

## THE EFFECT OF DISCOVERY LEARNING ON THE MATHEMATICAL COMMUNICATION SKILLS IN CLASS X STUDENTS

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### ABSTRAK

Penelitian ini bertujuan untuk menganalisis pengaruh Model Pembelajaran Discovery terhadap Keterampilan Komunikasi Matematika Siswa Kelas X di SMA Negeri 4 Pematangsiantar. Jenis penelitian yang dipelajari adalah penelitian kuratif. Metode penelitian yang dipelajari adalah metode penelitian. Dalam penelitian ini, jenis penelitian yang dipelajari adalah Desain Penelitian Kuratif dengan jenis desain penelitian yaitu One Shot Caser Sturdy. Penelitian ini dilakukan di SMA Negeri 4 Permatangsiantar yang berlokasi di Jalan Patimura No. 1, Pahlawan, Kecamatan Permatangsiantar Timur, Kota Permatangsiantar. Alasan peneliti memilih lokasi ini adalah karena penelitian dengan subjek yang diambil peneliti telah dilakukan di sekolah tersebut. Penelitian ini dilakukan pada semester ganjil tahun ajaran 2025/2026. Berdasarkan hasil analisis data dan diskusi, dapat disimpulkan bahwa terdapat pengaruh positif dan signifikan dari model pembelajaran Discovery Learning terhadap keterampilan komunikasi matematika siswa kelas X SMA Negeri 4 Pematangsiantar. Pengaruh ini dapat dilihat dari persamaan regresi, yaitu  $Y = 60,442 + 1,265X$  dengan koefisien regresi 1,265. Dengan menggunakan uji t, yaitu  $t_{hitung} > t_{tabel} = (11,142 > 7,169)$  menunjukkan bahwa signifikansi menggunakan koefisien determinasi dapat dilihat bahwa pengaruhnya besar yaitu 81,6%. Berdasarkan hasil perhitungan koefisien determinasi, menunjukkan bahwa model pembelajaran penemuan (discovery learning) terhadap kemampuan komunikasi matematika siswa memiliki pengaruh sebesar 81,6%.

**Kata Kunci:** Model Pembelajaran, Pembelajaran Penemuan, Keterampilan Komunikasi Matematika

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### ABSTRACT

*This study aims to analyze the influence of the Discovery Learning Model on the Mathematical Communication Skills of Class X Students at Sma Negeri 4 Pematangsiantar. The type of research that is being studied is curative research. The research method that is being studied is the research method. In this*

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research, the type of research that is being studied is the Curative Research Design with the type of research design namely One Shot Case Study. This research was conducted at SMA Negeri 4 Permatangsiantar which is located at Jalan Patimura No. 1, Pahlawan, Siantar Timur District, Permatangsiantar City. The reason the researcher chose this location is because research with the subject that the researcher has taken has been carried out at the terrserburt school. This research was conducted in the odd semester of the 2025/2026 academic year. Based on the results of data analysis and discussion, it can be concluded that there is a positive and significant influence of the Discovery Learning learning model on the mathematical communication skills of class X students of SMA Negeri 4 Pematangsiantar. This influence can be seen from the regression equation, namely  $Y = 60.442 + 1.265X$  with a regression coefficient of 1.265. By means of the *t*-test, namely  $t_{hitung} > t_{tabel} = (11.142 > 7.169)$  shows that the significance using the coefficient of determination can be seen that the large influence is 81.6%. Based on the results of the calculation of the coefficient of determination, it shows that the discovery learning learning model on students' mathematical communication skills has an influence of 81.6%.

**Keyword:** Learning Model, Discovery Learning, Mathematical Communication Skills

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## 1. INTRODUCTION

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 Sawaludin (Sunarsih, Rahayuningsih, & Setiati, 2020) learning is an effort made by educators to ensure that the learning process occurs in students.

According to Suardi (Jumiarti, Dimpudus, & Haeruddin, 2021) learning is defined as a process in which students interact with educators and learning resources within a learning environment. Learning is the process by which educators help students acquire knowledge, develop skills and character, and shape attitudes and beliefs. In other words, learning is a process designed to help students learn effectively. The teacher initiates the lesson and the students carry out the learning activities.

According to Sawaludin et al. (Ali & Setiani, 2018) the goal of learning is for students to achieve development in three aspects: cognitive, affective, and psychomotor. To achieve these learning goals, there must be a positive interaction between educators and students, and both must complement each other. Learning objectives are behaviors that students are expected to achieve or perform under certain conditions and ability levels.

Based on the expert opinions above, it can be concluded that learning objectives describe the achievement of three aspects of competency: knowledge, skills, and attitudes, which students need to develop through one or more learning activities. These learning objectives can be achieved with the assistance of teachers. One of the subjects included in the Indonesian learning system is mathematics (Romero & Ventura, 2020).

In the context of mathematics learning, mathematical communication skills are a crucial competency that must be developed, as they enable students to express ideas, understand concepts, and solve problems logically and systematically. Both the Independent Curriculum and previous curricula emphasize the importance of this skill as part of the numeracy literacy competencies needed in the 21st century. However, the reality shows that students' mathematical communication skills are still relatively low. Many students struggle to convey mathematical ideas both orally and in writing. This may be due to a teacher-centered learning approach and limited opportunities for students to explore and construct their own understanding of mathematical concepts.

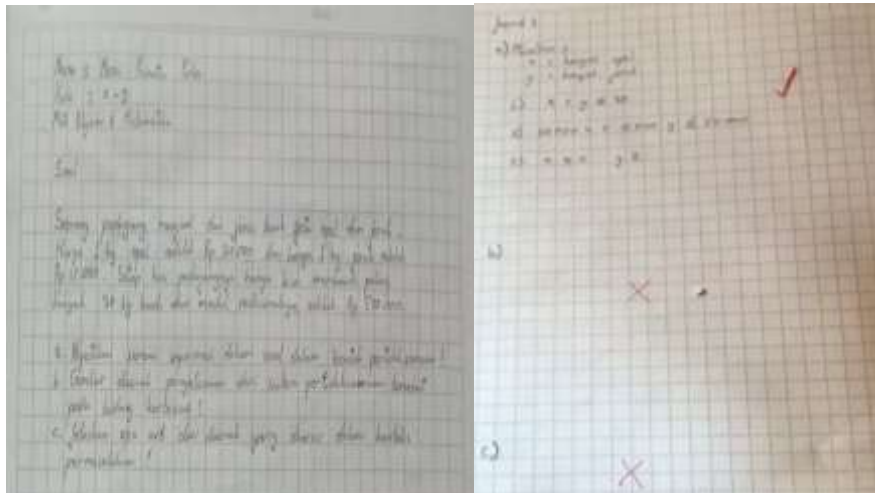
Mathematics is a basic science that must be mastered by every human being and has a very important role in knowing the achievement of success in various fields. This statement is based on the understanding of mathematics will be the right vehicle for studying other subjects, both at the same level of education and at higher education (Jenab, 2018). The general objectives of learning mathematics are communicating (*mathematical communication*), reasoning (*mathematical reasoning*), solving problems (*mathematical problem solving*), linking mathematical concepts (*mathematical connection*), and representing ideas (*mathematical representation*). Mathematical communication skills in mathematics learning are very necessary to be developed, this is because through communication students can organize their mathematical thinking both orally and in writing (Deviana, Subekti, & Kuswandari, 2021).

Based on the mathematics learning objectives explained above, it can be seen that one of the skills needed in mathematics learning is mathematical communication skills. According to Hestu Tansil Laia (Astuti, Rini Kristiantari, & Saputra, 2021) mathematical communication skills play an important role because: a) Mathematics is not only an essential language that is not only used for thinking and determining formulas but also has important value in expressing ideas clearly, accurately, and precisely; b) Mathematics and learning mathematics are at the heart of human social activities. The reality is that many students in Indonesia still have low mathematical communication skills. According to research conducted by Ulyawati, et al. (Simangunsong & Pane, 2021) in analyzing students' mathematical communication skills, it can be said that students are able to understand mathematical ideas, are able to express mathematical ideas, but are not yet able to use mathematical representations (formulas, diagrams, graphs, models) to express mathematical information, and change and interpret mathematical information in different mathematical representations. This is shown by their research subjects where the research subjects have been able to use the correct solution steps to solve problems but are still less fluent or less careful in carrying out calculations or solutions are still less structured or have not used the correct notation, formulas, or mathematical symbols. The indicators used in mathematical communication skills are 1) Stating mathematical statements in written form in the form of mathematical symbols, 2) Drawing graphs to explain mathematical symbols in writing, 3) Stating problems in everyday life in the form of mathematical models containing mathematical symbols, 4) Connecting graphs with mathematical symbols (in the form of equations and inequalities) (Ariyanto, Aditya, & Dwijayanti, 2019).

The low mathematical communication ability also occurred at the place where the researcher conducted the observation, namely at SMA Negeri 4 Pematangsiantar on June 19-20, 2025. During the observation, the researcher gave an ability test to students at SMA Negeri 4 Pematangsiantar to measure

their mathematical communication ability. The indicators that the researcher used in compiling this ability test question were: 1) Able to change story problems into mathematical models, 2) Able to express mathematical statements in the form of symbols, notations, and mathematical symbols and graphic forms in Cartesian coordinates, 3) Able to explain how to determine the solution area and draw boundary lines in Cartesian coordinates, 4) Able to conclude the results in the form of sentences that are easy to understand related to the context of the problem (Situmorang, 2023).

Based on the results of the researcher's observations and the results of interviews with one of the mathematics teachers, Mr. Venansius Siagian at SMA Negeri 4 Pematangsiantar on June 19, 2025, said that many students still have low mathematical communication skills. This is caused by several factors, namely: 1) Students are unable to understand the questions given so they have difficulty converting the problems given into a mathematical model. 2) Students do not understand how to read graphs and how to represent a function equation in graphical form. 3) Students are less able to determine the intersection points needed to draw a linear equation graph (Diana, Tahir, & Khair, 2022). 4) Teachers still use conventional learning models. This means that mathematics learning in the school is still *teacher-centered* where most of the material is still delivered by teachers using the lecture method so that most students become passive and find the learning boring. The following are the difficulties experienced by students in one of the classes that the researcher observed at SMA Negeri 4 Pematangsiantar on the material of linear inequalities of two variables which can be seen in the following picture (Zulmi & Akhlis, 2020).



**Figure 1. Observation Test Questions and Answers**

From the figure 1 above shows one of the student's answers in the initial ability observation test. Based on the results of the initial ability test of 30 students in the class, the researcher obtained the following results: 15 students (50%) were unable to change story problems into mathematical models, 22 students (73.3%) were unable to express mathematical statements in the form of symbols, notations, and other mathematical symbols, 25 students (83.3%) were unable to represent mathematical symbols in the form of graphs on Cartesian coordinates and 27 students (90%) were unable to interpret or change the form of graphs back into the form of equations and inequalities. From the results of the initial ability test that the researcher gave, the researcher can conclude that students are still less able to express mathematical statements in the form of symbols, notations, and other mathematical symbols according to mathematical procedures and students are still lacking in representing mathematical symbols in the form of graphs on Cartesian coordinates (Kristin & Rahayu, 2017).

One alternative learning model believed to be able to improve mathematical communication skills is Discovery Learning (Ardianti, Sujarwanto, & Surahman, 2022). This model positions students as active subjects in the learning process, where they are encouraged to discover concepts or principles themselves through meaningful learning experiences (Williams & Vaughn, 2020). Discovery Learning provides space for students to discuss, express opinions, ask questions, and convey their findings, thus naturally training their mathematical communication skills. In a study conducted by entitled "The Effect of the Discovery Learning Model on Improving Critical Thinking Skills in Mathematics" that the discovery learning model is able to improve critical thinking skills in mathematics, as well as supported by the results of research by researchers also used the discovery learning model to improve critical thinking skills in mathematics (Emy Sohilait, 2021).

Based on the description that the researcher has conveyed above, the researcher is interested in conducting research with the title " The Effect of the Discovery Learning Learning Model on the Mathematical Communication Skills of Class X Students at SMA Negeri 4 Pematangsiantar " .

## 2. METHOD

The type of research that is studied is curative research. The research method that is studied is the experimental research method. According to (Sahir, 2022), the experimental research method is a study that functions to examine the existence of various effects due to adding control variables (FAJRI, 2019). 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 (Mariza & Fachrurazi, 2019). 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, the researcher will provide a treatment. This research was conducted at SMA Negeri 4 Pematangsiantar, located at Jalan Patimura No. 1, Pahlawan, East Siantar District, Pematangsiantar City. 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 (Prilliza, Lestari, Merta, & Artayasa, 2020) the population is the entire sample of the samples that will be studied at the research location. Thus, the population of this study is the entire class X students of SMA Negeri 4 Pematangsiantar. The reason the researcher chose this sample is because based on the curriculum implemented at the school, linear inequalities of two variables are taught in class X.

According to (Astuti, 2019) 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 (Gupta et al., 2021) probability sampling is a sampling method where each member of the population has the same chance of being selected as a sample. Of the several types of probability sampling, the researcher chose the Cluster Random Sampling technique to determine the sample. Mernurrurt (Hendrayani, Sutresna, & Rusyana, 2021) 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-9 as the experimental class that will apply the Discovery Learning learning model.

According to (Katić, Ferraro, Ambra, & Iavarone, 2021) data analysis is an activity carried out after data from all respondents or other data sources has been collected. The activities in data analysis include: grouping data based on variables and respondent types, tabulating data based on variables from all

respondents, presenting data for each variable studied, performing calculations to answer the research questions, and performing calculations to test hypotheses (Yenti, Ramadhanti, & Laila, 2022).

### 3. RESULTS AND DISCUSSION

#### Research result

##### Description of Research Results

The research was conducted at SMA Negeri 4 Pematangsiantar in the 2025/2026 academic year at Jalan Patimura No. 1, Pahlawan, Siantar Timur District, Pematangsiantar City. The description and analysis of data in this study were used to describe the results of quantitative data from student tests that had been given to one class as a research sample to determine the effect of the *Discovery Learning learning model* on students' mathematical communication skills. This data description is useful for explaining and describing research data which includes validity, reliability, difficulty level and so on. Researchers conducted the research using quantitative methods. The implementation of the research and data collection were carried out at SMA Negeri 4 Pematangsiantar Jl. Pattimura No. 1, Pahlawan, Siantar Marihat District, Pematangsiantar City, North Sumatra Province in class X. The learning process was carried out using the *discovery learning learning model* on the material of Two Variable Linear Inequalities. The population used in this study were all students of class X. The sample in the study consisted of 1 class, namely class X-9 with a total of 30 students (Santoso, 2022).

The research instruments used in this study were questionnaires and tests, with the questionnaire consisting of 20 statement items and the test consisting of 4 descriptive questions containing four indicators of mathematical communication skills. The questionnaire and test were submitted to 2 (two) validators, namely Lois Oinike Tambunan, M.Pd. (Lecturer at HKBP Nommensen University, Pematangsiantar in the field of mathematics education) and Venansius Siagian, S.Pd. (Mathematics Teacher at SMA Negeri 4 Pematangsiantar) to determine whether the questionnaire and test were suitable for use in research. The results of instrument validation from 2 validators, the researcher concluded that the questions were suitable for use without revision.

##### Research Description

The purpose of this study was to determine whether there was an influence of the *Discovery Learning learning model* on the mathematical communication skills of class X students at SMA Negeri 4 Pematangsiantar in the 2025/2026 academic year. The data in this study were the results of students' mathematical communication skills tests.

The mathematical material taught for the purpose of this study is Linear Inequality of Two Variables. After being given treatment in the form of a *Discovery Learning learning model*, a student questionnaire was given to implement the model which would be filled out by the students. After that, to see the mathematical communication ability, a mathematical communication ability test was given which had been tested first in class X-10. In this study, researchers obtained data from the results of the student questionnaire implementing the model and the mathematical communication ability test conducted in class X-9. The questionnaire was used to see whether students had implemented the *Discovery Learning learning model* according to the steps, while the mathematical communication ability test was a question given after implementing the *Discovery Learning learning model*. The results of the model implementation questionnaire and the results of the mathematical communication ability test were used to determine whether the *Discovery Learning learning model had an effect on mathematical communication ability* (Laila, 2020).

The research instruments used in this study were a student questionnaire implementing the model consisting of 20 statements and a mathematical communication ability test consisting of 4 essay-type questions. The researcher conducted a trial of the *Discovery Learning model implementation questionnaire* and the mathematical communication ability test that would be used to collect data on the sample. After the trial, the next step was to collect data on the model implementation questionnaire scores and the mathematical communication ability test scores using the questions that had been tested. Then, class X-9, which was used as the sample class, was given treatment using the *Discovery Learning learning model* with the material Linear Inequalities of Two Variables (Maudi, 2016). The data on the student questionnaire scores implementing the *Discovery Learning model* and the mathematical communication ability test scores obtained using the *SPSS 26.0 program* are presented in Table 4.10.

**Table 1. Description of Model Implementation and Mathematical Communication Skills**

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Standard Deviation
Questionnaire (X)	30	65	80	74.17	3,455
Descriptive Test(Y)	30	21	40	33.40	4,839
Valid N (listwise)	30				

In the table, the student questionnaires that implemented the *Discovery Learning learning model* were obtained with a minimum score of 65 and a maximum score of 80. The average score of the student questionnaires implementing the model was 74.17. This shows that students have followed the steps of the *Discovery Learning model* well (Wahyu, Sutiarso, & Bharata, 2020).

The minimum score of mathematical critical thinking ability is 21 and the maximum score is 40. The maximum score of the mathematical communication ability test is 40 with a conversion of 100 for a score of 40. The KKM value for the mathematics learning outcomes obtained by students is 75. The average value of students' mathematical communication abilities based on the test results is 33.40. Based on the average value, it can be concluded that students have obtained learning outcomes above the KKM value.

#### t-Test Analysis Results

The regression coefficient is tested using the t-test. Assuming other variables are constant, this test is used to assess the significance of the independent variable on the dependent variable.

**Table 2. Test Results with t-Test**

Coefficients <sup>a</sup>					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	60,442	8,432		7,169	0,000
<i>Discovery Learning Model</i>	1,265	0,114	0,903	11,142	0,000

a. Dependent Variable: Mathematical Communication Skills

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  $t_{hitung} > t_{tabel} = 11.142 > 7.169$ . So based on the significance value of 0.00 and the value of 11.142 then the hypothesis  $H_1$  is accepted, namely There is an influence on the *discovery learning learning model on students' mathematical communication skills* (Retnowati & Ekayanti, 2020).

### Results of the Determination Coefficient Test

**Table 2. R square**

Model Summary				
Model	R	R Square	Adjusted R Square	Standard Error of the Estimate
1	.903 <sup>a</sup>	0.816	0.809	2,113

Based on the table, the value obtained is The correlation/level of relationship between variables (R) is 0.903 . Meanwhile, the coefficient of determination (R square) is 0.816 , so the percentage coefficient of determination can be formulated as follows:

$$KD = 0.816 \times 100\%$$

$$KD = 81.6 \%$$

The coefficient of determination percentage shows that the contribution of the variance of variable X ( *discovery learning model* ) to variable Y ( *mathematical communication ability* ) is 81.6%. Based on the results of the calculation of the coefficient of determination, it shows that the *discovery learning model* has an influence of 81.6 % on students' mathematical communication ability .

### Discussion

This research was conducted at SMA Negeri 4 Pematangsiantar involving class X-9 who will be given the discovery learning model treatment. Before this research was conducted, the researcher first conducted a trial of the instrument to see whether the test instrument and questionnaire had met the research standards or not. In this study, the instrument trial was conducted in class X-10. After the data was obtained, the test instrument was tested with validity tests, reliability tests, difficulty levels, and discriminating power, while the questionnaire instrument was tested using validity tests and reliability tests (Anggo & Samparadja, 2022).

Based on the trial of the student questionnaire by implementing the discovery learning model and the mathematical communication ability test that has been carried out with the number of trial students,  $N = 30$  and a significance level of 5% obtained  $r_{tabel} = 0.361$  . From the results of the validity test calculation on the model implementation questionnaire and the mathematical communication ability test, 20 questionnaires for the implementation of the discovery learning model and 4 descriptive questions on the mathematical communication ability were declared valid (Muslimahayati, 2019).

Then, from the results of the test item reliability test, the Cronbach's Alpha value was obtained at 0.936 and from the results of the student perception questionnaire reliability test, the Cronbach's Alpha value was obtained at 0.870. The research data is said to be reliable if the Cronbach's Alpha value is  $> 0.70$ , so it can be concluded that the test items and the student perception questionnaire are both reliable. Based on the results of the test of the level of difficulty of the questions, it was found that there was 1 question that was said to be difficult, 2 questions were categorized as moderate and 1 question was categorized as easy. Then, for the discriminating power, it showed that there were 3 questions categorized as having

good question discriminating power, and 1 other question was categorized as having moderate discriminating power (Annisa & Siswanto, 2021).

After knowing that the student perception questionnaire with the *discovery learning model* and the mathematical communication ability test that had been tested had met the research standards, then the researcher conducted research with the research standard stage, then the researcher conducted research with the initial stage, namely the researcher gave treatment to the experimental class using the *Discovery Learning learning model*. After the treatment was carried out, the researcher gave a test of mathematical communication ability essay questions on the Two-Variable Linear Inequality material and a student perception questionnaire to see whether students could follow the learning well using the *Discovery Learning learning model* (Naryaningsih, Siswono, & Wintarti, 2022).

After obtaining the model implementation scores and mathematical communication ability test scores, the data were analyzed. The results showed an average score of 74.16 for the student perception questionnaire using the *discovery learning model*, and an average score of 33.4 for the learning outcomes (La'ia & Harefa, 2021).

After obtaining the data from the research, the researcher then analyzed the research data. Before testing the hypothesis, the researcher first conducted prerequisite tests, namely the normality test and the linearity test. This normality test was conducted using SPSS 26.0 and Excel. The basis for making decisions in the normality test is that the data is declared normally distributed if the significance value (Sig.)  $> 0.05$ . Based on the results of the normality calculation of the questionnaire data on student perceptions of the *discovery learning learning model*, a significance value of 0.086 was obtained, thus the research data is normally distributed. Meanwhile, the significance result (Sig.) from the mathematical communication ability test data is 0.086  $> 0.05$ . So the mathematical communication ability test data is normally distributed (Marfiah & Pujiastuti, 2020).

After conducting a normality test, the researcher conducted a linearity test. In this linearity test, the SPSS 26.0 program was used to obtain The significant result (Sig.) of the *Deviation from Linearity* row is  $h 0.249 > 0.05$ , so there is a linear relationship between the independent variable (X) and the variable (Y). So it can be concluded that there is a linear relationship between the *discovery learning model* and mathematical communication skills (Indriani & Imanuel, 2018).

Furthermore, the researcher conducted a hypothesis test consisting of a simple linear regression test obtained the regression equation  $Y = 60.442 + 1.265X$ , meaning that for every additional score of the student's perception questionnaire on the *discovery learning learning model*, the communication ability will increase by 1.265 (Rohmah & Rinaldi, 2019). In addition, the sig. value obtained in the regression line is  $0.000 < 0.005$ , so  $H_1$  is accepted, meaning there is an influence of the *discovery learning learning model* on students' mathematical communication abilities (Oktaviana & Aini, 2021). Furthermore, the R Square value is 0.816, so the contribution of the variance of the variable X (*discovery learning model*) to the variable Y (communication ability) of the two-variable linear inequality material is 81.6%. Furthermore, the last hypothesis test is the t-test (Nugraha & Pujiastuti, 2019). The sig. value obtained for the influence of the variable X on the variable Y is  $0.000 < 0.005$ . Given  $n = 30$ , then  $df = nk = 30 - 2 = 28$ , then  $t_{count} > t_{table} = 11.142 > 7.169$ . So based on the significance value (Sig.) and the  $t_{count}$  value, the hypothesis  $H_1$  is accepted, namely there is an influence of the discovery learning model on students' mathematical communication skills on the material of two-variable linear inequalities.

## CONCLUSION

Based on the results of data analysis and discussion, it can be concluded that there is a positive and significant influence of the *Discovery Learning learning model* on the mathematical communication skills of class X students of SMA Negeri 4 Pematangsiantar. This influence can be seen from the regression equation, namely  $Y = 60.442 + 1.265X$  with a regression coefficient of 1.265. By means of the t-test, which  $t_{hitung} > t_{tabel} = (11,142 > 7,169)$  shows that the significance using the coefficient of determination can be seen that the large influence is 81.6%. Based on the results of the calculation of the coefficient of determination, it shows that the *discovery learning learning model* on students' mathematical communication skills has an influence of 81.6 %.

## Suggestion

Based on the results of this study, the researcher would like to provide the following suggestions:

1. For Gulrul . By understanding that the *discovery learning model* has an influence on students' mathematical communication skills, teachers are expected to have other learning strategies according to their characteristics. The most appropriate learning strategy with the characteristics of the students they teach will create a more active, effective, and efficient learning process. Therefore, choosing the *discovery learning model* can be an alternative to the learning process in class.
2. For Students , By knowing the *discovery learning learning model* , it will have an impact on students' mathematical communication skills. It is hoped that students will practice collecting many questions, from the simplest to the most varied. Pay close attention when scrolling while teaching. Reflect on good and efficient learning methods, and students should be able to play actively in learning activities so that the learning process can run well.
3. For further research. For further research who want to conduct the same research, it is recommended to develop this research by preparing other material presentations and can optimize the time to improve students' mathematical communication skills

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