

The Influence of Pakpak Culture Based on Guided Discovery Learning Model in Mathematical Communication Ability and Self Confidence of Students in SD Negeri No. 030277 Teladan, Sidikalang Districts, Dairi Regency

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Abstract

In fact, the implementation of the teaching-learning process does not train and develop students' communication skills to cause interaction between students, such as working together, expressing ideas, asking questions, and responding to questions / opinions of other students. The teachers have applied the discussion learning model, but this is done with a direct learning model. During the discussion, the teacher only gives a number of assignments to students which contain almost all of the material without giving instructions, so that the students' thinking patterns do not develop and are not stimulated to think critically. This research was conducted at SD Negeri No.030277 Teladan Sidikalang, Sidikalang District, Dairi Regency. The population in this study was all fifth grade students of SD Negeri No.030277 Teladan Sidikalang which consisted of 3 classes totaling 91 students. Class VA as many as 31 students, class VB as many as 30 students, and class V-C as many as 30 students. There is a significant influence between learning (guided discovery learning and direct learning) on students' mathematical communication skills. The effect of the independent variable on changes in the dependent variable is 31.2%, while the remaining 68.8% is influenced by other variables. There is a significant influence between learning (guided discovery learning and direct learning) on students' self confidence. The effect of independent variables on variable changes is 9.6%, while the remaining 90.4% is influenced by other variables.

Keywords

Pakpak culture;
guided discovery
learning model;
mathematical
communication ability;
self confidence



I. Introduction

Communication in mathematics is the activity of delivering and receiving mathematical ideas in the language of mathematics according to (Jatmiko, Dwirahayu, and Diwidian, 2016: 32). Communication is an important part of every human activity, everyone communicates, and everyone communicates. but in fact, many students have difficulty learning mathematics. Mathematics is considered very difficult for students who are unable to obtain mathematical concepts, according to (Velloo, Ali, and Chairany, 2016: 101).

Students still have difficulty solving math problems related to the ability to provide answers using their language according to (Jatmiko, Dwirahayu, and Diwidian, 2016: 32). Almost every student finds mathematics boring or difficult. On the other hand, students who are smart in mathematics are often less able to communicate well, what they think is

only for themselves. "It is a contradiction in terms, where mathematics itself is a language, but many students are less able to communicate with mathematics" (Armiati, 2009: 270).

According to Irhamna (2020) mathematics is a universal science. Mathematics is also seen as the queen of science. To be able to teach mathematics, a teacher must be able to prepare lesson plans so mathematics lessons can be received by students (Nasution, 2020). Mathematics is a science that has special characteristics, one of which is deductive reasoning in mathematics so that mathematics education and teaching need to be handled in a hierarchical manner special anyway (Sinaga, 2021). Mathematical communication skills are important, but the problem is that learning mathematics has not paid much attention to students' mathematical communication skills, which are still relatively low.

Research conducted by (Fauzan, 2008) shows that the ability to communicate mathematically is still a weak point of students in learning mathematics. When asked a question to students, their general reaction is to look down, or look at the friend sitting next to them.

Research (RCAs, 2020: 7) says that "students' mathematical communication skills are still low". This is also disclosed (Fahmi, Syaputra, and Rajaguguk, 2016: 88) is still low. Research (Rini, Sugiarto, and Safa`attullah, 2017: 360) in class VII SMP Negeri III Salatiga, mathematical communication is also low. Then, in the study (Yusra and Saragih, 2016: 2) found that the competence of students' communication skills was still low so that it needed special attention for them to develop a mathematics learning model. The same thing was also expressed by (Perwitasari and Surya, 2017: 201) the low Mathematical Communication Ability of Students. Mathematics teachers tend to "forget" the objectives stated in the curriculum when designing lessons. As a result,

In addition, teachers are also more focused on presenting material and questions that will appear in exams (semester exams and UAN). This is evident from the results of his experimental research that students' mathematical communication skills are still below the KKM. Judging from the KKM at SD Negeri No.030277 Teladan Sidikalang, that is 75. Student UAS in mathematics is still low, as proposed in table 1.

Mathematics of elementary students' mathematical communication is still under the KKM. Judging from the KKM at SD Negeri No.030277 Teladan Sidikalang, Sidikalang District, Dairi Regency in odd semesters.

Table 1. UAS Mathematics Value

No.	Class	Academic Year / Value	
		2019/2020	2020/2021
1	VA	71	73
2	VB	71	72
3	VC	70	72

In fact, the implementation of the teaching-learning process does not train and develop students' communication skills to cause interaction between students, such as working together, expressing ideas, asking questions, and responding to questions / opinions of other students. The teachers have applied the discussion learning model, but this is done with a direct learning model. During the discussion, the teacher only gives a number of assignments to students which contain almost all of the material without giving instructions, so that the students' thinking patterns do not develop and are not stimulated to think critically. Of course this learning paradigm needs to be improved.

II. Review of Literatures

2.1 Guided Discovery Learning Model

Learning model is to answer how individuals learn. Learning models help students get or obtain information, ideas, skills, and express themselves. Implementation of the 2013 Curriculum according to Permendikbud Number 22 of 2016 concerning Process Standards using 3 (three) learning models which are expected to shape scientific, social behavior and develop a sense of curiosity. The three models are: (1) learning model through disclosure / discovery (discovery / inquiry learning) (2) problem-based learning (PBL) model, (3) project-based learning (PBL) model.).

The guided discovery learning model is a learning model in which the teacher plays a role in stating problems, then guides students to find solutions to the problem with orders or student worksheets and students follow directions and find solutions themselves (Krismanto, 2003: 4).

Guided Discovery learning is a learning model designed in such a way that students can discover concepts or principles independently through mental processes. Learn with a discovery learning guide is a learning where students find their own concepts that are studied with the direction and guidance of educators to achieve the goals that have been previously set by educators. Learning that supports the implementation of effective learning is student centered approaches. Bruner in (Dahar, 2011: 79) says that learning discovery is in accordance with the active search for knowledge by humans and by itself gives the best results. Trying on your own to find solutions to problems and the knowledge that goes with them, results in knowledge that is truly meaningful.

The Guided Discovery Learning model (guided findings) is a teaching approach in which the teacher provides students with examples of specific topics and guides students to understand the topic (Eggen & Khaucak 2012: 177). This guided discovery model is a learning method of the many existing learning methods, placing the teacher as a facilitator, the teacher guiding students where the teacher is needed. In this method, students are encouraged to think for themselves so that they can find general principles based on the material or data provided by the teacher, with this guided discovery model, it is hoped that it can change student learning styles so that students become active in following lessons. To what extent students are guided, depends on their abilities and the material being studied.

Based on some of the opinions above, it can be concluded that guided discovery learning is a discovery learning model which in its implementation is carried out by students based on instructions. Instructions are given generally in the form of guiding statements, here the teacher as a facilitator, the teacher guides students where the teacher is needed. In this method students are encouraged to think for themselves so that they can find general principles based on the material or data provided by the teacher. To what extent students are guided in learning depends on their abilities and what material is being studied.

2.2 Direct Learning Model (Direct Instruction)

Learning in class can be done with a variety of learning models. The material can be conveyed by the teacher directly so that students master the material optimally. This learning model is called a direct learning model.

The direct learning model (Direct Instruction) is a learning model that emphasizes the process of delivering material verbally from a teacher to a group of students with the

intention that students can master the subject matter optimally according to (Sanjaya, 2011: 179). In this model the subject matter is delivered directly by the educator, and students are not required to find the material. The direct learning model is a learning model where activities are focused on academic activities. In this case, the implementation of direct learning is strictly controlled by the teacher to maximize the use of student learning time (Anurrahman, 2012: 169).

From the above opinion, it can be concluded that the direct learning model is a learning model that emphasizes the process of delivering material verbally by paying attention to the academic activities of students being taught with a gradual activity pattern. Direct learning is a teacher center learning model.

Each learning model has its own characteristics that differentiate it from other learning models. The characteristics of the direct learning model are as follows (Trianto, 2011: 41):

(1) The existence of learning objectives and the influence of the model on students, including learning assessment procedures. (2) The syntax or overall pattern and flow of learning activities, and (3) The management system and learning environment model required so that certain learning activities can take place successfully.

The characteristics of direct learning are: (1) Done by verbally conveying subject matter. This means that kneeling verbally is the main tool in carrying out this model. (2) Usually the subject matter delivered is ready-made subject matter, such as data or facts, certain concepts that must be memorized so that it does not require students to think again. (3) The main objective of learning is mastery of the subject matter itself. This means that after the learning process ends, students are expected to understand it correctly by being able to re-express the material that has been described (Hosnan, 2014: 373).

From the description above, it can be said that in the direct learning model the teacher plays a very dominant role. Students are not required to find the material themselves but must memorize the finished subject matter.

2.3 Understanding Mathematical Communication

Communication in general can be defined as an event conveying messages to each other that take place in a community and cultural context. Mathematical communication skills are the ability to communicate mathematical knowledge correctly and effectively according to (Wood in Vale and Barbarosa, 2017: 52). According to (Abdulahak in Ansari, 2009) communication is defined as the process of delivering messages from the sender of the message to the recipient of the message through certain channels and specific purposes. In communication science, there are three forms of communication, namely linear communication which is often referred to as one-way communication, relational and interactive communication which is called the "Cybernetics Model", and convergent communication which is characterized by multi-directions.

Mathematical communication skills are students' ability to speak, write, explain mathematical ideas and to create interactions and exploration of their ideas in class through group discussions and also their ability to communicate mathematics as a message that needs to be conveyed according to (Surya, Syahputra and Juniati, 2018: 14).

Based on the description above, it can be concluded that the Mathematical Communication Ability is the students' mathematical communication ability describe problems in everyday life and present them in mathematical ideas.

The form of communication between the three concepts is different. Linear communication means that the relationship occurs only in one direction, because the recipient of the message only hears the message from the message provider. Meanwhile, in

rational communication there is an interaction between the giver and receiver of the message, but it really depends on experience. Experience will determine whether the message sent is received by the recipient in accordance with what is intended by the message giver. If the experience / understanding of the message recipient is not able to reach the contents of the message, it will affect the desired result of the message. Furthermore, convergent communication is communication that takes place in a multi-way manner, between recipients of a mutually understood focus or interest that takes place dynamically and develops towards a collective and sustainable understanding.

Convergent communication in learning is aimed at improving the quality and effectiveness of learning. The difference in the previous form of communication is in relational communication, if students have learning difficulties, it is returned to the teacher (Ansari, 2009). But in learning that utilizes convergent communication, if there are difficulties and culture, then culture is resolved together in the learning environment of the participants, so that mutual understanding between them and culture is expected to be resolved.

2.4 Self Confidence

One aspect that must be developed is self-confidence. With high self-confidence, students are more enthusiastic and focused on their life goals. According to Rakhmat (Sudrajat: 2008) self confidence is defined as a belief in yourself that each individual has in his life, as well as how the individual sees himself as a whole with reference to self-concept.

Self confidence as a person's belief to be able to behave as expected and desired and a person's belief that he can control a situation and produce something positive (Ismawati, 2010). Self confidence consists of four indicators, namely: (1) self-confidence, (2) being yourself, (3) ready to face other people's rejection, (4) good self-control, (5) positive thinking.

Self confidence is one's own ability to do tasks and choose a good and effective solution. Self-confidence is very important for students to succeed in learning mathematics (Martyanti, 2013). With self-confidence, students will be more motivated and prefer to learn mathematics, so that in the end it is hoped that the achievement of learning mathematics will also be more optimal.

2.5 Pakpak Culture

Pakpak culture-based mathematics learning makes passive learning conditions active and creative. Students find information independently, find their own concepts learned with the direction and guidance of the teacher by using the Pakpak cultural musical instrument, such as finding the formula of the circumference of the measurement results of the Pakpak cultural musical instrument.

Culture-based learning is a strategy for creating a learning environment and designing learning experiences that integrate culture as part of the learning process. In culture-based learning, culture becomes a method for students to transform their observations into forms of creative principles about nature in the midst of facing the industrial revolution of students as millennial generations but not forgetting their own culture.

III. Research Methods

This research was conducted at SD Negeri No.030277 Teladan Sidikalang, Sidikalang District, Dairi Regency. Research time in the even semester of the 2020/2021 academic year. One of the reasons for choosing this place was that similar research had never been carried out.

The population in this study were all fifth grade students of SD Negeri No.030277 Teladan Sidikalang which consisted of 3 classes totaling 91 students. Class VA as many as 31 students, class VB as many as 30 students, and class V-C as many as 30 students. The sampling technique used was a random group sampling technique or cluster random sampling. According to Syahputra, E. (2016: 32) "a group sampling procedure in which the units of analysis in the population are classified into called a cluster, then a sample is selected whose members consist of the clusters (no longer a sample whose members are units of analysis). The clusters that are selected into the sample determine all the analysis units to be investigated". It is impossible for the researcher to take students randomly to form a new class. For this reason, the researcher took the smallest sampling unit, namely the class. Class selection is done by determining all class units on small paper, then rolled up and drawn and selected as many as needed. Two classes were selected, namely VB and VC classes with 30 students in each class.

IV. Discussion

The process of implementing this research begins with the provision of an initial mathematics ability test to each of the experimental class and the control class which consists of 30 students. The purpose of giving the initial ability test is to classify students based on low and high KAM. After the results of the answer sheets were examined by the researcher, the results obtained were the lowest and highest scores, the average in each class and the standard deviation of the scores for each class. These results are based on the students' abilities on each test that is carried out, so there are various kinds differences in student test results depending on their respective abilities. The summary of information on the results of student data is summarized in a simpler form so that it is easily understood by readers and the information is presented in the following table below 4.1

Table 2. Description of Students' Initial Mathematics Ability in Each Sample Class Based on the Initial Mathematics Ability Test Score

	Descriptive Statistics				
	N	Minimum	Maximum	Mean	Std. Deviation
Control	30	40	80	61.33	13,892
Experiment	30	40	75	59.67	15,139
Valid N (listwise)	30				

Furthermore, the students' initial math abilities (high and low) were grouped based on the students' KAM. Students who have $KAM \geq X + SD$ are grouped in high math ability, while students who have $KAM < X - SD$ are grouped in low math ability. For

guided discovery learning based classes Pakpak culture values $X = 59.67$ and $SD = 15.139$, so $X + SD = 74.809$ and $X - SD = 44,531$. Whereas for the conventional model class the value of $X = 61.33$ and $SD = 13,892$, so $X + SD = 75,222$ and $X - SD = 47,438$. The summary results of the sample distribution are presented in Table 4.2 below:

Table 3. Distribution of Research Samples

KAM Category	Statistics	Class	
		Control	Experiment
High	N	11	14
	Average	77	75
	Standard Deviation	2,523	0
Low	N	19	16
	Average	53	46
	Standard Deviation	10,145	5,627

Based on the table above, it was found that the Guided Discovery Learning experimental class based on the Pakpak culture had 14 students' ability levels for the high category and 16 students for the low category. While the control class for the level of students' ability levels for the high category was 11 students and 19 students for the low category. Based on the table above, in the GDL class the average score of students in the high category KAM is 75, and the low category is 46. While in the control class the average KAM score for the high category is 77, and the low category is 53.

To find out the similarity of the mean between the two classes, a similarity test was carried out. However, beforehand the analysis test was carried out which included the normality test and the homogeneity test.

a. Normality Test of Student KAM Data

One of the requirements in quantitative analysis is the fulfillment of the assumptions on the normal distribution of the data to be analyzed. The normality test used in this study was the Kolmogorov-Smirnov and Shapiro-Wilk test with a significance level of 5%. The hypotheses tested are:

H0: The sample comes from a population that is normally distributed

Ha: The sample comes from a population that is not normally distributed.

The test criteria for H0 are accepted if the probability (sig) obtained is more greater than 0.05 and rejected if less than 0.05. The results of KAM data normality using SPSS statistic 20 in full can be seen in table 4. below:

Table 4. Results of Normality Test of Students' Initial Mathematics Ability Values
One-Sample Kolmogorov-Smirnov Test

		GDL Based on Pakpak Culture	Direct Learning
N		30	30
Normal	Mean	, 0000000	, 0000000

Parametersa, b				
	Std. Deviation		15.13842701	13.89132020
Most Extreme Differences	Absolute		,307	,202
	Positive		,264	,139
	Negative		-,307	-,202
Kolmogorov-Smirnov Z			1,684	1,104
Asymp. Sig. (2-tailed)			,007	,174
Monte Carlo Sig. (2-tailed)	Sig.		,115c	,149c
	99%	Lower Bound	,003	,140
	Confidence Interval	Upper Bound	,007	,158

a. Test distribution is Normal.

b. Calculated from data.

c. Based on 10000 sampled tables with starting seeds 112562564.

b. Homogeneity Test of Student KAM Data

After carrying out the normality test, the variance homogeneity test was carried out on the Pakpak culture-based GDL class learning group and direct learning at the 5% significance level and the hypothesis tested to determine the homogeneity of the students' KAM test data were as follows:

H0: The sample comes from a homogeneous data group variance

Ha: The sample comes from the variance of the data group which is not homogeneous

The H0 test criterion is accepted if the probability (sig) obtained is greater than 0.05 and rejected if the probability is smaller than 0.05. The results of homogeneity calculations using SPSS statistics 20 are shown in Table 5. below:

Table 5. Homogeneity Test Results of Initial Mathematical Ability Values Students
Test of Homogeneity of Variances
Early Math Ability

Levene Statistics	df 1	df 2	Sig.
2,478	1	58	,121

From table 5 above, it can be seen that the probability value (sig) is 0.121 and is greater than 0.05, which means that H0 is accepted and Ha is rejected. This shows that there is no difference in the KAM variance of students in the GDL class and the direct learning class, or the two classes have a population with a homogeneous variance of KAM.

After the students' initial math ability scores were normally distributed and the variance was homogeneous, then the mean similarity test was carried out. With the following hypothesis:

H0: The value of sig > 0.05 means that there is no difference between the two classes

Ha: Value of sig < 0.05, then there is a difference in the average between the two classes

The following are the results of the calculation of the average similarity test statistics which are presented in table 6 below:

Table 6. Results of the Average Difference Test in KAM Value
ANOVA
Early Math Ability

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	41,667	1	41,667	, 197	, 658
Within Groups	12243,333	58	211,092		
Total	12285.00	59			

Based on the Anova test results table above, it can be seen that the significance value of the students' initial mathematical ability is 0.658, which means that it is greater than 0.05, so H0 is accepted with the conclusion that there is no average difference between the two classes.

Post test given to students at the end of learning activities. This test is conducted individually and students work independently in completing it. Post-test data processing in the experimental class and control class was carried out to determine students' mastery of the material that had been taught by applying the guided discovery learning model based on Pakpak culture in the experimental class and the control class. The summary of the information on the students' post test results is summarized in a simpler form easily understood by readers and the information is presented in table 7. below:

Table 7. Data Description Post Test Students' Mathematical Communication Ability
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Direct KKM Postes	30	50	89	68.07	11.55
GDL KKM Postes	30	50	100	74.43	14.57
Valid N (listwise)	30				

From the description of the acquisition of the post-test scores of students' communication skills in the table above, it can be seen that the minimum score for the experimental class is 50 and the control class is 50. As for the maximum score for the experimental class is 100 and the control class is 89. the experimental class was 74.43 and the control class was 68.06. Furthermore, normality and homogeneity tests will be carried out for post-test data on students' communication skills.

The normality test used in this study was the Kolmogorov-Smirnov and Shapiro-Wilk test with a significance level of 5%. The hypotheses tested are:

H0: The sample comes from a population that is normally distributed

Ha: The sample comes from a population that is not normally distributed.

The test criteria for H0 are accepted if the probability (sig) obtained is more greater than 0.05 and rejected if less than 0.05. As for the results of data normality posttest KKM uses SPSS statistic 20 in full can be seen in table 8 below:

Table 8. Data Normality Test Results Post Test Communication Ability Mathematical Students

Tests of Normality

	Learning model	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistics	df	Sig.	Statistics	df	Sig.
Posttest Ability Communication	LIVE	,171	30	,025	,933	30	,060
	GDL	,120	30	,200*	,959	30	,288

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

After conducting the normality test, the variance homogeneity test was carried out on the Pakpak culture-based GDL class learning group and direct learning at the 5% significance level and the hypothesis tested to determine the homogeneity of the students' mathematical communication ability test data were as follows:

H₀: The sample comes from a homogeneous data group variance

H_a: The sample comes from the variance of the data group that is not homogeneous.

The test criteria H₀ is accepted if the probability (sig) obtained is more is greater than 0.05 and is rejected if the probability is smaller than 0.05. The results of homogeneity calculations using SPSS statistics 20 are shown in Table 9. below:

Table 9. Homogeneity Test Results Data Post Test Students' Mathematical Communication Ability

Test of Homogeneity of Variances Communication Skills Posttest

Levene Statistics	df 1	df 2	Sig.
1,470	1	58	,230

From the results of statistical calculations carried out with the SPSs above, it can be seen that the sig value in the post-test value data of students' mathematical communication skills is greater than 0.05, which is 0.230. Thus it can be concluded that H₀ is accepted and H_a is rejected, it means that the post-test data of the mathematical communication skills of the two classes comes from a population with the same variance.

The self-confidence attitude scale was given overall to both classes after the two classes received treatment. The summary of information on student post test results is summarized in a simpler form so that it is easily understood by the reader and the information is presented in table 10 below:

Table 10. Self Confidence Result Data Description
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Postes SC GDL	30	70	98	80,80	8,583
Posttest SC Direct	30	68	90	75.90	6,682
Valid N (listwise)	30				

Based on table 10, the posttest data obtained from the student's self-confidence attitude scale that for the experimental class minimum score of 70 and for the control class of 68. As for the maximum score for the experimental class is 98 and the control class is 90. For the experimental class average of 80, 80 and the control class is 75.90. From the table above, overall the self-confidence of the experimental class is higher than the control class. Furthermore, the normality test and the homogeneity test of the student's self confidence data were carried out.

The normality test used in this study was the Kolmogorov-Smirnov and Shapiro-Wilk test with a significance level of 5%. The hypotheses tested are:

H₀: The sample comes from a population that is normally distributed

H_a: The sample comes from a population that is not normally distributed.

The test criteria for H₀ are accepted if the probability (sig) obtained is more greater than 0.05 and rejected if less than 0.05. The results of the normality of Self Confidence post-test data using the full SPSS statistic 20 can be seen in table 11 below:

Table 11. Data Normality Test Results Post Test Self Confidence
Tests of Normality

	Learning Model	Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistics	df	Sig.	Statistics	df	Sig.
Self Confidence	GDL	,173	30	,156	,928	30	,064
	Live	,178	30	,016	,940	30	,092

a. Lilliefors Significance Correction

Based on the results of the data normality test above, it can be seen that the results of the post-test self-confidence of students in the experimental class and control class are normally distributed. Where the significance value at Shapiro-Wilk for the experimental class is 0.064 and 0.092 for the control class, it means that the significance is greater than 0.05. So it can be concluded that H₀ is accepted, and H_a is rejected, it means that the post-test self-confidence data of the experimental class and control class students are normally distributed. Furthermore, the homogeneity test was carried out.

After conducting the normality test, the variance homogeneity test was carried out on the Pakpak culture-based GDL class learning group and direct learning at the 5% significance level and the hypothesis tested to determine the homogeneity of the students' self-confidence post test data were as follows:

H0: The sample comes from a homogeneous data group variance

Ha: The sample comes from the variance of the data group that is not homogeneous.

The test criteria H0 is accepted if the probability (sig) obtained is more is greater than 0.05 and is rejected if the probability is smaller than 0.05. The results of homogeneity calculations using SPSS statistics 20 are shown in table 12 below:

Table 12. Homogeneity Test Results Post Test Self Confidence Data
Test of Homogeneity of Variances
Adversity Quotient

Levene Statistics	df 1	df 2	Sig.
3,536	1	58	,065

Based on the table above, from the results of statistical calculations carried out with SPSS above, it can be seen that the sig value in the student's self-confidence post-test data is greater than 0.05, which is 0.065. Thus it can be concluded that H0 is accepted and Ha is rejected, meaning that the post-test self-confidence data of the experimental class and control class students come from a population with the same variance.

Hypothesis testing was statistically carried out using two-way ANOVA. Hypothesis testing with two-way ANOVA is carried out after the fulfillment of the data requirements that are normally distributed and the variance of the homogeneous data group.

IV. Conclusion

The conclusions of the results of this study are as follows:

1. There is a significant influence between learning (guided discovery learning and direct learning) on students' mathematical communication skills. The effect of the independent variable on changes in the dependent variable is 31.2%, while the remaining 68.8% is influenced by other variables.
2. There is a significant influence between learning (guided discovery learning and direct learning) on students' self confidence. The effect of independent variables on variable changes is 9.6%, while the remaining 90.4% is influenced by other variables.
There is an interaction between learning (guided discovery learning and direct learning) and KAM on students' mathematical communication skills.
3. There is no interaction between learning (guided discovery learning and direct learning) and KAM on student self-confidence.

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