

THE CORRELATION BETWEEN MATHEMATICS COMPREHENSION AND STUDENT'S SELF-EFFICACY ON FRACTIONAL MATHEMATICS LEARNING

Novi Rahmawati^{1}, Sudiyanto², Idam Ragil Widiyanto Atmojo³*

^{1,2,3}Elementary School Teacher Education Master Program,

The Faculty of Teacher Training and Education University of Sebelas Maret Surakarta

Jl. Ir. Sutami No.36, Ketingan, Kec. Jebres, Surakarta City, Central Java 57126

novirahmawati@student.uns.ac.id soeddie.fkipuns@gmail.com idamragil@fkip.uns.ac.id

Abstract: In the process of teaching and learning mathematics, students usually have an anxiety. One of the anxieties faced by students of elementary schools is tend to hesitated in answering questions because of a lack by self-efficacy and mathematical comprehension. Therefore, this study aims to determine the correlation between mathematics comprehension and student's self- efficacy on fractional mathematics learning. The method used in this research is a correlational design. The population is all second grade students in North Sumedang. The second grade student's in the experimental class I (Panyingkiran III Elementary School) and class II (Sukamaju Elementary School) as the research samples. Normality test used by Kolmogorov-Smirnov and correlation test used by Spearman's rho. The results of this research are: 1) There are positive correlation between the mathematics comprehension and student's self-efficacy on fractional mathematics learning and 2) there are similarities in characteristics between student's of mathematics comprehension and student self-efficacy, so that 28.09% of the variation in achievement students' mathematics comprehension can be influenced by students' self- efficacy.

Keywords: Mathematics Comprehension, Self-Efficacy, and Fractional Mathematics Learning.

Abstrak: Dalam proses pengajaran dan pembelajaran Matematika, siswa biasanya memiliki kekhawtiran. Salah satu kekhawatiran yang dihadapi oleh siswa Sekolah Dasar adalah mereka cenderung ragu dalam menjawab pertanyaan-pertanyaan dikarenakan oleh kurangnya efikasi diri dan pemahaman matematika. Oleh karena itu, penelitian ini bertujuan untuk mengetahui korelasi antara pemahaman matematika dan efikasi diri siswa terhadap pembelajaran pecahan matematika. Metode yang digunakan pada penelitian ini adalah desain korelasi. Populasinya adalah semua siswa kelas dua di Sumedang Utara. Siswa kelas dua dalam eksperimen kelas I (Sekolah Dasar Panyingkiran III) dan eksperimen kelas II (Sekolah Dasar Sukamaju) sebagai sampel penelitian. Tes normalitas menggunakan Kolmogorov Smirnov dan tes korelasinya menggunakan Spearman rho. Hasil penelitian ini adalah: 1) terdapat korelasi positif antara pemahaman matematika dengan efikasi diri siswa terhadap pembelajaran pecahan matematika dan 2) terdapat kemiripan pada karakteristik antara pemahaman matematika siswa dan efikasi diri siswa, sehingga 28.09% varian dalam pencapaian pemahaman matematika siswa bisa dipengaruhi oleh efikasi diri siswa.

Kata kunci: Pemahaman Matematika, Efikasi Diri, Pembelajaran Pecahan.

Sumber: *ICEHoS - International Conference on Education, Humanities, and Social Science*

In learning mathematics, students are expected to have goals that are achieved, including mathematics comprehension and self-efficacy of students to support effective mathematics learning. In achieving these goals, of course there are problems that students understand whether they are considered concepts or student confidence in delivering the answers they have made. The Ministry of National Education (in Kesumawati, 2008) states that conceptual understanding is a skill to needed in learning mathematics so that students can demonstrate understanding of the mathematical concepts they are learning. Apart from mathematics comprehension, students' self-efficacy is also important to serve as a goal of learning mathematics. In the field, sometimes students are still found who are hesitant in answering math problems, according to the opinion of Veloo & Zubainur (in Laurens, et al., 2018) that the rate of increase in students in Indonesia increases if it is being in mathematics class and learning mathematics tends to be below average when compared to learning mathematics in other Asian countries

such as China, Singapore, and Malaysia. The reason is byArem (in Zakaria, et al., 2012) that one of the reasons why students experienceless high mathematics is because they tend to be confident in understanding mathematical concepts. Thus, this study seeks to explain the mathematics comprehension and the independence of students in learning mathematics about fractions in second grade of elementary school.

LITERATURE REVIEW

First Literature

Skemp and Pollatsek (in Kesumawati, 2008: 231) explain two types of conceptual understanding: 1) instrumental understanding is understanding of concepts that are mutually exclusive and only formulas that are memorized in simple calculations, and 2) rational understanding contained in schemes or structural schemes that can be used in solving a wider range of problems. Mathematical ideas, facts, or procedures can be applied to students in learning mathematics, especially in fractions material.

Second Literature

According to NCTM (2000), to achieve an mathematics comprehension in mathematics learning must be directed at developing various kinds of ideas and understanding how mathematical ideas are related to one another so that a comprehensive understanding is built, and using mathematics in contexts outside of mathematics. Thus, it can be denied that learning conceptual understanding of mathematics is needed as a basis for achieving an idea, fact, or mathematical procedure so that it can be applied by students so that rational and procedural understanding can be achieved by students on fractional mathematics learning.

Third Literature

Bandura (in Sunaryo, 2017: 40), "Self- efficacy is beliefs in one's capabilities to organize and execute the courses of action required to manage prespective situations".

Hyphothesis

- 1) There are positive correlations between the mathematics

comprehension and student's self-efficacy on fractional mathematics learning.

- 2) There are similarities in characteristics between student's of mathematics comprehension and student self-efficacy.

METHODOLOGY

Research Strategy

The method used in this research is a correlational design. Cresswell (2014: 41), The correlational design which investigator use the correlational statistic using SPSS 22.0 for windows to describe and measure the degree or association (or correlation) between two or more variable or sets of scores.

Measurement

The correlational statistic using SPSS 22.0 for windows.

Population and Sample

In this study the population is all second grade students in North Sumedang. The second grade student's in the experimental class I (Panyingkiran III Elementary School) and in the experimental class II (Sukamaju Elementary School) as the research samples.

Sampling Method and Research Object

Random sampling. The second grade student's in North Sumedang.

Data Collection

Data collection obtained for pretest-posttest control group design, interview and observation.

Research Instrument

Research instrument is tool of collecting data that should be valid and reliable. In this research using basic mathematics tests, interviews, questionnaires, and observations.

Data Analysis

Data analysis using the normalized gain and coefficient of determination. The normality test used by Kolmogorov- Smirnov and the correlation test used by Spearman's rho.

DISCUSSION

A. Normality Test

The normality test of students' mathematics comprehension and results of the self- efficacy of students in the experimental class I and II aims to find out normal or not the posttest value data of mathematical understandingability in the

experimental class I and II and the final results of student self- efficacy used the Kolmogorov-Smirnov because the sample was more than 50 with SPSS 22.0 for windows with a significance level of $\alpha = 0.05$. The hypotheses to be tested are:

H_0 = posttest value data of student's mathematics comprehension and final results student's self-efficacy in the experimental class I and II is normally distributed.

H_1 = posttest value data of students' mathematics comprehension and final results student's self-efficacy in the experimental class I and II wasn't normally distributed.

The decision is made if one of the p-value (sig) < 0.05 then H_0 is rejected and if the p-value (sig) ≥ 0.05 then H_0 is accepted. The results of the normality test are presented in the following Table 1.

Table 1. Normality Test of Students' Mathematics Comprehension and Student's Self-Efficacy in The Experimental Class I and II

	<i>Statistic</i>	<i>df</i>	<i>Sig.</i>
Mathematics comprehension	0,101	86	0,031

<i>Self-efficacy</i>	0,133	86	0,001
<i>a. Lilliefors Significance Correction</i>			

Based on Table 1, data on the posttest scores in the class are obtained the experimental class I and II p-value (sig) $< \alpha$ of 0.031 and the final result student's self-efficacy in the experimental class I and II with p-value (sig) $< \alpha$ of 0.001. The second data has p-value (sig) $< \alpha$, then H_0 is rejected. Accordingly, The data posttest value of student's mathematics comprehension and the final results of student's self-efficacy in the experimental class I and II were not normally distributed.

B. Correlation Test

In this study using the Spearman test (Spearman's rho) because the posttest value data of student's mathematical comprehension abilities and the final results of students' self-efficacy in experimental class I and II were not normally distributed. Through the help of SPSS 22.0 for windows with a significance level of $\alpha = 0.05$. The decision made with p-value (sig) < 0.05 , then H_0 is rejected and if the p-value (sig) \geq

0.05 then H_0 is accepted. The hypotheses to be tested are:

H_0 = there is no correlation between mathematics comprehension and student self-efficacy.

H_1 = there is a correlation between mathematics comprehension and student self-efficacy.

The following are the results of the calculation of the Spearman correlation test data presented in Table 2.

Table 2. Correlation Test of Student's Mathematics Comprehension and Student's Self-Efficacy in The Experimental Class I and II

		Mathematics comprehension		Self-efficacy
<i>Spearman's rho</i>	Mathematics comprehension	<i>Correlation Coefficient</i>	1,000	0,530**
		<i>Sig. (2-tailed)</i>	86	0,000
		N	86	86
		<i>Self-efficacy</i>	<i>Correlation Coefficient</i>	0,530**
			<i>Sig. (2-tailed)</i>	0,000
			N	86

**. Correlation is significant at the 0.01 level (2-tailed).

In Table 2, shows that the p-value (sig.2-tailed) of 0,000 is less than the significance level α , it can

be concluded that there is a correlation between mathematics comprehension and student's self-efficacy.

To find the direction of the correlation between mathematics comprehension and student's self-efficacy, we can see the coefficient correlation of 0.530. This coefficient means that the level of closeness of the correlation between mathematics comprehension and student self-efficacy is classified as strong enough. This value also provides information about the coefficient of determination with the formula:

$$\begin{aligned} r^2 \times 100\% &= (0,530)^2 \times 100\% \\ &= 0,2809 \times 100\% \\ &= 28,09\% \end{aligned}$$

So, there are factors that differentiate between student's mathematics comprehension and student self-efficacy, so that it is 28,09% of the variation student's mathematics comprehension can be relied on by student's self-efficacy or anything some 28,09% of the variation in self-efficacy can be obtained students' mathematics

comprehension.

CONCLUSION

Based on the results of the research that has been done, it can be concluded that the normality test used the Kolmogorov-Smirnov because the sample is more than 50 students. The posttest data value of student's mathematics comprehension and the final results of student's self-efficacy in the experimental class I and II were not normally distributed. Meanwhile, the correlation test using the Spearman (Spearman's rho) shows that there is a positive correlations between student's mathematics comprehension and student's self-efficacy on fractional mathematics learning in second grade students of 28.09% of the variation in achievement. Student's mathematics comprehension can be influenced by student's self-efficacy.

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