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ANALYSIS OF PROBLEM-SOLVING ABILITY: IMPLEMENTATION OF INQUIRY SOCIAL COMPLEXITY LEARNING MODEL AND SELF CONCEPT

Fera Kuspita Mara[1], Nanang Supriadi[2], Siti Ulfa Nabila[3]
Department of Mathematics Education, UIN Raden Intan Lampung, Indonesia
E-mail: ferakuspita@gmail.com, nanangsupriadi@radenintan.ac.id, sitiulfanabila@radenintan.ac.id

Abstract. Mathematical problem-solving ability is an important ability for students to have, because if students' mathematical problem-solving ability is high, then students' self-concept is also high. This study aims to determine (1) the effect of the inquiry social complexity learning model on students' mathematical problem-solving abilities by controlling self-concept; (2) is there an influence of the self-concept covariate variable on students' mathematical problem-solving abilities; and (3) whether there is a simultaneous influence of inquiry social complexity and self-concept learning models on students' mathematical problem-solving abilities. The data analysis technique uses analysis of covariance (one-way ANCOVA) at a significance level of 5%. The research method used is quasi-experimental. The instrument used is in the form of tests and questionnaires, the type of test instrument is a test of mathematical problem-solving abilities, while the questionnaire instrument is a self-concept questionnaire. The results showed that (1) the mathematical problem solving abilities of students in classes treated with the inquiry social complexity learning model were better than students in classes treated with the conventional expository model; (2) the self-concept of students in the experimental class who were treated with the inquiry social complexity learning model and the control class who were treated with the conventional expository model had good scores, thus influencing students' mathematical problem solving abilities; (3) there is a simultaneous influence of the inquiry social complexity learning model and Self Concept on students' mathematical problem solving abilities. The results of the study indicate that students' mathematical problem solving and self-concept abilities can be improved by using the inquiry social complexity learning model.

Keywords: *Inquiry Social Complexity Learning Model; Self-Concept; Mathematical Problem-Solving Ability*

A. INTRODUCTION

Mathematical Problem-Solving Ability is the ability that students have in trying to solve problems through several procedures or steps. Indicators of mathematical problem solving abilities include understanding the problem, preparing a solution plan, solving the problem according to plan and checking the results obtained again.(Maulyda et al., 2019) The Inquiry Social Complexity (ISC) learning model is a model that emphasizes activity, thinking skills, knowledge integration, constructivism, and discovery so that students' cognitive and communicative competencies can integrate with other students during learning and develop communication skills which are a special aspect of social unity among individuals and knowledge that can be improved simultaneously with other people to be more useful. (Perdana et al., 2020) Self-concept is a person's self-image, which

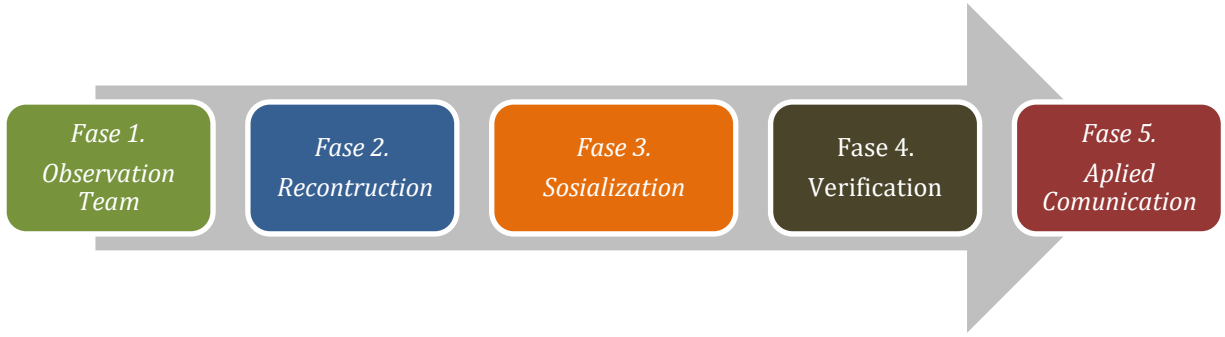
includes physical, psychological, social and emotional goals and their achievements. Physical aspects include attractiveness, practicality and appearance. Thoughts, feelings, courage, adaptability, honesty, independence, trust, and goals are examples of psychological aspects.(Musriandi, 2017)

The 21st century learning system requires schools to change teacher-centered learning to student-centered learning so that students are able to think critically, deductively and inductively. Students' abilities are honed through problems, so that students are able to improve their various competencies. The ability to solve problems is basically the main goal of the educational process. Because problem solving which includes methods, procedures and strategies is the core and main process in the mathematics curriculum and because problem solving is a basic ability in learning mathematics, it is very important for every student to have this ability. The ability to reason, connect, and communicate. This ability is essential for students to develop critical thinking and problem-solving skills. It also requires them to think logically and analytically. Finally, it enables them to develop an aptitude for problem-solving and the ability to apply their knowledge to real-world scenarios. (Sumartini, 2018)

The Inquiry Social Complexity (ISC) learning model is a learning model that can accommodate students to interact based on effective communication indicators to gain broader knowledge and skills. The Inquiry Social Complexity (ISC) learning model is a model that emphasizes activity, thinking skills, knowledge integration, constructivism, and discovery so that students' cognitive and communicative competencies can integrate with other students during learning and develop communication skills which are a special aspect of social unity among individuals and knowledge that can be improved simultaneously with other people to be more useful.(Perdana dkk, 2020) The implementation of learning using the inquiry social complexity learning model can be seen by changes in the attitude of students who are enthusiastic in learning to find and solve their own problems. The main obstacle faced by researchers is convincing students to be confident and dare to learn new things.(Rika et al., 2022). Apart from that, in research conducted by Diah Ayu Pertiwi, it was stated that there was an influence of the inquiry learning model on mathematical problem-solving abilities. Based on previous research, the inquiry social complexity learning model is expected to provide solutions and increase students' enthusiasm for learning to solve problems.(Ayu Pertiwi, 2017) This model is based on the idea that students should be involved in the learning process, both individually and in groups. This model encourages students to think critically, ask questions, and solve complex problems. It also allows for collaboration between peers, helping to build teamwork and collaboration skills.(Rudibyani & Perdana, 2020)

This research aims to focus students on being able to contribute actively to the learning process and also improving students' mathematical problem-solving abilities. Students will get a useful learning process because they learn from direct events individually. Learning activities using this learning model are able to foster curiosity and expand knowledge. The inquiry social complexity learning model in this research has learning steps, namely (1) Observation Team, Students work together in teams or groups to observe and collaborate in discussing several example questions given. Students work together and exchange opinions to solve the problem. (2) Reconstruction, Students divide tasks to solve the example problem. Students identify examples of these questions and can solve these questions correctly. (3) Socialization, Students carry out discussions and argue based on the results of working on examples of questions that have been worked on. Students in small groups explain examples of questions that have been worked on by their respective groups. (4) Verification, Students explain the types of questions they have worked on together. Students present the results of the example questions they have worked on. (5) Applied Communication, Students in groups present their arguments in turns and then agree on the truth according to the teacher's recommendations. Students apply it in everyday life. Students carry out discussions and argue from

the results of working on examples of questions that have been worked on. Students in small groups explain examples of questions that have been worked on by their respective groups.(Perdana dkk, 2020) The steps of the inquiry social complexity learning model can be seen in Figure 1.



Apart from that, self-concept has an important impact or influence on problem solving, especially mathematics learning. This is supported by the results of previous research with the results that self-concept has a positive and significant influence on mathematical problem-solving abilities even though it is relatively low. This means that the level of self-concept influences students' mathematical problem-solving abilities even though the contribution is not that big. By increasing students' self-concept in learning mathematics, it is likely that their academic achievement will also increase. (Haditia et al., 2021) This self-concept is the center of personality formation as well as being the core of personality. This will further determine personality development during the learning process in class and have an impact on learning outcomes. (Samron et al., 2017)

B. METHODS

1. Research Design

This research is Quasi Experimental research, using quantitative data analysis. This research uses two independent variables, namely the inquiry social complexity learning model and self-concept, in this research self-concept is also a covariate variable and mathematical problem-solving ability is the dependent variable. The sampling technique used in this research was the Cluster Random Sampling technique and two samples were obtained, namely the experimental class which was given treatment using the inquiry social complexity learning model and the control class was given treatment using the conventional expository model. Based on the research method that has been explained, the researcher will use an experimental method with a 1x2 factorial design which can be depicted in Table 1.

Table 1. 1x2 Factorial Design

Group			
Experiment		**Control**	
X1	Y1	X2	Y2
X1.1	Y1.1	X2.1	Y2.1
X1.2	Y1.2	X2.2	Y2.2
X1.3	Y1.3	X2.3	Y2.3
...	...	...	...
...	...	...	...
X1.n	Y1.n	X2.n	Y2.n

-

2. Data Collection Instrument

The instruments used in this research are questionnaires and description tests, where questionnaires are used to measure self-concept students and description tests to measure students' mathematical problem-solving abilities. The questionnaires and description tests used in this research have been validated by expert lecturers, namely mathematics education lecturers. Data analysis techniques include how to interpret the data obtained, its relation to the problem and research objectives. For experimental research, there is no need to write statistical formulas, but it is enough to state what tests were used and the decision-making criteria. For qualitative research, researchers also need to describe the things that are done to ensure the validity and consistency of research results. The questionnaire consists of 20 statements, each answer has a score according to the Likert scale level including: strongly disagree (score 1), disagree (score 2), agree (score 3), and strongly agree (score 4)(Shantika & Bahri, 2022) The selected answers have levels from very positive to very negative, the scores for positive and negative statements are inversely related to each other. After validation, the next step was to test the questionnaire on 28 students and obtained 20 valid and reliable questionnaires with a Cronbach's Alpha value of 0.934. The mathematical problem solving ability test consists of 10 essay questions representing 4 indicators of problem solving ability. Next, a trial was carried out on 28 students and it was found that 6 questions were valid and reliable with a Cronbach's Alpha value of 0.881. So 6 questions are used to measure mathematical problem solving abilities.

3. Research Participan

Participants in the research were 70 students aged 17-18 years, with details of 35 students who used the inquiry social complexity learning model and 35 students who used the conventional expository learning model. The 70 students are class XII students at SMK Negeri 2 Bandar Lampung 2023/2024. This school was chosen because this school still uses the conventional expository learning model.

4. Data Collection Technique

The data collection techniques used in this research are questionnaires and tests, questionnaires are used to measure self-concept and tests are used to measure mathematical problem-solving abilities. In this research, the tests applied were an initial test (pretest) and a final test (posttest). The pretest is used before implementing the inquiry social complexity learning model to see the initial abilities between the experimental class and the control class. The posttest was used after implementing the inquiry social complexity learning model to see whether there were significant differences between the experimental group and the control group. The self-concept indicators used are indicators according to Cahoun and Acocella's theory(Haditia et al., 2021)can be seen in Table 2.

Table 2. Self Concept Indicators

NO	Indicator	Description
1	**Knowledge**	The ability to appear or speak in front of the class in mathematics learning
2	**Hope**	Attention from friends or teachers in mathematics lessons regarding one's appearance
3	**Evaluation**	Ability to accept mathematics lessons
		Able to complete math assignments and tests
		Be confident in yourself when taking math tests

Based on Table 2, it can be seen that there are three self-concept indicators used in making the questionnaire, namely Knowledge, Hope, Assessment.(Haditia et al., 2021)The indicators of mathematical problem solving abilities used in this research can be seen in Table 3.

Table 3. Indicators of Mathematical Problem Solving Ability

No	Indicator	Description
1	Understanding the Problem (Understanding the problem)	Determine what is known and what is asked in the question given
2	Drawing up a plan (Devising a plan)	Determine which formula can be used in the problem
3	Carrying out the plan (Carry out the plan)	Solve the questions according to the formula that has been created
4	Checking Back (Looking back)	Check the results that have been done

Based on Table 3, it can be seen that the indicators of mathematical problem-solving ability used are understanding the problem (Understanding the problem), drawing up a plan (Devising a plan), implementing the plan (Carry out the plan), and checking again (Looking back). The indicators used are indicators according to Polya's theory(Mahanal et al., 2022; Maulyda et al., 2019; Sarai et al., 2022; Son et al., 2019; Tambunan, 2019; Yu et al., 2014; Zamnah, 2019).

5. Data Analysis

The data analysis techniques used in this research are the independent sample t test and analysis of covariance (one-way ANCOVA). The independent sample t test was used to determine the initial class balance. The analysis of covariance test (one-way ancova) is a hypothesis test that is used after fulfilling four prerequisite tests, namely normality test, homogeneity test, regression linearity test, regression coefficient homogeneity test(Kadir, 2020; Supriadi et al., 2022). T test, hypothesis test and prerequisite test using SPSS 25 for Windows software.

C. RESULT & DISCUSSION

1. Results

Class Balance Test

The balance test was carried out to determine the initial abilities of the experimental class and the control class. The data used in the balance test is pretest data on mathematical problem-solving abilities. The data has previously been tested for normality and homogeneity. The conclusion obtained is that the pretest data is normal and homogeneous. Next, to determine the initial abilities of the control and experimental classes, a t test analysis was carried out on pretest scores using SPSS 25 software, the following pretest t test results can be seen in Table 4.

Table 4. t test Results of Pretest Mathematical Problem-Solving Ability

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Y	Equal variances assumed	3,087	,083	,508	68	,613	,686	1,351	-2,009	3,381
	Equal variances not assumed			,508	64,432	,613	,686	1,351	-2,012	3,383

	*Note.*Independent Sample t Test on mathematical problem solving ability with n= 70 (M = 22,260, SD = 6,279), with p-value < 0.05

Table 4 shows the results of the t test on mathematical problem solving abilities. It can be seen that ((70) = 0.508, p > .05). So it can be concluded that there is no difference in the problem solving abilities of the control class and the experimental class. Based on this, this research can be continued by implementing inquiry social complexity learning model and conventional expository inquiry learning models.

Prerequisite Test for Analysis of Covariance (One-Way Ancova)

The first prerequisite test for Analysis of Covariance (One-Way Ancova) is the normality test. The normality test was carried out to determine whether the research results in the form of questionnaires and questions in the experimental and control classes were normally distributed or not. The data used is posttest data. The normality test calculation uses Kolmogorov Smirnov with the help of SPSS 25 software. The following are the results of the normality test in Table 5.

Table 5. Normality Test

Tests of Normality							
X1		Kolmogorov-Smirnova			Shapiro-Wilk		
		Statistics	df	Sig.	Statistics	df	Sig.
X2	Experiment	.123	35	,200*	,957	35	,189
	Control	,120	35	,200*	,942	35	,063
Y	Experiment	,147	35	,053	,923	35	.017
	Control	.127	35	,170	,939	35	,052
*. This is a lower bound of the true significance.							
a. Lilliefors Significance Correction							

Based on Table 5, it shows that the results of the student self-concept pretest normality test at a significance level of α = 0.05 can be concluded that the experimental and control class data are normally distributed because the p-value> α. The next prerequisite test is the homogeneity test. Following are the results of the data variation homogeneity test which can be seen in Table 6.

Table 6. Homogeneity Test Results

Levene's Test of Equality of Error Variances			
Dependent Variable: Y			
F	df1	df2	Sig.
,034	1	68	,855
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.			
a. Design: Intercept + Self_Concept + Model_ISC			

The results from Table 6 show that the results of the homogeneity test *Self Concept* and Mathematical Problem-Solving Ability comes from the same or homogeneous variant because it meets the criteria, namely p-value > α. The next test is the linearity regression test carried out to see the linear relationship between covariates and the dependent variable. The results of the regression linearity test can be seen in Table 7.

Table 7. Data Regression Linearity Test Results

Tests of Between-Subjects Effects					
Dependent Variable: Y					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1598.939a	2	799,470	1129.962	,000
Intercept	,883	1	,883	1,248	,268
X1	4,687	1	4,687	6,625	.012
X2	1438.425	1	1438.425	2033,056	,000
Error	47,404	67	,708		
Total	469706,000	70			
Corrected Total	1646.343	69			
a. R Squared = .971 (Adjusted R Squared = .970)					
*Note.*Regression linearity test with n= 70 (M= 81.770 SD = 4.885), with p-value < .05					

The regression linearity test is fulfilled if there is a linear relationship between the covariate variable and the dependent variable, then it can be said that the regression linearity test is fulfilled. The covariate (X2) in Table 7 shows that it is smaller than α or 0.000 < 0.05. So with this it can be said that there is a linear relationship between the covariate variable and the dependent variable.

Table 8. Results of Homogeneity Test for Linear Regression Data Coefficients

Tests of Between-Subjects Effects					
Dependent Variable: Y					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1599.302a	3	533.101	747,954	,000
Intercept	,760	1	,760	1,067	,306
X1*X2	,363	1	,363	,509	,478
X1	,527	1	,527	,740	,393
X2	1410.207	1	1410.207	1978,557	,000
Error	47,041	66	,713		
Total	469706,000	70			
Corrected Total	1646.343	69			
a. R Squared = .971 (Adjusted R Squared = .970)					
*Note.*Test the homogeneity of data linear regression coefficients with n= 70 (M= 81,770 ,SD= 4.885),n p-value < .05					

Based on Table 8, there is a linear relationship between the covariate variables and the independent variables, so it can be said that the homogeneity test for the linear regression coefficient of the data is fulfilled. Sig. Covariate (X2) in table 8 shows that it is more than α or 0.478 > 0.05. This is in accordance with the initial statement, so it can be said that there is no linear relationship between the covariate variable (self-concept) and the independent variable (Inquiry Social Complexity learning model). So it can be concluded that the homogeneity test for the linear regression coefficient of the data is fulfilled.

Hypothesis Test Analysis of Covariance (One-Way Ancova)

After the four prerequisite tests are fulfilled, the hypothesis test is then carried out using one-way ANCOVA. The one-way ANCOVA test is a difference test or comparative test with the dependent

variable on an interval or ratio (quantitative) data scale, while the independent variable consists of a mixture of factor data and numerical data.(Kadir, 2020a). The first test carried out was the Test of Between-Subjects Effects. The ANCOVA technique adjusts the dependent variable score by eliminating treatment impact bias. The aim of eliminating treatment impact bias is to reduce error variance by controlling the influence of covariate variables that are believed to bias the analysis results. Statistical analysis of covariance can be used to equate groups in terms of the influence of variables outside the treatment variable(Kadir, 2020b; Miller & Chapman, 2001). The results of the analysis of covariance test (one-way ANCOVA) in this study using SPSS 25 for Windows software can be seen in Table 9.

Table 9. ResultsAnalysis of Covariance Test (One-Way Ancova)

Tests of Between-Subjects Effects						
Dependent Variable: Y						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1598.939a	2	799,470	1129.962	,000	,971
Intercept	,883	1	,883	1,248	,268	.018
X1	4,687	1	4,687	6,625	.012	,090
X2	1438.425	1	1438.425	2033,056	,000	,968
Error	47,404	67	,708			
Total	469706,000	70				
Corrected Total	1646.343	69				
a. R Squared = .971 (Adjusted R Squared = .970)						
*Note.*Test analysis of covariance with n= 70 (M= 81,770,SD=) 4.885, with p-value < .05						

Based on Table 9, it can be observed that row X1 shows that the F count = 6.625 with p-value = 0.012. Based on the degree of significance that has been determined at 0.05, this shows that the p-value is <0.05. So H0 is rejected and H1 is accepted. The conclusion that can be drawn is that there is an influence of the Inquiry Social Complexity learning model on mathematical problem-solving abilities by controlling self-concept. Furthermore, in Table 9 it can be observed that row X2 shows that the F count = 2033.056 with p-value = 0.00. Based on the degree of significance that has been determined at 0.05, this shows that the p-value is <0.05. So H0 is rejected and H1 is accepted.
Based on the Corrected model results in Table 9, it can be observed that the F count = 1129.962 with p-value = 0.00. Based on the degree of significance that has been determined at 0.05, this shows that the p-value is <0.05. So H0 is rejected and H1 is accepted. The conclusion that can be drawn is that there is a simultaneous influence of the Inquiry Social Complexity learning model and self concept on mathematical problem-solving abilities. Apart from that, further tests were carried out which aimed to see which learning model was better between the inquiry social complexity learning model and the conventional expository learning model using the estimated parameter test, namely as follows.

Table 10. Advanced Test Results

Parameter Estimates							
Dependent Variable: Mathematical Problem Solving Ability							
Parameter	B	Std. Error	Q	Sig.	95% Confidence Interval		Partial Eta Squared
					Lower Bound	Upper Bound	
Intercept	-1,802	1,825	-.987	,327	-5,446	1,842	.014
[X1=1]	-.557	,216	-2,574	.012	-.988	-.125	,090
[X1=2]	0a	.	.	.	.	.	.
Self_Concept	,996	,022	45,089	,000	,952	1,040	,968
a. This parameter is set to zero because it is redundant.							

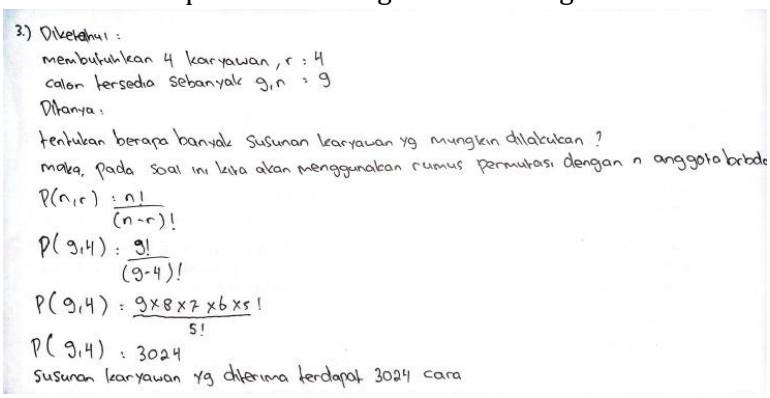
Based on table 10, it can be observed that the row [X1=1] shows that the value of t0 = -2.574 with p-value = 0.012. Based on the degree of significance that has been determined at 0.05, this shows that the p-value is <0.05. So H0 is rejected and H1 is accepted. The conclusion that can be drawn is that the mathematical problem-solving abilities of students who are treated with the inquiry social complexity learning model are better than students who are given the conventional expository learning model after controlling for self-concept.

2. Discussion

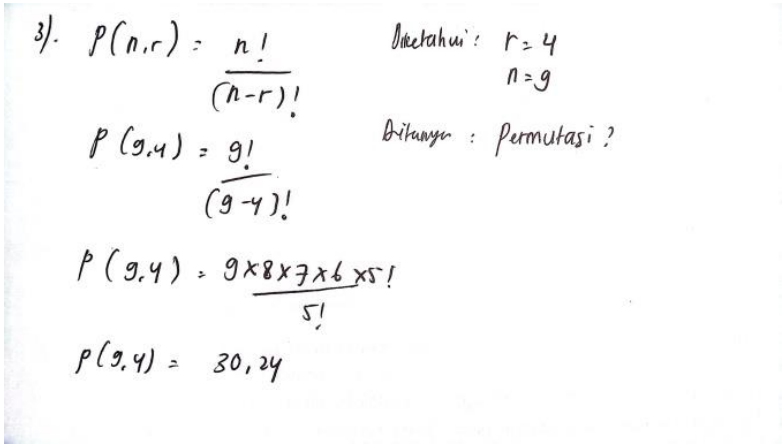
This research was conducted at SMK Negeri 2 Bandar Lampung. Began on July 17 to August 14 2023 with 5 meetings. The first meeting was filled with introductions and pretests, the second to fourth meetings were filled with proper learning and the last meeting was used to collect posttest data. Meetings are held twice a week, namely on Tuesday and Thursday. This research consists of one independent variable, namely the inquiry social complexity learning model, one dependent variable, namely mathematical problem-solving ability, and one covariate variable, namely self-concept. Researchers took samples from two classes, namely class XII TKR 1 and class XII TSM 1 with the same class members totaling 35 people. So the total is 70 students. Class XII TKR 1 was treated with the inquiry social complexity learning model (experimental class) and class XII TSM 1 was treated with the conventional expository learning model (control class). The material studied is Permutations and Combinations. After being given treatment in both classes, a posttest of self-concept and mathematical problem-solving abilities was carried out.

The learning process is carried out directly or face to face in class using the quantum teaching learning model. The inquiry social complexity learning model has 5 stages, namely *Observation Team, Reconstruction, Socialization, Verification, Applied Communication*. The first stage is *Observation Team* namely the stage where students are asked toto observe and collaborate in discussing several example questions given. The second stage is Reconstruction, which is the stage where students divide the task to solve the example questions and identify the example questions and be able to solve the questions correctly. The third stage is Socialization, at this stage students carry out discussions and argue based on the results of working on examples of questions that have been worked on. The fourth stage is Verification, at this stage students explain the types of questions that have been worked on together. The fifth stage is Applied Communication, at this stage students in groups present their arguments in turns and then an agreement is reached on the truth according to the teacher's recommendations.

The first hypothesis in this research is whether there is an influence of the inquiry social complexity learning model on mathematical problem-solving abilities by controlling self-concept. After the learning process is complete, the researcher can continue by conducting a posttest to see the differences between the experimental class and the control class. The following are the posttest results of students' mathematical problem-solving abilities in Figure 2.


3.) Diketahui :
membutuhkan 4 karyawan, r : 4
calon tersedia sebanyak 9, n : 9
Ditanya :
tentukan berapa banyak Susunan karyawan yg mungkin dilakukan ?
maka, pada soal ini kita akan menggunakan rumus permutasi dengan n anggota berbeda
$P(n,r) = \frac{n!}{(n-r)!}$
$P(9,4) = \frac{9!}{(9-4)!}$
$P(9,4) = \frac{9 \times 8 \times 7 \times 6 \times 5!}{5!}$
$P(9,4) = 3024$
Susunan karyawan yg diterima terdapat 3024 cara

Based on Figure 2, it can be seen that students who receive the inquiry social complexity learning model can work on mathematical problem solving ability questions with indicators of understanding the problem. Students can understand the problem well, then the indicator is designing an overall plan that is made correctly and will lead to the correct solution. Based on the indicators of carrying out the correct, complete and clear answer plan, then the indicators look again, students carry out checks to see the correctness of the results and processes in Figure 3.


3). $P(n,r) = \frac{n!}{(n-r)!}$ Diketahui : $r = 4$, $n = 9$
$P(9,4) = \frac{9!}{(9-4)!}$ Ditanya : Permutasi ?
$P(9,4) = \frac{9 \times 8 \times 7 \times 6 \times 5!}{5!}$
$P(9,4) = 30,24$

Based on Figure 3, it can be seen that students who receive the conventional expository learning model cannot work on mathematical problem-solving ability questions with indicators of mathematical problem-solving ability, namely understanding problems, designing plans, carrying out plans and looking back. Based on the description above, it can be seen that the inquiry social complexity learning model by controlling self-concept has better or more influential results. This is because the inquiry social complexity learning model has several advantages, namely this model focuses on students being able to contribute actively to the learning process and can also improve students' mathematical problem-solving abilities. Learning activities using this learning model are able to foster curiosity and expand knowledge. Previous researchers who are relevant to this research are research conducted by Venny Rika entitled Implementation of Inquiry social complexity to improve critical thinking skills and student learning outcomes in learning. The research results show that there has been an increase in critical thinking skills and student learning outcomes during the 2 cycles. The success of implementing the inquiry social complexity learning model can be seen

by changes in students' attitudes who are enthusiastic in learning to find and solve their own problems. The main obstacle faced by researchers is convincing students to be confident and dare to learn new things. Previous researchers who are relevant to this research are research conducted by Venny Rika entitled Implementation of Inquiry social complexity to improve critical thinking skills and student learning outcomes in learning.

The research results show that there has been an increase in critical thinking skills and student learning outcomes during the 2 cycles. The success of implementing the inquiry social complexity learning model can be seen by changes in students' attitudes who are enthusiastic in learning to find and solve their own problems. The main obstacle faced by researchers is convincing students to be confident and dare to learn new things. Previous researchers who are relevant to this research are research conducted by Venny Rika entitled Implementation of Inquiry social complexity to improve critical thinking skills and student learning outcomes in learning. The research results show that there has been an increase in critical thinking skills and student learning outcomes during the 2 cycles. The success of implementing the inquiry social complexity learning model can be seen by changes in students' attitudes who are enthusiastic in learning to find and solve their own problems. The main obstacle faced by researchers is convincing students to be confident and dare to learn new things. The research results show that there has been an increase in critical thinking skills and student learning outcomes during the 2 cycles. The success of implementing the inquiry social complexity learning model can be seen by changes in students' attitudes who are enthusiastic in learning to find and solve their own problems. The main obstacle faced by researchers is convincing students to be confident and dare to learn new things. The research results show that there has been an increase in critical thinking skills and student learning outcomes during the 2 cycles. The success of implementing the inquiry social complexity learning model can be seen by changes in students' attitudes who are enthusiastic in learning to find and solve their own problems. The main obstacle faced by researchers is convincing students to be confident and dare to learn new things.

The experimental class received treatment carried out simultaneously with the inquiry social complexity learning model and self-concept on mathematical problem-solving abilities and the control class received the same treatment simultaneously with the conventional expository model and students' self-concept on mathematical problem-solving abilities. In this research, it can be seen that the inquiry social complexity learning model with other models can have a better effect than the model being compared. This is the case with the inquiry social complexity learning model which is compared with the conventional expository learning model. The average score of students who received inquiry social complexity learning model treatment was greater than students who received conventional expository learning model treatment, although the difference was not very significant. Apart from the inquiry social complexity learning model, self-concept is also a concern in this research. In line with this research, self-concept influences mathematical problem-solving abilities. This can be seen from the results of calculations or data processing using SPSS software which shows the influence on ability mathematical problem solving. Following are the calculation results. The following are the calculation results in Figure 4.

Tests of Between-Subjects Effects

Dependent Variable: Y

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1598.939[a]	2	799.470	1129.962	.000
Intercept	.883	1	.883	1.248	.268
Model_ISC	4.687	1	4.687	6.625	.012
Self_Concept	1438.425	1	1438.425	2033.056	.000
Error	47.404	67	.708		
Total	469706.000	70			
Corrected Total	1646.343	69			

a. R Squared = ,971 (Adjusted R Squared = ,970)

Sig. Self_Concept covariate shows that it is smaller than α or 0.000 < 0.05. So with this it can be said, there is a linear relationship between the covariate variable (self-concept) and the dependent variable (mathematical problem solving ability). So self-concept influences mathematical problem solving abilities. After completing the data analysis and results obtained from research at SMK Negeri 2 Bandar Lampung on the experimental class and control class, it can be concluded that there is an influence of the social complexity and self-concept inquiry learning model on students' mathematical problem-solving abilities.

D. CONCLUSION

The learning process is carried out directly or face to face in class using the inquiry social complexity learning model which has 5 stages, namely *Observation Team, Reconstruction, Socialization, Verification, Applied Communication*. After the learning process is complete, the researcher can continue by conducting a posttest to see the differences between the experimental class and the control class. Based on data analysis and discussion, it is stated that the mathematical problem-solving abilities of students in classes treated with the inquiry social complexity learning model are better than students in classes treated with the conventional expository model. So, it can be concluded that there is an influence of the inquiry social complexity learning model by controlling self-concept. There is an influence of the self-concept covariate variable on mathematical problem-solving abilities and there is a simultaneous influence of the inquiry social complexity learning model and self-concept on mathematical problem solving abilities.

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