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Comparison of the Improvement of Thinking Ability Learning Strategies (SPPKB) with Expository Learning Strategies (SPE) on Students' Mathematics Problem Solving Ability

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Abstract
This study aims to compare how the mathematical problem-solving ability of the seventh-grade students of SMPN 3 Satap Garing by applying the Thinking Ability Improvement Learning Strategy (SPPKB) and the Expository Learning Strategy (SPE). The type of research used is a quasi-experimental design with a non-equivalent control group. The results of the study indicate that the mathematical problem-solving abilities of seventh-grade students of SMPN 3 Satap Garing with the application of SPE are generally in the high category. In addition, there are differences in students' mathematical problem-solving abilities with the application of Thinking Ability Improvement Learning Strategies (SPPKB) and Expository Learning Strategies (SPE), which are the results of students' mathematical problem-solving abilities taught by using the application of Thinking Ability Improvement Learning Strategies (SPPKB) is higher than the mathematical problem-solving ability of students who are taught using the application of the Expository Learning Strategy (SPE) in class VII SMPN 3 Satap Garing.

Keywords: *Mathematical problem-solving abilities; Learning strategies for improving thinking skills (SPPKB); Expository learning strategies (SPE).*

INTRODUCTION

Mathematics is a global field of science. It lives in a boundless realm. No country denies its presence, and no religion forbids studying it. He doesn't want to be in politics, and he doesn't want to be politicized, either. His existence in the world is very much needed, and his life continues to develop in line with the demands of human needs because there is no human activity/behavior that is separated from mathematics. Mathematics has become a queen and a servant for other sciences (Kamarullah, 2017).

Learning mathematics in everyday life plays an important role, especially in the world of education. By learning mathematics, students can have the ability to understand mathematics and can also take advantage of the usefulness of mathematics in everyday life.

Based on the results of interviews with the seventh-grade mathematics teacher at SMPN 3 Satap Garing, information was obtained that the cause of the low mathematical problem-solving ability of students was that many of the students did not focus on the subject, the lack of basic understanding of mathematics from students which resulted in students being slow. Understanding the material and most of them assume that mathematics is a difficult subject and that the material provided by the teacher is difficult to understand, so it is difficult for students to develop the material that the teacher has given.

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As a teacher, of course, doing all the best things for students starting from variations in teaching methods as well as methods and strategies in teaching or giving assignments. Interesting teaching strategies can motivate students to follow lessons and improve their mathematical reasoning abilities. The effective strategy to enhance students' mathematical problem-solving skills includes the Thinking Ability Improvement Learning Strategy (SPPKB) and the Expository Learning Strategy (SPE).

The learning strategy for improving thinking skills (SPPKB) is a learning strategy that relies on developing students' thinking skills by examining the facts or experiences of students as material for solving the problems posed (Sanjaya, 2013). SPPKB learning moves from a democratic process that provides opportunities for students to develop ideas through discussion and thinking. SPPKB learning has stages that allow for the occurrence of thinking processes in students in relation to learning and understanding a topic. Therefore, through SPPKB learning, teachers will be able to improve students' mathematical problem-solving abilities and, in the end, are expected to be able to enhance students' mathematics learning outcomes (Kristayani et al. 2020).

Expository learning strategy (SPE) is a learning strategy that emphasizes the importance of the teacher's role during learning where the teacher conveys the lesson completely and thoroughly to students so that students just listen and digest it regularly and orderly, which is tested at the end of learning. (Rizkiani, et al. 2019).

According to Sanjaya (2016), there are several steps in the application of expository learning, namely 1) preparation (preparation), 2) Presentation, 3) Connecting (correlation), 4) Concluding (generalization). These steps support students' learning progress by means of the teacher conveying the subject matter verbally to a group of students. According to the opinion above, the author describes one by one the indicators of the expository learning strategy. The researcher wants to compare students' mathematical problem-solving ability levels by applying the Thinking Ability Improvement Learning Strategy (SPPKB) and the Expository Learning Strategy (SPE).

METHOD

The type of research used is *quasi-experimental* (quasi-experimental) with a *non-equivalent control group design*. This research was conducted at SMPN 3 Satap Garing, Garing village. The population included in the study were seventh-grade students at SMPN 3 Satap Garing. The research samples were students of class VII.a as the experimental class 1, who were given learning using the Thinking Ability Improvement Learning Strategy (SPPKB), and students of class VII.b as the experimental class 2, who were given learning using the Expository Learning Strategy (SPE) and were selected using technique *simple random sampling*. Experimental class a and experiment b each consisted of 30 students. The research instrument stage uses the form of description questions. Each class will be given a pretest, treatment, and posttest. After the data is obtained, it will be analyzed using a descriptive statistical analysis test and a descriptive statistical analysis test. Then, the hypothesis was tested using the t-test and the normality and homogeneity test.

RESULT AND DISCUSSION

Result

Description of Ability to solve math problems for Class VII a Students of SMPN 3 Satap Garing using Learning Strategies to Increase Thinking Ability (SPPKB)

Table 1. Descriptive Statistical Value of Pretest and Posttest Experiment Results 1

Statistik	**Nilai Kelas VII a**	
	Pretest	Posttest
Jumlah Sampel	28	28

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Nilai Terendah	35	80
Nilai Tertinggi	60	90
Rata-Rata	45,66	82,70

Based on table 1, data from the results of the ability test for students' mathematical problems using Learning Strategies to Improve Thinking Ability (SPPKB) for class VII.a (experiment 1) for the lowest score before learning was 35. After learning Learning Strategies to Improve Thinking Ability (SPPKB), it was found the lowest score is 80 and the highest score is 90.

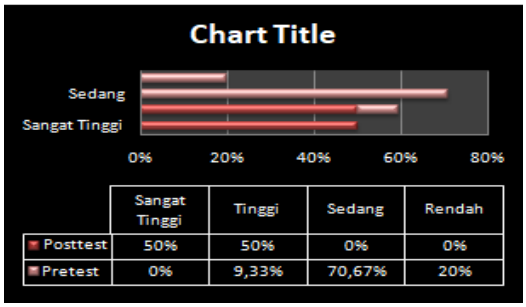

Figure 1. Categories of Class Students' Mathematical Problem Solving Ability a

Based on Figure 1, the ability to solve mathematical problems in experimental class 1 students before being given SPPKB learning was in the medium and low categories. After applying SPPKB, the presentation results for the high category were 50%, and very high were 50%.

Description of Ability to solve math problems for Class VII b Students of SMPN 3 Satap Garing using Expository Learning Strategies (SPE)

Table 2. Descriptive Statistical Value of Experimental Pretest and Posttest Results 2

Statistik	**Nilai Kelas VII a**	
	Pretest	Posttest
Jumlah Sampel	28	28
Nilai Terendah	20	75
Nilai Tertinggi	65	80
Rata-Rata	40,65	80,20

The data from the results of students' mathematical problem ability tests used the Expository Learning Strategy (SPE) for class VII.b (experiment 2), for the lowest score before learning was 20. After learning the Expository Learning Strategy (SPE), the lowest score was 75, and the highest score was 80.

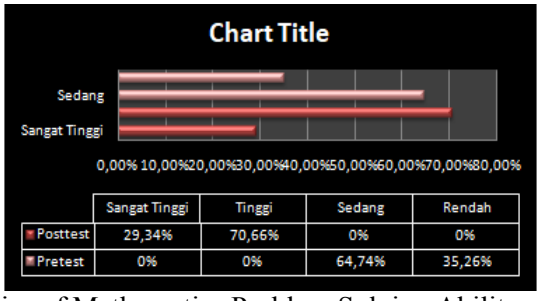

Figure 2. Categories of Mathematics Problem Solving Ability of Class Students b

Based on Figure 2, the ability to solve mathematical problems in experimental class 2 students before being given SPPKB learning was in the medium and low categories. After applying SPPKB, the presentation results for the high category were 70.66%, and very high was 29.34%.

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As for comparing students' mathematical problem-solving abilities for students who are given SPPKB learning and classes that are given SPE learning.

First of all, the normality test and homogeneity test are carried out. From the results of the posttest data normality test for experimental class 1, it was obtained $Xcount^2$ = 8.216. In the statistical table, the value X^2 for the significance level α=0.05 and $Xtable^2$ = 11.1, so we get $Xcount^2 < Xtable^2$ with $dk = k - 1$. So, it can be concluded that the posttest data for experimental class 1 after being given SPPKB learning are normally distributed. Likewise for the posttest data normality test for experimental class 2 obtained $Xcount^2$=9.325. In the statistical table, the value of X^2 with a significance level of α =0.05 is obtained $Xtable^2$=11.1, so $Xcount^2 < Xtable^2$ with $dk = k - 1$. So, 197 can be concluded that the posttest data for experimental class 2 after the application of SPE was obtained to have a normal distribution.

Then for the next stage a homogeneity test was carried out from the posttest data for class VII.a (experiment 1) and class VII.b (experiment 2). Obtained $F\text{-}count^2$ = 1.78 and for the value of $F\text{-}table$ with dk numerator = 2 − 1 = 1 and dk denominator 30 + 30 – 2=58 with a significance level of α = 0.05, the value of $Ftable$ = 4.02, so that $Fcount < Ftable$. So, it can be concluded that the posttest data for experimental class 1 and experimental class 2 are homogeneous.

The hypothesis test shows that t *count* = 2.188 and the value of *t table* with α = 0.05 then the value dk = (30 + 30 – 2) = 58 is 1.72. Because t count > t *table,* it is concluded that $H0$ is rejected.

CONCLUSION

The mathematical problem-solving ability of seventh-grade students of SMPN 3 Satap Garing with the Thinking Ability Improvement Learning Strategy (SPPKB) has a percentage of 50% for the high category and 50% for the very high category, with an average score of 82.70. Students' mathematical problem-solving ability by applying the Expository Learning Strategy (SPE) has a percentage of 70.66% for the high category and 29.34% for the very high category, with an average score of 80,20.

REFERENCES

Kamarullah. (2017). *Pendidikan Matematika Di Sekolah Kita. Al Khawarizmi: Jurnal Pendidikan Dan Pembelajaran Matematika*, Vol 1(1), 22.

Kristayani dkk. (2020). *Pengaruh Strategi Pembelajaran Peningkatan Kemampuan Berpikir (Sppkb) Terhadap Keterampilan Berpikir Kritis Dan Hasil Belajar Ppkn. Jurnal Pendidikan Ips Indonesia*, Vol 4(2), 56

Rizkiani, dkk. (2019). *Efektivitas Penggunaan Strategi Pembelajaran Ekspositori Berbantuan Macromedia Flash 8 Terhadap Kemampuan Pemecahan Masalah Matematis Siswa Sma N 1 Panyabungan Utara. Jurnal Mathedu (Mathematic Education Journal*). Vol (2)2, 77.

Sanjaya, Wina. 2013. *Strategi Pembelajaran Beroerientasi Standar Proses Pendidikan*. Jakarta: Fajar Interpratama Mandiri.

Sanjaya. 2016. *Strategi Pembelajaran Berorientasi Standar Proses Pendidikan.* Jakarta: Pranada Media Group