematical concepts of class X students of SMK Negeri 1 Siantar. This influence can be seen from the regression equation $Y = 63,570 + 1.271$ with a regression coefficient of 1.271. Through the t-test, it can be seen that $t_{count} > t_{table} = (11,361 > 6,742)$ indicates that significance and by using the coefficient of determination can be seen the magnitude of the influence is 82.2%.

Keyword: Learning Model; TPS (Think Pair Share); Geogebra Application; Mathematical Concept

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1. INTRODUCTION

The quality of education in a nation is one of the determinants of its progress. In other words, the progress of a nation or country can be seen from the quality of education within that nation or country. Poor quality education will cause the nation or country to lag behind. However, education is never free from various problems. In general, the problems faced by education are divided into two: micro problems and macro problems. Micro problems are problems arising from components within education itself as a system, such as curriculum and learning models (Mayang Sari, 2025). Macro problems, on the other hand, are problems arising from within education as a system, with other broader systems encompassing all of human life, such as the uneven distribution of education across regions. Likewise, education in Indonesia still faces various problems. These problems are the main cause of the low quality of education in Indonesia (Wicaksono, Susilo, & Sueb, 2019).

Education is a crucial aspect of human life and is always intertwined with it. Education is a human endeavor and plan to foster and create a learning atmosphere and learning process so that students can actively develop their potential to possess intelligence, self-control, noble character, and values represented in society. To achieve success in education, a well-structured education system, reliable human resources, and supporting infrastructure are needed. Education is a medium that plays a crucial role in creating quality and potential individuals in the broadest sense. Through education, a process of self-maturation occurs so that the decision-making process regarding a problem is always accompanied by a strong sense of responsibility (Ginting, 2022).

According to the Republic of Indonesia Law Number 20 of 2003 concerning the National Education System Article 1 Chapter 1, "Learning is a process of interaction between students and educators and learning resources in a learning environment." According to Suardi (Destiniar, Jumroh, & Sari, 2019) Learning is defined as a process in which students interact with educators and learning resources in a learning environment. According to Yolandasari (2020) learning is also defined as the

process of providing guidance or assistance to students in carrying out the learning process. Based on several expert opinions above, researchers can conclude that learning is a process of interaction between educators and students in a learning environment to obtain and develop knowledge from various learning resources.

Mathematics is considered a crucial subject in the Indonesian education system. Mathematics learning is an interactive process between teachers and students aimed at developing students' mathematical understanding and skills. Students need mathematics as a foundation for understanding arithmetic concepts, facilitating the learning of other subjects, and understanding the application of mathematics in everyday life. Therefore, everyone needs mathematical skills to solve problems in various areas of life.

In mathematics learning, students need to think to understand the mathematical concepts they are learning and use them appropriately when finding solutions to mathematical problems (Amaliyah, Fatimah, & Abustang, 2019). One of the objectives of mathematics learning, as stated in Permendikbud No. 58 of 2018, is for students to have the ability to explain the relationships between concepts and be able to use them appropriately in problem solving. Based on this description, the objectives of mathematics learning need to be achieved properly, especially students' ability to understand concepts (Silalahi et al., 2023). Based on the objectives of mathematics learning described above, it can be seen that one of the skills needed in mathematics learning is the ability to understand concepts.

Students with a good level of conceptual understanding will be able to apply what they've learned in class to real-world problems without having to memorize formulas. A concept in mathematics is an idea or concept that allows us to group signs (objects) into examples. Learning a concept often emerges as a real-life event experience or intuition experienced by students in everyday life (Fardiansyah, Purwadi, & Mudzanatun, 2019). The ability to understand mathematical concepts is a very important ability to be mastered so that students can understand a concept from a material flexibly and precisely in understanding the different steps of the material and can use it efficiently. Conceptual understanding is a student's ability in the form of mastery of a number of lesson materials, where students not only know or remember a number of concepts being studied, but students are also able to re-express them in other forms that are easy to understand according to the cognitive structure possessed by students. In learning mathematics, good logical thinking is needed so that students are not only able to solve mathematical problems but also understand the concept as a whole, students are also trained to understand the concept mathematically (Fransiska et al., 2023).

In the ability to understand the concept explained, there are several indicators of the ability to understand the concept. The indicators of the ability to understand mathematical concepts are as follows: (1) Restating the concepts that have been learned. (2) Classifying objects based on mathematical concepts. (3) Applying concepts algorithmically. (4) Providing examples or counterexamples of the concepts learned. (5) Presenting concepts in various representations. (6) Linking various mathematical concepts internally or externally (Musa et al., 2024). However, in reality, the ability to understand the concept is still low, this is stated from the results of a survey conducted by PISA (Programme for International Student Assessment) the results of the PISA 2022 survey showed that Indonesia was in position 66 out of 81 countries with an average score of 366, where this score is still far from the average OECD score of 472 (OECD, 2023). This shows that the ability to understand the mathematical concept of Indonesian students as measured by international standard questions is in the low category (Nainggolan & Surya, 2024).

Based on field observations conducted by researchers in class X of SMK Negeri 1 Siantar on April 26, 2025, researchers had the opportunity to meet directly with students. During the observation,

researchers gave an ability test to students at SMK Negeri 1 Siantar to measure their mathematical concept understanding abilities. The indicators that researchers used in compiling the students' concept understanding ability test questions were: (1) Able to restate a concept, (2) Able to group objects according to certain properties, (3) Able to apply problem-solving algorithm concepts, (4) Able to present concepts in various forms of mathematical representation (drawing or making graphs). The difficulties experienced by students in one of the classes that researchers observed at SMK Negeri 1 Siantar on quadratic functions can be seen in the following figure.

The problem of poor understanding of mathematical concepts can be influenced by several factors. Internal factors such as low learning motivation, math anxiety, and individual learning styles significantly influence student performance. Meanwhile, external factors include less innovative teaching methods, an unsupportive classroom environment, a lack of learning resources, and minimal parental involvement. Inexperienced teachers often rely on lecture methods and assignments that are not appropriate to the students' cognitive development stage, while some parents, especially those from low educational backgrounds, difficulties in supporting children's learning at home (Pada & Sd, 2025). One of the mathematics topics that students experience difficulty with is quadratic functions. Quadratic functions are one of the main topics studied in secondary school. This topic utilizes the properties and rules of the roots of quadratic equations, discriminants, axes of symmetry, and the vertex of a quadratic function graph in problem solving, conceptual understanding, and indicators for drawing quadratic function graphs. This topic is crucial in advanced mathematics learning such as calculus and other subjects (Rosdiana, 2023).

Based on the results of the initial ability test and interviews, it was shown that students' conceptual understanding was still low. Therefore, intervention through the implementation of appropriate learning models was needed to improve conceptual understanding. One way is to implement a more effective learning model in the school. Each learning model must be tailored to the most appropriate concept and can be combined with other learning models to improve student learning outcomes. To be able to develop effective learning models, each teacher must have adequate knowledge regarding the concepts and ways to implement learning models in the learning process.

A learning model is a plan or pattern that can be used to form a curriculum (long-term learning plan), design learning materials, and guide learning in the classroom or elsewhere (Restia, 2020). According to (Priatna, 2018), a learning model is a conceptual framework that describes a systematic procedure in organizing learning experiences to achieve learning objectives. And according to (Kurniasih, 2022), a learning model is a framework that provides a systematic overview for implementing learning in order to help students learn towards specific goals to be achieved. Thus, it can be concluded that a learning model is a planned and systematic conceptual framework that functions as a guideline for educators in designing, organizing, and implementing effective learning activities to achieve learning objectives. The learning model that researchers offer is the TPS (Think Pair Share) learning model. According to Shoimin (2022), think pair share is a cooperative learning model that gives students time to think and respond and help each other. The think pair share learning model provides students with the opportunity to pair up with friends to solve math problems, thereby influencing interaction patterns between students (Editia, 2020). The reason researchers chose the TPS (Think Pair Share) learning model is because this model has several advantages, namely: (1) It can increase student activity in the learning process, (2) It helps students understand the material more quickly because students not only get the material from the teacher but also from their classmates, (3) It provides many opportunities for students

to think, answer, and discuss with their group mates, (4) It helps students understand mathematical concepts in depth through discussion.

The selection of an appropriate learning model can be combined with the use of supporting learning media. Learning media that implements the development of science and technology in mathematics learning, one of which is the use of technology-based media assistance such as the use of the Geogebra application (Pilu & Hardianto, 2019). Geogebra is a dynamic program that combines geometry, algebra, and calculus with various facilities that can be used as a mathematics learning medium to demonstrate or visualize mathematical concepts and as a tool for constructing mathematical concepts (Indaryani, 2023). With the help of the Geogebra application, it will certainly help students understand and illustrate the form of sketches of quadratic function graphs and construct mathematical concepts in solving problems regarding quadratic functions. The reason researchers use the Geogebra application is because this application has several advantages over other applications such as: Producing geometric paintings quickly and accurately compared to manual methods using rulers, pencils, and compasses, the existence of animation facilities and manipulation movements that can provide a clearer visual experience for students to understand geometric concepts, can be used as an evaluation to ensure that the paintings or drawings that have been made are correct, make it easier for teachers and students to investigate or show the properties that apply to geometric objects and can improve problem-solving abilities for students in mathematics lessons.

In a study conducted by (Tambunan, 2021) entitled "The Effect of the Think-Pair-Share Cooperative Learning Model on Improving Mathematical Understanding and Communication Skills" that the Think-Pair-Share cooperative learning model is able to improve students' mathematical understanding and communication skills, as well as supported by the results of research by (Suryawan & Permana, 2020), the researchers also used the TPS (Think Pair Share) learning model but with the help of the Geogebra application to see its effect on the conceptual understanding abilities of junior high school students. The results of the study obtained showed that after 2 actions using the TPS learning model assisted by the Geogebra application, it was found that there was a significant influence of the provision of actions on students' conceptual understanding abilities. This is indicated by an increase in students' conceptual understanding abilities in the class (Ramlan, 2020).

Based on the description that the researcher has conveyed above, the researcher is interested in conducting research with the title "The Effect of the TPS (Think Pair Share) Learning Model Assisted by the Geogebra Application on the Mathematical Concept Understanding Ability of Class X Students of SMK Negeri 1 Siantar".

2. METHOD

The type of research that is being studied is curative research. The research method that is being studied is the experimental research method. According to (Khurniati, Harun, & Nur Aini, 2023) the experimental research method is a research that functions to examine the existence of various effects due to the addition of control variables. 3.1.2. Research Design

In this study, the type of experimental research used is the Qualitative Experimental Design with the type of research design, namely One Shot Case Study. In this type of design, the researcher will use a class unit where the researcher will provide a solution (treatment) to students for several periods. After that, the researcher will provide a post-test to measure students' mathematical communication skills and after that, provide treatment. This research design can be seen in the table below.

This research was conducted at SMK Negeri 1 Siantar, located at Jalan Sangnawaluh Km 3.5, Siantar District, Simalungun Regency. The reason the researcher chose this location was because research with the subject that the researcher took was previously conducted at the school. This research was conducted in the odd semester of the 2025/2026 academic year.

According to (Musa'ad, Musa'ad, Setyo, Sundari, & Trisnawati, 2023) the population is the total of the sample that will be studied at the research location. Thus, the population of this study is the total of class X students of SMK Negeri 1 Siantar. The reason the researcher chose this sample is because based on the curriculum implemented at the terrserburt school, quadratic functions are taught in class X. The distribution of the population of class X students at terrserburt school can be seen in the following table.

According to (Sahir, 2022), a sample is a portion of the population selected by the researcher to be studied. The sampling technique used by the researcher to determine the sample in this study is Probability Sampling. According to (Sahir, 2022), probability sampling is a sampling method where each member of the population has the same chance of being selected as a sample (Suhaifi, Rufi'i, & Karyono, 2022). Of the several types of probability sampling, the researcher chose the Cluster Random Sampling technique to determine the sample. Mernurrurt (Hadi, Fattah, & Amrina, 2018) Cluster Random Sampling is a sample selection technique that is carried out when the population being studied is very large and straight so that the sample selection is carried out randomly. The sample that the researcher chose was class X DKV-3 as an experimental class that would implement the TPS (Think Pair Share) learning model supported by the Gerogebrra application.

3. RESULTS AND DISCUSSION

Research result

Description of Research Results

The description and analysis of data in this study are used to describe the results of quantitative data from the test instrument and student questionnaire that has been given to one class as a research sample that is useful for determining the effect of the TPS (*Think Pair Share*) learning model assisted by the Geogebra application on students' mathematical concept understanding abilities on the quadratic function material. This data description is useful for explaining and describing research data which includes data range, maximum value, minimum value, mean, and so on (Annisa, Kurniati, Murtikusuma, Prambudi, & Suwito, 2022).

In its implementation, researchers need time to obtain research data. The following time allocation for this study is presented in Table 1.

Table 1. Research Allocation

No	Activity	Date
1	Observation	April 26, 2025
2	Proposal Preparation	April 28, 2025 - August 20, 2025
3	Proposal Seminar	August 27, 2025
4	Instrument Trial	September 10, 2025-September 15, 2025
5	Research and Data Processing	September 30-October 20, 2025

The sample in this study was one sample class, namely XI-DKV 3. The learning carried out in the experimental class used the TPS (*Think Pair Share*) learning model with the help of the Geogebra application. The researcher conducted this study for 3 meetings with the material presented being quadratic functions. After the researcher provided treatment to the experimental class, the researcher then gave a perception questionnaire containing 30 statement items to be filled in by the students. After that, to see the level of students' mathematical concept understanding ability, a concept understanding ability

test consisting of 5 essay questions was given that had been tested first in class XI-DKV 2. In this study, the researcher obtained the results of the test and questionnaire conducted in class XI-DKV 3. The perception questionnaire is a questionnaire used to see students' perceptions of the application of the TPS (*Think Pair Share*) 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 TPS (*Think Pair Share*) learning model with the help of the Geogebra application has an effect on the ability to understand mathematical concepts in the quadratic function material. The research instruments used in this study were a student perception questionnaire consisting of 30 statements and a mathematical concept understanding ability test consisting of 5 descriptive questions (Yunita, 2020).

The test instrument is the result of a trial that has been analyzed for its characteristics, namely by testing the validity, reliability, level of difficulty and discriminatory power of the items as well as improvements that have been made by researchers under the guidance of lecturers and mathematics teachers. While the student perception questionnaire instrument is the result of a trial that has been analyzed for its characteristics, namely by testing the validity and reliability (Samo, 2019). After the trial was carried out, the next step was to take the score of the student perception questionnaire regarding the application of the TPS (*Think Pair Share*) learning model with the help of the Geogebra application and the score of the mathematical concept understanding ability test using the questions that have been tested.

Instrument Test Analysis

Instrument testing was used to determine the feasibility and quality of the instrument. The instruments tested were a student perception questionnaire and a mathematical concept comprehension ability test. The results of the trial tests were then tested for validity, reliability, difficulty level, and discriminatory power for the mathematical concept comprehension ability test. Meanwhile, the student perception questionnaire was tested for validity and reliability (Septian, Darhim, & Prabawanto, 2020).

Hypothesis Testing

Analysis of Simple Linear Regression Test Results

Simple linear regression test analysis 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 2. Simple Linear Regression Test Results

Coefficients ^a						
		Unstandardized Coefficients	Standardized Coefficients			
		B	Std. Error	Beta	t	Sig.
1	(Constant)	63,570	9,429		-6,742	0.000
	TPS Learning Model (X)	1,271	0.112	0.907	11,361	0.000

a. Dependent Variable: Ability to Understand Mathematical Concepts (Y)

Based on the table with calculations using *SPPS 26.0*, the constant value is 63,570, while the regression coefficient value is 1.271. The simple regression equation can be written as follows:

$$Y = 63.570 + 1,271X$$

Information:

Y =Mathematical Concept Understanding Ability

X = Student Perception Scores of the TPS (*Think Pair Share*) Learning Model

So it can be translated:

1. The constant **63.570** is a number that has a meaning if the TPS (*Think Pair Share*) model with the help of the Geogebra application is the same as the value (Variable $X = 0$) then the value of the results of the ability to understand mathematical concepts (Y) is **63.570**.
2. The regression coefficient value is **1,271**, this number means that for every 1 additional score of the student perception questionnaire on the TPS (*Think Pair Share*) model with the help of the Geogebra application, the students' ability to understand mathematical concepts will increase by **1,271**.
3. The b value $>$ is 0, then there is a positive influence of variable (X) on variable (Y). So there is a positive influence of the TPS (*Think Pair Share*) learning model with the help of the Geogebra application on students' mathematical concept understanding ability on the quadratic function material of class X SMK Negeri 1 Siantar.

Results of the Coefficient of Determination

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

Table 3. R Square Value

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.907 ^a	0.822	0.815	2,131

a. Predictors: (Constant), X
b. Dependent Variable: Y

Based on Table 4.13, the correlation value/level of relationship between variables (R) is 0.907. Meanwhile, the coefficient of determination (R square) is 0.822, so the percentage coefficient of determination can be formulated as follows:

$$Kd = 0,822 \times 100\%$$

$$Kd = 82,2\%$$

The percentage coefficient of determination shows that the contribution of the variance of variable X (TPS (*Think Pair Share*) learning model assisted by the Geogebra application) is 82.2%.

Based on the results of the determination coefficient calculation, it shows that the large influence of the TPS (*Think Pair Share*) learning model with the help of the Geogebra application on students' ability to understand mathematical concepts is 82.2%.

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 5. Test Results with t-Test

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	63,570	9,429		6,742	0.000
	TPS Learning Model (X)	1,271	0.112	0.907	11,361	0.000

a. Dependent Variable: Ability to Understand Mathematical Concepts (Y)

Based on table 4.14, the sig. value for the influence of variable X on variable Y is $0.000 < 0.05$. Given $n = 30$, then $df = n - k = 30 - 2 = 28$. With $df = 28$, then $t_{hitung} > t_{tabel} = 11.361 > 6.742$. So based on the significance value (Sig.) and the value t_{hitung} , the hypothesis H_1 is accepted, namely that there is an influence of the TPS (*Think Pair Share*) learning model with the help of the Geogebra application on students' ability to understand mathematical concepts.

Discussion

This research was conducted at SMK Negeri 1 Siantar involving class XI. Where class XI-DKV 3 was the class given treatment with the TPS (*Think Pair Share*) learning model with the help of the Geogebra application. Before conducting this research, a trial of the test instrument and questionnaire was first conducted. This aims to determine whether the questions and questionnaire items have met the research standards or not. In this study, a trial test of the ability to understand mathematical concepts and a questionnaire of students' perceptions was conducted on class XI-DKV 2. Then the questions were tested using validity, reliability, difficulty level, and question discrimination (Ekawati, 2016). Based on the trial test of the ability to understand mathematical concepts and students' perceptions that have 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 calculations on the student perception questionnaire and the mathematical concept understanding ability test, it was found that 5 items of mathematical concept understanding ability and 30 items of student perception questionnaires on the TPS (*Think Pair Share*) learning model assisted by the Geogebra application were declared valid. Then for the criteria in the *Cronbach's Alpha Technique* if the value $r_{hitung} > 0.70$ is then the mathematical concept understanding ability test and the student perception questionnaire can be used in research 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 concept understanding ability test is 0.857. Because $0.857 \geq 0.70$, it can be concluded that this mathematical concept understanding ability test is reliable. While the results of the student perception questionnaire reliability test are 0.911. Because $0.911 \geq 0.70$, it can be concluded that the student perception questionnaire on the TPS (*>Think Pair Share*) learning model assisted by the Geogebra application is reliable.

After knowing that the students' perception questionnaire on the implementation of the TPS (*Think Pair Share*) learning model with the help of the Geogebra application and the mathematical concept understanding ability test that had been tested had met the research standards, then the researcher conducted research with the initial stage of providing treatment to the sample class using the TPS (*Think Pair Share*) learning model with the help of the Geogebra application (Bernard & Novtiar, 2022). After

completing the learning with the TPS (*Think Pair Share*) learning model with the help of the Geogebra application, students were given a perception questionnaire to find out whether students had implemented the TPS (*Think Pair Share*) learning model with the help of the Geogebra application that had been implemented. After giving the student perception questionnaire, the researcher gave a test of the mathematical concept understanding ability of the quadratic function material to find out the students' mathematical concept understanding ability after being given the treatment (Haq, Susilawati, Maryono, & A, 2022).

There is a normality test and linearity test as a prerequisite before hypothesis testing. The normality test uses the *Kolmogorov-Smirnov test* in the SPSS 26.0 program with a Sig. > 0.05 criterion (Lestari & Sundi, 2021). The normality test of the student perception questionnaire data on the TPS (*Think Pair Share*) learning model assisted by the Geogebra application is 0.113 > 0.05, so the student perception questionnaire data on the TPS (Think Pair Share) learning model assisted by the Geogebra application is normally distributed. While the significance result (Sig.) of the mathematical concept understanding ability test data is 0.121 > 0.05, so the test question data is normally distributed (Manik et al., 2023).

After conducting the normality test, the researcher conducted a linearity test. In this linearity test using the SPSS 26.0 program, the significant result (Sig.) of the Deviation from linearity row was 0.090, so there is a linear relationship between the independent variable (X) and the dependent variable (Y). So it can be concluded that there is an influence of the TPS (Think Pair Share) learning model with the help of the Geogebra application on the ability to understand concepts in the quadratic function material (Anggraenia & Dewi, 2021).

Furthermore, the researcher conducted a hypothesis test consisting of a simple linear regression test obtained a regression equation $Y = 63,570 + 1,271X$, meaning that for every additional score of the student's perception questionnaire on the TPS (*Think Pair Share*) learning model assisted by the Geogebra application, the ability to understand the concept will increase by 1.271. In addition, a sig. value was obtained. in the regression line of 0.000 < 0.005, then H_1 it was accepted that there was an influence of the TPS (*Think Pair Share*) learning model assisted by the Geogebra application on students' mathematical concept understanding ability. Furthermore, the R Square value was obtained 0.822, so the contribution of the variance of the X variable (TPS (*Think Pair Share*) assisted by the Geogebra application) to the Y variable (the ability to understand the concept) of the quadratic function material was 82.2%. Furthermore, the last hypothesis test was the t-test. The sig. value was obtained. for the influence of the X variable on the Y variable was 0.000 < 0.005. Given $n = 30$, then $df = nk = 30 - 2 = 28$, then $t_{hitung} > t_{tabel} = 11,361 > 6,742$. So based on the significance value (Sig.) and the value t_{hitung} , the hypothesis H_1 is accepted, namely that there is an influence of the TPS (*Think Pair Share*) learning model with the help of the Geogebra application on students' ability to understand mathematical concepts in the quadratic function material (Pauweni, Uwange, Ismail, & Kobandaha, 2022).

Based on the description above, it can be stated that there is a significant influence of the TPS (*Think Pair Share*) learning model assisted by the Geogebra application on students' mathematical concept understanding ability. The hypothesis stating that there is a positive and significant influence of the TPS (*Think Pair Share*) learning model assisted by the Geogebra application on students' mathematical concept understanding ability on the quadratic function material of class X SMK Negeri 1 Siantar is 82.2%, so it is accepted as true or H_1 accepted.

CONCLUSION

Based on the results of data analysis and discussion, it can be concluded that there is a positive and significant influence of the TPS (Think Pair Share) learning model assisted by the Geogebra application on the ability to understand mathematical concepts of class X students of SMK Negeri 1 Siantar. This influence can be seen from the regression equation $Y = 63,570 + 1.271$ with a regression coefficient of 1.271. Through the t-test, it can be seen that $t_{\text{count}} > t_{\text{table}} = (11,361 > 6,742)$ indicates that significance and by using the coefficient of determination can be seen the magnitude of the influence is 82.2%.

Suggestion

Based on the results of this study, the researcher would like to provide the following suggestions: For mathematics subject teachers at SMK Negeri 1 Siantar, they can try using the TPS (Think Pair Share) learning model with the help of the Geogebra application so that the learning model used is more varied and can increase student activity and improve the quality of learning. The TPS (Think Pair Share) learning model with the help of the Geogebra application has a positive influence on students' ability to understand mathematical concepts in the quadratic function material so that other researchers can try using this model for other mathematical materials. By implementing the TPS (Think Pair Share) learning model with the help of the Geogebra application, it is hoped that students will be more active in learning and can interact better with their classmates so that they can more easily understand the material in mathematics learning

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