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The Effectiveness Of The Search Solve Create Share (SSCS) Learning Model To Improve The Mathematical Problem-Solving Ability Of Students Of SMA Negeri 1 Benai Kuansing

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ABSTRACT

The motivated of this research is the low level of mathematical problem-solving ability of students at SMAN 1 Benai Kuansing. The purposes of this research are: 1) to describe the differences in mathematical problem-solving skills of students who study through the SSCS model with students who study through learning with a scientific approach; and 2) to examine the improvement in mathematical problem-solving skills of students who study through the SSCS model and students who study through learning with a scientific approach. This research is an experimental research (quasi experiment) with the Nonequivalent Pretest-Posttest Control Group Design. The result showed that the improvement in mathematical problem-solving ability of students who study through the SSCS model is higher than that of students who study through learning with a scientific approach. The conclutions is; 1)There is a significant average difference between the mathematical problem-solving abilities of students who follow the SSCS learning model and those of students who follow learning with a scientific approach; 2) Improvement the mathematical problem-solving ability of students who follow the SSCS learning model is better than improvement the mathematical problem-solving ability of students who follow learning with a scientific approach.

1. Introduction

In the daily activities, consciously or unconsciously, we are confronted with various problems that necessitate problem-solving skills. According to Dewi & Arini (2018), mathematical problem-solving is at the heart of mathematics and should have been instilled and familiarized in students from an early age so that they have good analytical power. analytical power. In addition, one of the basic reasons for the importance of mathematical problem-solving skills is that the

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learning objectives of mathematics in the independent curriculum are that students can solve problems, which include the ability to understand the problem, design mathematical models, solve models, or interpret the solutions obtained (Kemendikbud, 2021).

Problem-solving is considered one of the important cognitive activities used in everyday life, and mathematical problem-solving is considered the most important part in the field of mathematics (Aljaberi, 2015). In problem-solving, students are learn to devise appropriate strategies to solve the problems they face. Beside that, mathematical problem-solving ability can also develop students' ways of thinking critically, logically, systematically, and thoroughly. Therefore, problem-solving ability is an ability that must be possessed by students, because problem-solving provides great benefits for students in seeing the relevance between math and other subjects and in real life. Language is an important tool to express and communicate with the others (Sari, 2023).

Mathematical problem solving ability is a complex cognitive activity, as a process to overcome a problem encountered and required many strategies to solve it (Harahap & Surya, 2017). Students are called have problem-solving abilities if they were able to understand the problem, plan problem-solving, carry out the planning that he has made and interpret and re-checking the the solution they get. Nurfauziah & Zhanty (2019) said that problem-solving ability is closely related to with the ability of students in read and understand the language of story problems, present in a mathematical model, plan calculations from mathematical models, and completing calculations from non-routine problems, so that it becomes a necessity for students to have the ability to solve problem-solving skills because problem-solving is the the general purpose of learning mathematics. Then Layali & Masri (2020) also explained that mathematical problem-solving ability (KPMM) is a more complex thinking skills which aims to enable students to use mathematical activities to solve problems in learning mathematics, other learning, and solve problems in life everyday.

The results of research conducted by Akbar et al. (2018), who said that the mathematical problem-solving ability of students in class XI SMA Putra Juang on material opportunities is included in the low category, this can be seen from the percentage of achievement students for each indicator, namely understanding the problem 48.75%, planning solving 40%, solving the problem 7.5%, and checking 0%. The results of research conducted by Farera et al. (2020) also stated that mathematical problem-solving ability among students is still relatively low, with 67% of students' answers still not being able to understand the problem, 70% not being able to make a design to solve the problem, 87% not being able to carry out the solution, and 85% not being able to check the answer again.

The results of research conducted by Ulfa et al. (2019) also said that when students are given problem-solving questions, it can be seen that students tend to look at friends' answers when working on problems because they cannot understand the problem given, there are also students who are less precise in using the steps of solving the problem, but the answer is correct, and students did not double-check the answer. Based on the explanation, it can be concluded that the mathematical problem-solving ability of students learning mathematics is still relatively low.

There were several factors that cause students to make mistakes on indicators are: students are not used to writing information asked and known from the problem; lack of understanding and interpreting information in the problem in the form of operational math; solution planning strategy students who are less correct due to a lack of knowledge of operations; and students' errors in rechecking the solution obtained caused by the assumption of students who feel no need to do checking and felt that the answer given was correct.

The low mathematical problem-solving ability of students is also seen in SMA Negeri 1 Benai. To obtain an overview of the mathematical problem-solving ability of students, the researcher administered a test of mathematical problem-solving ability. The test was carried out in class XI SMA Negeri 1 Benai on August 31, 2022, and was followed by 42 students. Test results show the percentage of achievement students for each indicator, namely understanding the problem 4,76%, planning solving 23,80%, solving the problem 21,42%, and interpreting the results obtained 19,04%. Based on test results, it can be seen that all problem-solving ability indicators for students are still in the category of lacking. Here's an example of an answer from one of the students that can be seen on Figure 1.

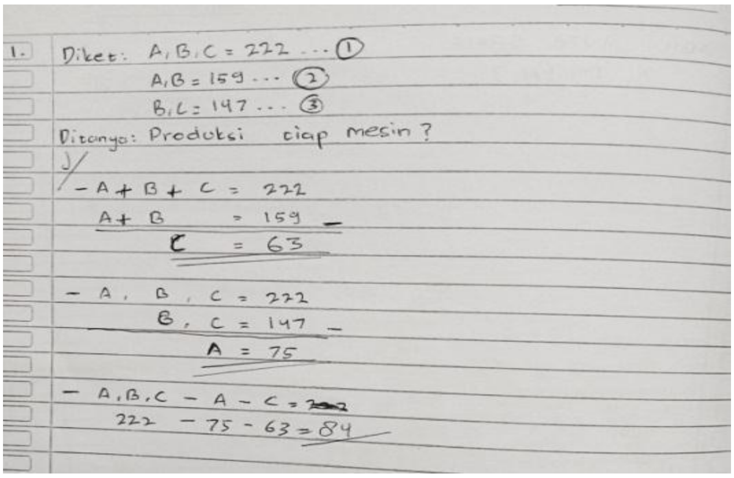

Figure 1. Answer of One of The Student

Based on Figure 1, it can be seen that students have not been able to solve the problem correctly. The results of student work show that: (1) students do not understand the problem as well, this can be seen from the work of students who do not write back the information contained in the problem in their own language, then students are not precise in writing what is known and asked from the problem that is the direction of solving the problem; (2) students do not make a settlement plan, that is, students do not declare the information obtained in the form of variables *x*, *y*, *z* or other variables that are simpler, and do not make mathematical models; (3) at the step of implementing the plan, students do not write down what method is used in solving the problem, then students do not solve the problem in accordance with systematic steps; (4) students do not make conclusions and do not double-check the answers. Based on the results of students' answers, it can be seen that students' mathematical problem-solving skills are still low. Students' critical thinking abilities are very necessary to shape students' cognitive strengths (Agustia, 2024).

From the results of the tests that the researchers have done, information was obtained that of the 42 students who took the test, on average, all students were not able to do the questions correctly. The low achievement of students in each KPMM indicator is certainly based on difficulties in solving the problems presented. Based on information from one of the mathematics teachers at the school, it was learned that teachers rarely provide contextual questions that are non-routine, so that students can only solve the same problems as the example questions given by the teacher.

In addition, the researcher also asked one of the mathematics teachers who taught at the school whether the teacher used a learning model that involved students actively while learning. The teacher replied that in the teaching and learning process, the teacher still uses the usual learning model with a scientific approach, where the teacher perceives, motivates, and conveys learning objectives, but in the core activities, the teacher still demonstrates his knowledge by explaining the material, providing sample questions, and providing advanced exercises to students. After that, the teacher provides feedback by giving students opportunities to ask questions that they do not understand.

During the learning process, students are less involved, so this is a factor in the difficulty of students in solving problems, namely that students are less trained to do non-routine questions related to daily life, and teachers are also still not optimal in the learning process, namely the selection of learning strategies that do not involve students so that they do not build student problem-solving. In fact, according to Ratnasari (2019), to engage KPMM students in the learning process, an appropriate learning strategy is needed by the teacher.

According to Meika et al. (2021), their research stated that problem-solving skills play an important role in the learning process because students are likely to get problems that are not routine. Therefore, it is necessary to find an appropriate model formula, method, or learning approach so that it can improve the mathematical problem-solving ability of students. In addition, students need to be actively involved in the learning process in order to construct their own knowledge (Luthfiyah et al., 2021). Teachers should continue to try to compile and apply various variations so that students are interested and enthusiastic about following mathematics lessons (Meika et al., 2021). Therefore, teachers must be more selective in determining the right and appropriate teaching model or strategy so that students can learn well, so that learning can take place effectively and efficiently, and they can achieve the expected learning goals (Saniyah, 2017).

One of the efforts that teachers can make to create a conducive learning atmosphere so that students experience meaningful learning is to try various learning models that are considered in accordance with the conditions of students in the classroom and the material to be taught (Mawaddah & Annisah, 2015). One of the learning models that is expected to improve the mathematical problem-solving ability of students and students actively involved in learning is the *Search Solve Create Share* (SSCS) learning model (Luthfiyah et al, 2021). The SSCS model involves students actively investigating problems, which can increase interest in asking questions and solving real problems. The SSCS learning model exposes students to problems as a basis for learning; in other words, students learn through problems posed by teachers. Through this model, students are expected to explore and develop information and try to actively find all information related to the material studied.

The SSCS model is a model that teaches a problem-solving process and develops problem-solving skill.. The SSCS model consists of four stages that refer to problem-solving, namely the stage of identifying problems *(search), the stage of planning and implementing problem solving (solve), the stage of writing solutions obtained (create), and the stage of presentation (share).* This SSCS model is a student-centered problem-solving learning model where activities in its phases make students not only listen to the teacher in front of the class but are trained to be accustomed to actively digging for their own information with the help of teachers and other friends who are also accustomed to sharing their knowledge. Pizzini introduced the SSCS learning model in the development of science learning, designed to expand knowledge of science concepts and their application in solving everyday life problems. Furthermore, Pizzini, Abel, & Shepardson in 1990 perfected this model and stated that the SSCS model is not only applicable to science education but also suitable for mathematics education (Irwan, 2014).

The results of Meika et al.'s (2021) research stated that there were significant differences in mathematical problem-solving abilities between groups of students taught with the SSCS model and groups of students taught with conventional learning models. The existence of significant differences shows that the application of the SSCS learning model affects the mathematical problem-solving skills of students.

The SSCS learning model has advantages for students, including: (1) students gain direct experience in solving problems; (2) students learn and strengthen the understanding of concepts with meaningful learning; (3) train students to process information independently; (4) inculcate higher-order thinking skills; (5) develop various methods with existing capabilities; (6) increase students' sense of interest; (7) be responsible for the learning process and work results; (8) cooperate with other students; and (9) integrate abilities and knowledge (Lestari, 2013). According to Tan Li Li (in Risnawati, 2008), the SSCS model of learning provides a very large role for students so as to encourage them to think critically, creatively, and independently so that a good understanding of concepts will be formed in them, which will later improve their problem-solving skills.

One of the materials in mathematics lessons that discusses problems in everyday life is a three-variable linear equation system taught to high school/MA class X students. Many real-life problems are related to the material of three-variable linear equation systems, such as finding the price of office stationery, buying groceries, buying prices of various kinds of furniture, buying prices of food and clothing, and many more problems related to three-variable linear equation systems. In the concept of discussion, students must be able to solve problems or problems of three-variable linear equation systems, both in terms of collecting important information on the problem, applying appropriate mathematical models, and operating in a calculation.

The results of research conducted by Putri (2021) at SMAN 14 Pekanbaru stated that there are still many students who have difficulty solving problems on the three-variable linear equation system material. This can be seen from the average daily test value of students on the three-variable linear equation system material, which is still relatively low, which is 65.4. This is in line with research conducted by Usman et al. (2022) which states that out of 30 students, only 10 students, or around 33.3% of students, have good problem-solving skills on three-variable linear equation system material. While 20 people, or around 66.7% of other students, still have less problem-solving skills, The results of observations made by researchers at SMA Negeri 1 Benai also revealed the fact that the mathematical problem-solving ability of students on the material of three-variable linear equation systems is still relatively low.

From the background description that has been stated, the researcher feels interested in obtaining further and more in-depth information about the effectiveness of the *Search, Solve, Create, and Share* (SSCS) learning model in improving the mathematical problem-solving abilities of SMA Negeri 1 Benai Kuansing students. Based on the problem, this research aims to; 1) describe the differences in average solving abilities mathematical problems of student who follow SSCS learning with students who follow learning with a scientific approach; 2) knowing the increase in mathematical problem solving abilities of students who follow SSCS learning with students who follow learning with a scientific approach.

2. Methodology

The type of research conducted is *Quasi-Experimental*. The research design used is a *Nonequivalent Pretest-Posttest Control Group Design*, which can be seen in the following Table 1.

Table 1. Nonequivalent Pretest-Posttest Control Group Design

Group	**Pretest**	**Treatment**	**Posttest**
Experiment	O_1	X_1	O_2
Control	O_3	X_2	O_4

The population in this research is all grade X students of SMA Negeri 1 Benai for the 2023/2024 school year, consisting of 213 students divided into 6 classes, namely X1, X2, X3, X4, X5, and X6. The determination of the number of samples in this study was carried out using the Slovin formula, namely:

$$n = \frac{N}{1 + N(e^2)}$$

Information:

n = sample size
N = many population
e = significance level (10%)
The number of samples in this study are:

$$n = \frac{213}{1 + 213(0{,}1^2)}$$
$$n = 68{,}05 \approx 68\ (rounded\ down)$$

The determination of research samples is carried out by the purposive sampling method , which is based on certain considerations from researchers. The selection of sample classes in this study was carried out by testing the normality and homogeneity of variance of mathematical initial ability scores taken from the daily test scores of students from six population classes. The test is preceded by a normality test and continues with a variance homogeneity test. After obtaining classes that are normally distributed and homogeneous, a draw was carried out to determine the two classes used as research samples. To ensure the equality of the abilities of the two classes that have been taken randomly, a similarity test was carried out for two average sample classes. From the test results, researchers set class X_1 as the experimental class and class X_2 as the control class.

Data on students' mathematical problem-solving abilities were obtained from posttest scores after being given treatment. Data analysis of mathematical problem-solving ability was carried out to see whether or not there were differences in students' mathematical problem-solving abilities in each sample class after being given treatment. The data will be tested for normality, homogeneity, and continued with a similarity test of two averages with the help of the SPSS application version 22 for Windows. Meanwhile, to analyze the improvement of students' mathematical problem-solving ability before and after treatment, *N-gain* data was used. *N-gain*, or normalized gain data, is obtained by comparing the difference between posttest and pretest scores with the difference between SMI (ideal maximum score) and pretest scores. The value of *N-gain* is determined by the following formula:

$$N - gain = \frac{S_{po} - S_{pr}}{SMI - S_{pr}}$$

Information :

S_{po} = Posttest Score

S_{pr} = Pretests Score

The high and low value of *N-gain* is determined based on the following criteria on Table 2.

Table 2. *N-gain* Criteria

***N-gain* Value**	**Criteria**
$N - gain \geq 0,7$	High
$0,3 < N - gain < 0,7$	Currently
$N - gain \leq 0,3$	Low

Source: (Ramdhani et al, 2020)

Then, on the *N-gain* data (problem-solving ability increase score), hypothesis testing will be carried out to see if there is a difference in problem-solving ability increase between the experimental class and the control class. The hypothesis test uses a similarity test of two averages, starting with a normality test and a homogeneity test of data variance.

3. Results and Discussion

Results

Mathematical Initial Capability (KAM) Data Analysis

Data analysis before treatment includes analysis of data on the initial mathematical ability of grade X students of SMA Negeri 1 Benai as a population in this study, which is obtained from daily test scores on the subject matter of rows and rows. The data will go through a normality test, a homogeneity test, and a similarity test of two averages. Based on the results of the normality test and the homogeneity of the initial mathematical ability data of students, classes X_1, X_2, X_3, and X_5 were obtained with a normal distribution and homogeneous variance. Of the four classes that have been tested, researchers took classes X_1 and X_2 as sample classes because both classes have the same math lesson schedule and the same teacher.

After taking two classes to be sampled, to ensure the equality of the abilities of the two classes that have been taken randomly, a similarity test was carried out for two average sample classes. The formulation of the hypothesis is:

H_0: There is no difference from the average initial mathematical ability scores of students in both classes
H_1: There is a difference from the average initial mathematical ability score of students in both classes

The statistical hypotheses are:

$$H_0 : \mu_1 = \mu_2$$
$$H_1 : \mu_1 \neq \mu_2$$

The results of the similarity test of two averages of the initial mathematical abilities of students in both classes using the t-test can be seen in Table 3 below.

Table 3. T-test Results of Students' Initial Mathematical Ability Scores

t_{hitung}	t_{tabel}	**Information**
0,103	1,99444	H_0 accepted

The results of the similarity test of two averages of the initial mathematical abilities of students in both classes with the help of the SPSS version 22 for Windows application can also be seen in the following Table 4.

Table 4. Results of the Similarity Test of Two Average Students' Initial Mathematical Ability Data

Class	**N**	**Average**	**Sig. *(2 tailed)***	**Information**
X_1	36	39,14	0,745	H_0 accepted
X_2	36	39,29		

From Table 4 above, it can be seen that the values of $t_{hitung} < t_{tabel}$, which are $0{,}103 < 1{,}99444$ and from Table 4 above, it can also be seen that the significance value (sig.) of $0{,}745 > \alpha\ (\alpha = 0{,}05)$ so H_0 is accepted. In other words, at the 95% confidence level, it is concluded that there is no difference in the average mathematical initial ability of X_1 and X_2 grade students. From the test results, researchers chose class X_1 as the experimental class and class X_2 as the control class.

Mathematical Problem-Solving Ability Data Analysis

Data analysis of mathematical problem-solving ability includes analysis of posttest data to see whether or not there are differences in students' mathematical problem-solving abilities in experimental and control classes. The data will test normality and homogeneity and continue with the similarity test of two averages. Testing is done manually and with the help of SPSS application version 22 for Windows. The test results showed that the posttest data were normally distributed but not homogeneous. Because the mathematical problem-solving ability score data of students is normally distributed but has inhomogeneous variance, the two-average similarity test is carried out using the T-test (Separate Variance).

The formulation of the hypothesis is:
H_0 : There is no difference from the average score of mathematical problem-solving ability of sample class students
H_1 : There is a difference from the average score of mathematical problem-solving ability of sample class students

The formulation of the statistical hypothesis is:

$$H_0 : \mu_1 = \mu_2$$
$$H_1 : \mu_1 \neq \mu_2$$

The results of the similarity test of two averages against the mathematical problem-solving ability scores of experimental and control class students using the t test can be seen in Table 5 below.

Table 5. T-test Results of Mathematical Problem-Solving Ability Scores of Experimental Class and Control Class

t_{hitung}	t_{tabel}	**Information**
5,88	2,035	H_0 rejected

From Table 5 above, it can be seen that the values of $t_{hitung} > t_{tabel}$, which are $5{,}88 > 2{,}035$. Based on the decision-making criteria, it can be concluded that H_0 is rejected, which means that there are differences in mathematical problem-solving abilities between students who follow the SSCS learning model and students who follow learning with a scientific approach. The results of the similarity test of two average mathematical score data of experimental class and control class students with the help of the SPSS Version 22 *for Windows application* can also be seen in the following Table 6.

Table 6. Similarity Test Results of Two Average Mathematical Problem-Solving Ability Scores of Experimental Class and Control Class with The SPSS Application

Class	**N**	**Average**	**Sig. *(2 tailed)***	**Information**
Experiment	34	76, 64	0,000	H_0 rejected
Control	33	54, 24		

In Table 6 above, it can be seen that the significance value (sig.) is $0{,}000 \leq \alpha$ $(\alpha = 0{,}05)$ so H_0 is rejected. In other words, at a 95% confidence level, it can be concluded that there are differences in mathematical problem-solving abilities between students who follow the SSCS learning model and students who follow learning with a scientific approach.

Data Analysis Improved Mathematical Problem Solving Ability

Data analysis of improving mathematical problem-solving ability is an analysis of *N-gain* score data to see the difference in quality of improvement in mathematical problem-solving ability of students of both sample classes. Before conducting the test, a normality test and a homogeneity test were carried out on the score data to determine the data students' mathematical problem-solving ability improvement score (*N-gain*) of both sample classes. Testing is done manually and with the help of SPSS application version 22 for Windows. The test results show that the data students' mathematical problem-solving ability improvement score (*N-gain*) is normally distributed and homogeneous. Because the data students' mathematical problem-solving ability improvement score is normally distributed and has homogeneous variance, the two-average similarity test is carried out using the T-test (Pooled Variance).

The formulation of the hypothesis is:
H_0: The average score of improvement in mathematical problem-solving ability of experimental class students is less than or equal to the average score of improvement in mathematical problem-solving ability of control class students.

H_1: The average score of improvement in mathematical problem-solving ability of experimental class students is more than the average score of improvement in mathematical problem-solving ability of control class students.
The formulation of the statistical hypothesis is:

$$H_0 : \mu_1 \leq \mu_2$$

$$H_1 : \mu_1 > \mu_2$$

The results of the similarity test of two averages to the mathematical problem-solving ability improvement scores of experimental and control class students using the t test can be seen in the following Table 7.

Table 7. T-test Results of Mathematical Problem-Solving Ability Improvement Score

t_{hitung}	t_{tabel}	Information
6,026	1,99714	H_0 rejected

From Table 7 above, a decision can be made by comparing the value $\mathrm{t_{hitung}}$ with $\mathrm{t_{tabel}}$. Based on the calculation results obtained the $\mathrm{t_{hitung}} = 6{,}026$ value of , while the value of $\mathrm{t_{tabel}}$ with degrees of freedom at a significant level $dk = n_1 + n_2 - 2 = 34 + 33 - 2 = 65$ at a significant level 5% is 1,99714 , this means $\mathrm{t_{hitung}} \geq \mathrm{t_{tabel}}$ so H_0 is rejected. Thus, it can be concluded that the average score for improvement mathematical problem-solving ability of the experimental class is higher than the average score for improvement mathematical problem-solving ability of the control class.

The results of the similarity test of two average of mathematical problem-solving ability improvement score data of experimental class and control class students with the help of SPPS Version *22 for windows* application can also be seen in Table 8 below.

Table 8. Similarity Test Results of Two Average Score for Improvement Problem-Solving Ability of Experimental Class and Control Class with SPSS Application

Class	N	Average	Sig. *(2 tailed)*	Information
Experiment	34	0,7088	0,000	H_0 rejected
Control	33	0,4155		

In Table 8 above it can be seen that the *signifacance value (sig.)* of 0,000 < $\alpha = 0{,}05$, so H_0 is rejected. In other words, at a 95% confidence level, it was concluded that the average score for improvement mathematical problem-solving ability of experimental class students was better than the average score of improvement mathematical problem-solving ability of control class students. This shows that students who follow learning with the SSCS model have a better improved mathematical problem-solving abilities compared to students who follow learning with a scientific approach.

Discussion of Research Results

The learning process in the experimental class is carried out by applying the Search Solve Create Share (SSCS) model, where at each meeting each student gets a Student Worksheet (LKPD), which is useful for directing students in solving problems using the steps in the SSCS model and mathematical problem-solving ability stages. The learning process using the SSCS model applied in the experimental classroom requires students to actively participate in solving mathematical problems presented in student worksheet in groups. This is in line with Lestari's opinion (2013) that the SSCS model is a learner-centered problem-solving learning model where activities in its phases make students not only listen to the teacher in front of the class but are trained to be accustomed to actively digging for their own information with the help of teachers and other friends who are also accustomed to sharing their knowledge. While in the control class, students only receive material directly from the teacher.

At the search stage, students are given the opportunity to understand the problems that have been presented at student worksheet. At this stage, students are asked to identify what is known and ask about the problems in the LKPD. This is in line with the opinion of Djumadi & Santoso (2014), which states that the SSCS learning model exposes students to problems as a basis for learning; in other words, students learn through problems posed by teachers. Through this model, students are expected to explore and develop information and try to actively find all information related to the material studied.

At the Solve stage, students are asked to make a plan, namely determining what steps are needed in solving the given problems and implementing the plan that has been prepared before. During this Solve phase, students choose the most suitable method to solve the problem and then solve the problem systematically and appropriately until obtaining a solution to the solution. While the task of the teacher in this phase is to encourage students to cooperate and discuss in groups. Students are expected to work together to complete tasks in groups carefully and actively discuss to find problem-solving. This is of course also in accordance with the expression of Dewi et al (2016) where the learning stages in the SSCS model provide opportunities for students to explore ideas independently, require students to be able to write solutions with systematic completion steps, and require students to actively discuss during the learning process. Therefore, this solving phase has an important role in helping students develop their problem-solving skills.

After solving the problem, students enter the third stage, namely the create phase, where students are asked to create products in the form of solutions to the problems given. In this phase, students test the solution obtained whether it is correct or not. Furthermore, students can write down the results of solving problems on the worksheets provided. After finding and writing down solutions, students enter the sharing stage, where they are given the opportunity to present the results of their group work in front of the class in writing and orally about the material learned. This last phase helps students communicate between friends in order to exchange opinions with group friends or classmates about the solutions found, which is in line with the expression of Abadi (2023). In addition to training students to find and solve problems, the SSCS model also provides opportunities for students to improve their social skills. The task of the teacher in this phase is to conduct questions and answers to confirm, provide additional information, and complete student information so that students have a mature concept of the material being studied.

All SSCS steps indicate that the roles of teachers and students are clear and allow students to be actively involved in learning so that mathematical problem-solving skills can be developed. This is in line with the opinion of Febriyanti et al. (2014), which states that the SSCS model involves students actively investigating problems, which can increase interest in asking questions and solving real problems.

The effectiveness that the first researcher reviewed from this study was to look at the average difference in mathematical problem-solving ability of the two sample classes. The scores are analyzed using the t-test manually and with the help of the SPSS application. The calculation results using the t-test manually obtained values of 5,88 > 2,035. The results of the analysis test using the SPSS application obtained a *significance value (sig.)* of 0,000. The results of KPMM data analysis with t-tests manually and with the help of SPSS applications show that there is a significant difference between the mathematical problem-solving ability of students who follow the SSCS learning model and students who follow learning with a scientific approach. This is in accordance with what was stated by Meika et al. (2021) that the application of the SSCS model affects the mathematical problem-solving skills of students.

Furthermore, researchers reviewed the effectiveness of implementing the SSCS model by analyzing the mathematical problem-solving ability improvement scores of sample class students. The mathematical problem-solving ability improvement scores are analyzed using T-tests, both manually and with the help of SPSS applications. The calculation results using the t-test manually obtained values of 6,026 > 1,99714. The results of the analysis using the SPSS application obtained a significance value *(sig.)* of 0,000. This shows that the improvement in mathematical problem-solving ability of students who follow learning with the SSCS model have a better improve in mathematical problem-solving ability compared to students who follow learning with a scientific approach. When viewed from the average mathematical problem-solving improvement score of the sample class, the experimental class have an average mathematical problem-solving ability improvement score of 0,7088, while the control class have an average mathematical problem-solving ability improvement score of 0,4155. Based on the criteria of Ramdhani et al. (2020), the experimental class have a relatively high improved in mathematical problem-solving ability, while the control class have a moderate improved in mathematical problem-solving ability. The results of this study are supported by research conducted by Anshori & Masriyah (2023), which states that there is an improved in students' mathematical problem-solving abilities after following the SSCS learning model. Based on the results of the analysis, *N-gain value of* 0,33 was obtained, where the improved in students' mathematical problem-solving ability was included in the medium category. This is possible because the phases in the SSCS model lead students to develop their mathematical problem-solving ability in accordance with the opinion of Rahmawati et al. (2013), which states that the SSCS model is a model that teaches a problem-solving process and develops problem-solving skills.

4. Conclusion

Based on the problem formulation, research results, and discussions described in the previous chapter, it can be concluded that there is a significant average difference between the mathematical problem-solving abilities of students who follow the SSCS learning model and those of students who follow learning with a scientific approach. Improvement the mathematical problem-solving ability of students who follow the SSCS learning model is better than improvement the mathematical problem-solving ability of students who follow learning with a scientific approach.

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