

The Effect of Search, Solve, Create and Share (SSCS) Learning Model on Mathematics Problem Solving Ability Based on Self-Efficacy of Elementary School Students

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ABSTRACT

The purpose of this study was to determine the effect of the Search, Solve, Create and Share (SSCS) learning model on mathematical problem-solving abilities based on students' self-efficacy in elementary schools. This study is pre-experimental research with a pre-experimental one-group pre-test-posttest design. The samples in this study were grade 5 students of SD Negeri Bawakaraeng Makassar, consisting of 23 students. The data were collected using a mathematics learning test consisting of 5 questions and a self-efficacy questionnaire. The results showed that the average pretest score before being given treatment was 65.55, which was in the low category. The posttest average value after being given treatment was 89.78, which was in the very high category.

Furthermore, students' pretest and posttest data were calculated using normalized gain, and it was found that the average normalized gain of 0.75 was also in the high category. This is because there is an influence of self-efficacy which is owned by students so that students' mathematical problem-solving abilities increase. The average self-efficacy of students who answered strongly agreed was 74.45% of the 8 positive statements. Thus, it can be concluded that the higher the students' Self Efficacy also affects the high students' mathematical problem-solving abilities. The lower the students' self-efficacy, the lower the students' mathematical problem-solving skills.

Keywords: *SSCS model, self-efficacy, problem-solving ability.*

1. INTRODUCTION

Mathematics learning is one of the subjects taught at all levels of education, starting from the elementary level, middle level, even up to the university level. The purpose of learning mathematics according to the 2013 curriculum emphasizes the modern pedagogic dimension in learning, namely using a scientific approach. In learning mathematics, the activities carried out for meaningful learning are observing, asking, trying, reasoning, presenting, and creating [1]. The curriculum 2013 is a competency-based curriculum that emphasizes activity-based learning to facilitate students in acquiring attitudes, knowledge, and skills. In addition, the 2013 curriculum assessment is directed at the assessment of learning outcomes. Several things need to be considered in the assessment process are: (1) measuring the level of thinking of students from low to high, (2) emphasizing questions

that require deep thinking (not just rote), (3) measuring the cooperative process, not just memorization, (4) using student learning portfolios [2].

Through mathematics lessons, students are equipped with the ability to think logically, analytically, systematically, critically, creatively, and the ability to cooperate so that students can understand and solve problems well. Problem-solving ability is one of the competencies that every student must have. However, in reality, in the field, students' mathematical problem-solving skills are still low.

The low mathematical problem-solving ability of students can also be seen from the results of the TIMSS research in 2011. The questions raised in the TIMSS research include reasoning and problem-solving. The results of the 2011 research show that students' abilities are still far from the expected average value of achievement. Indonesia was ranked

38th out of 45 participating countries. The non-achievement of the central value scale from the TIMSS indicates that the mathematical ability of Indonesian students still does not meet the TIMSS standard. In the measurement, many skills are measured, one of which is problem-solving [3].

According to As'ari [4], today's mathematics learning must lead students to become: (1) analytical thinkers, (2) problem solvers, (3) innovative and creative, (4) effective communicators, (5) effective collaborators, (6) information and media literacy, (7) global awareness, (8) financial and economic literacy. Thus, good learning is learning that familiarizes problem-based learning, invites students always to explain and defend the process and results of their work from criticism made by their friends, familiarizes students with solving problems with various strategies, and invites students to evaluate strategies in terms of their effectiveness, efficiency, and does the reflective practice. Students' ability in problem-solving can be trained and developed through a learning process that is packaged in such a way by utilizing all the potential possessed by students. In addition, students need to be actively involved in the learning process, namely by constructing their own knowledge.

Based on the results of initial observations at the Bawakaraeng 1 Elementary School in Makassar, it is obtained that the semester exam scores of the fifth-grade students for the 2020/2021 academic year are still relatively low. The average learning outcomes obtained by students, which is 67.5, are still far from the KKM value that has been set, which is 75. The low student learning outcomes are due to the lack of understanding in mathematics, students' inability to solve mathematics problems, and lack of confidence. This is because students feel that mathematics is complicated, so that they lack confidence in solving or solving mathematical problems.

Therefore, there needs to be a learning model that can create student activity in the classroom and train students to use their thinking skills in solving mathematical problems and have confidence in issuing their ideas. The SSCS Learning Model is a learning model that emphasizes the use of a scientific approach or thinking systematically, logically, regularly, and thoroughly. The goal is to help students to be able to construct mathematical concepts in a structured manner and understand them. The SSCS Learning Model demands student involvement in every phase.

The SSCS learning model is one of student-centered learning. Pizzini [5] suggests that the SSCS model can allow students to gain direct experience in the problem-solving process. This learning model has

a distinctive characteristic consisting of four phases, namely, face searching, which aims to identify problems, solving which aims to plan for solving the problem; creating which aims to carry out problem-solving; and sharing, which aims to socialize the solution to the problem that is being carried out.

2. METHOD

This type of research is pre-experimental research with a pre-experimental one-group pre-test-posttest design. This design involves one group being given a pre-test (O1), given treatment (X), and given a post-test (O2). The success of the treatment is determined by comparing the pre-test and post-test scores. The samples in this study were grade 5 students of SD Negeri Bawakaraeng Makassar, with a total of 23 students. The data in this study were obtained from the results of the mathematics learning test for building space using tests in the form of problem-solving questions in the form of story questions consisting of five questions and a self-efficacy questionnaire. The questionnaire used in this study was an adaptation of the Nur Dwi Laili et al. (2019) questionnaire, which consists of 8 statements. Each item was a positive statement using a Likert Scale consisting of 5 scales, namely, strongly disagree (STS), disagree (TS), average (BS), agree (S), and strongly agree (SS).

Furthermore, the research data were analyzed using descriptive and inferential statistical analysis. Quantitatively, the data were analyzed by calculating the mean, mode, median, standard deviation, variance, maximum, and minimum. Meanwhile, inferential analysis was applied to test research hypotheses after testing their normality and homogeneity. The data used in the normality test and t-test are from Normalized Gain (N-gain) scores.

3. RESULTS AND DISCUSSION

The description of learning outcomes of students can be seen in the Table 1. Based on Table 1, it can be seen that there was an increase in the results of the pretest and posttest of the fifth-grade students. The average pretest score before being given treatment was 65.55, which was in the low category, while the average posttest score after being given treatment was 89.78, categorized in the very high category. Therefore, there was an increase in students' mathematical problem-solving abilities in solving spatial problems. The students' pretest and posttest data were then calculated using normalized gain to find out how much improvement in the mathematical problem-solving skills of the 5th-grade students of SD

Negeri Bawakaraeng Makassar after being given treatment by applying the SSCS learning model. The

average normalized gain was 0.75, which is in the high category.

Table 1. Descriptive statistical analysis results of students' learning outcomes

	Statistic		Average	Median	Modus	Min value	Max value	Standard deviation	Variance
Learning Model SSCS	Pretest	3	65,5	65	55	50	85	11,803	139,328
	Posttest	3	89,7	90	100	65	100	10,054	101,087
	N-Gain	3	0,75						

A questionnaire consisting of 8 positive statements was distributed to the students to find out students' self-efficacy in learning mathematics. The indicators in the questionnaire are confidence in the ability to understand the mathematical material, belief in the ability to complete math-related tasks, belief in

successfully achieving goals in learning mathematics, and belief in resilience and tenacity in learning mathematics. The results of the percentage of self-efficacy can be seen in the table 2.

Table 2. The percentage of self-efficacy of students

No	Items	STS		TS		BS		S		SS	
		F	%	F	%	F	%	F	%	F	%
1	I'm sure I can understand math material well	0	0	2	8,69	3	13,04	5	21,73	13	56,52
2	I'm sure I can understand math material with various difficulty levels	1	4,34	2	8,69	2	8,69	3	13,04	15	65,21
3	I'm sure I can do math assignments well	0	0	0	0	1	4,34	5	21,73	17	73,91
4	I'm sure I can do difficult math problems	1	4,34	1	4,34	3	13,04	2	8,69	16	69,56
5	I am sure I can achieve the target I set in learning mathematics	0	0	1	4,34	2	8,69	3	13,04	17	73,91
6	I'm sure I can improve my math score earn by studying hard	0	0	0	0	0	0	4	17,39	19	82,61
7	I'm sure I will continue to study math material even though it's difficult	0	0	0	0	1	4,34	2	8,69	20	86,95
8	I'm sure I'll look for other strategies or ways when I haven't can solve a math problem.	0	0	0	0	1	4,34	2	8,69	20	86,95

From Table 2, it can be seen that for the indicator of confidence in the ability to understand mathematical material contained in aspects no. 1 and

2, the percentage of students who answered strongly agree of 56.62% in aspect 1 and 65.21% in aspect 2 while 4, 34% who responded strongly disagreed on

aspect no 2. Meanwhile, for the indicator of confidence in the ability to complete tasks related to mathematics contained in aspects no 3 and 4, 73.91% and 69.56% of all students responded strongly agree on aspect 3 and aspect 4, respectively. Therefore, it can be said that the level of students' confidence in completing mathematics assignments is high when viewed from the percentage of students who answered strongly agree.

For the third indicator, namely the belief that they succeeded in achieving the goals in learning mathematics, only a few students answered disagree, namely 1 out of 23 students or 4.34%, while those who agreed were 73.91% in aspect 5 and 82.61% in aspect 6. For the last indicator, the belief in resilience and tenacity in learning mathematics contained in aspects 7 and 8, it can be seen that students have the desire and confidence to understand or learn mathematics even though it is difficult. This can be seen from the percentage level of students who answered agree, namely 86, 95%, while those who responded mediocly were only 4.34%.

Therefore, from some of the explanations above, it can be concluded that the higher the students' self-efficacy, the higher the students' mathematical problem-solving ability, and the lower the students' Self Efficacy, the lower the students' mathematical problem-solving skills. This is supported by Mastuti and Aswi [6] that individuals who are not confident usually because they do not educate themselves and are just waiting for people to do something for them. The higher the self-confidence, the higher what you want to achieve. In line with what was stated by Ghufon [7], individuals who have high self-confidence will look calmer, have no fear, and can show their confidence at all times.

4. CONCLUSION

There was an increase in the pretest and posttest results of the 5th-grade students of SD Negeri Bawakaraeng Makassar. Before being given treatment, the average pretest score was 65.55, and the posttest average value after being given treatment was 89.78. Furthermore, from the students' pretest and posttest data, the average normalized gain was 0.75, which was in the high category. Hence there is an influence of self-efficacy owned by students on the improvement of mathematical problem-solving abilities.

REFERENCES

- [1] Fuadi, R., dkk. (2016). Peningkatkan kemampuan pemahaman dan penalaran matematis melalui pendekatan kontekstual, *Jurnal Didaktika Matematika*, ISSN:2355-4185 3(1).
- [2] Kemendikbud. (2016). Silabus mata pelajaran sekolah menengah pertama/ madrasah tsanawiyah.
- [3] Oktaviani, D. (2014). Pengaruh model pembelajaran Search, Solve, Create, and Share (SSCS) terhadap peningkatan kemampuan pemecahan masalah matematis dan adversity quotient siswa SMA. (Tesis. UPI Bandung: Tidak Diterbitkan).
- [4] As'ari, A.R (2007). Pembelajaran matematika inovatif: masih adakah ruang untuk inovasi. <http://www.Indoms.org/arsipseminar/pembelajaranmatematikainovatif:masihadakahruanguntukinovasi.pdf>.
- [5] Pizzini, E.L. 1996. *Implementation handbook for the SCS problem-solving instructional model*. Iowa: The University of Iowa.
- [6] Mastuti, I. & Aswi. 2008. *50 Kiat Percaya Diri*. Jakarta: HI-FEST Publishing.
- [7] Ghufon, M Nur. 2012. *Teori-teori psikologi*. Yogyakarta: Ar- Ruzz Media.