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The correlation of inductive reasoning ability and self-regulated learning grade VIII students

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Abstract
This study aims to describe self regulated learning of students and mathematical inductive reasoning ability of students and also to examine the correlation between self-regulated learning with mathematical inductive reasoning ability in mathematics learning of grade VIII students at SMPN 1 Kelapa Dua, Tangerang. This study involved 39 students. The sampling strategy was purposive sampling. The results of the analysis showed that there was no significant correlation between self-regulated learning and students' mathematical ability of inductive reasoning. Significant value obtained was 0.190 (p>0.05). The absence of a relationship between self-regulated learning with mathematical reasoning abilities caused by other factors.

Keywords: self-regulated learning, inductive reasoning ability, relationships and self-regulated learning inductive reasoning

1. Introduction

Mathematical Reasoning is an ability that needs to be mastered by students in learning. According to Suherman (2003), mathematics science etymologically means Obtained by reasoning. Meanwhile Hudojo (2005) [] states mathematics as a science that examines abstract forms or structures and the relationship between them. The object of the mathematical observer is not just quantity, but more emphasis on relationships, patterns, shapes and structures. According to James James and James quoted Muhammad Athar in Malihah (2015) [4], mathematics is the science of logic about the form, order, magnitude and concepts related to each other with a large number that is divided into three areas items, namely algebra, analysis, and geometry, Based on some above understanding can be concluded that mathematics is a science Obtained by reasoning that examines the form, structure, arrangement, magnitude, and abstract concepts that are interconnected with each other.

According to Sumarmo (2014) [6] there are two types of reasoning namely deductive reasoning and inductive reasoning. Deductive reasoning is a conclusion based on the agreed rules. The value of truth in deductive reasoning is absolutely true or false, Neither mutually possible together (Sumarmo, 2014) [6]. Meanwhile, inductive reasoning is a conclusion based on observations of limited data. Because based on the limitations of the number of observations, the truth value of Conclusions in inductive reasoning is not absolute but is probabilistic.

As it was told before that reasoning ability is very important, therefore students have to have this ability. But to have this ability, students also have to have self regulated learning. Self-regulated learning as a situation where individuals learn as controlling the activity of their own learning, monitoring of motivation and academic goals, manage human resources and objects, as well as being behavior in the process of decision-making and implementing process. Self-regulation in learning is also an active individual ability metacognitive who have an incentive to learn and actively participate in the learning process. Zimmerman in Malihah (2015) [4] explains that self-regulation in learning is an individual effort to achieve the goal of learning by activating and sustaining thoughts, behaviors and emotions.

The purpose of this study was to find the self-regulated learning out of grade VIII students at SMPN 1 Kabupaten Gading Kelapa Dua. The second to find the ability of inductive reasoning out and also to determine the correlation of students self-regulated learning and reasoning abilities grade VIII students of SMPN 1 Kelapa Gading Dua. The question of this research is what the correlation between self regulated learning and inductive reasoning ability is.

2. Materials and methods

Reasoning ability is one of the students need to have the capability especially in solving mathematical problems. According Sumarmo (2014) [6], there are two types of inductive reasoning and deductive reasoning. Further Sumarmo explained that inductive reasoning is drawing conclusions based on limited data observation. Because based on the limited number of observations, then the value of the truth of the conclusion of an inductive argument is not absolute but probabilistic. Inductive reasoning that in terms of the characteristics of withdrawal conclusions include some of the following activities: a) transductive reasoning is the process of drawing conclusions from limited observations and applied to specific cases; b) Reasoning analogy is the process of pulling conclusion based conclusions similarity or process the data; c) Reasoning generalization is the general process of drawing conclusions based on limited data; d) Estimating answers, solutions or trends: interpolation and extrapolation; e) Provide an explanation of the models, facts, nature, relationships or patterns that exist; f) Using a pattern of relationships to analyze the situation and draw up a conjecture.

Reasoning ability can be improved when students have self

regulated leraning. Bandura defines self regulated learning as a situation where individuals learn as controlling the activity of their own learning, monitoring of motivation and academic goals, manage human resources and objects, as well as being behavior in the process of decision-making and implementing process. Self-regulation in learning is also an active individual ability metacognitively who have an incentive to learn and actively participate in the learning process. Zimmerman in Malihah (2015) [4] explains that self-regulation in learning is an individual effort to achieve the goal of learning by activating and sustaining thoughts, behaviors and emotions. If students have good self regulated learning, they will be able to have inductive reasoning ability.

This study was quantitative research. The study involved 39 students of grade VIII. Data was collected from questioner and a test. Questioner contained many aspects to assess self regulated learning. Meanwhile the test contained some Mathematics question to assess the inductive reasoning ability.

3. Results & Discussion

Data was collected from questioner and test. The score of Self-regulated learning questionnaire can be seen from Table 1 below:

Table 1: Category scaling of self-regulated learning

No	Interval	Category	Mean	N	Percentage
1	$80 < x \leq 100$	Very high		15	38.46%
2	$60 < x \leq 80$	High	72.37	15	38.46%
3	$40 < x \leq 60$	medium		5	12.82%
4	$20 < x \leq 40$	Low		4	10.25%
5	$0 \leq x \leq 20$	Very Low		0	0%

Based on Table 1, it can be seen there are 15 students had the mathematical ability of inductive reasoning were at very high of category with the percentage 38.46%, 15 students had mathematical reasoning ability was 38.46%, 5 students had reasoning abilities at a moderate level with a percentage of 12.82%, 4 students had low level of inductive reasoning ability. Based on the average value of students' reasoning ability inductive namely 72.37, were in both categories. Meanwhile the result of measurement of inductive reasoning ability was in Table 2 below. It means there were many students that had high self regulated learning.

Table 2: Categories measurement of inductive reasoning ability of students

No	Interval	Category	Mean	N	Percentage
1	$108.8 < x \leq 136$	Very high		0	0%
2	$81.6 < x \leq 108,8$	high	96.08	37	94.87%
3	$54.4 < x \leq 81,6$	Medium		2	1.47%
4	$27.2 < x \leq 54,4$	Low		0	0%
5	$0 \leq x \leq 27,2$	Very Low		0	0%

Based on Table 2 above it can be seen that 37 students have self-regulated learning was in the good category is percentage 94,87%, 2 middle category i.e. 1.47%. The rest were at the level of 0%. Based on the average of 96.08 can be said that an average of 95.85 can be said that the average self-regulated learning students are on either category. Almost all students were in either category. It means most students had high inductive reasoning ability.

To see the correlation of self regulated learning and inductive reasoning ability, it have to do Correlation test. Correlation test was done if there was assumption normal and linear. Therefore, it had to test the normality and linearity first.

Normality Test

Before we see the Correlation, we had to see the linearity first. The analysis of the linearity can we see in Table 3 below:

Table 3: The analysis of Normality

		The score of questioner	The score of test
N		39	39
Normal Parameters[a,b]	Mean	12.7564	50.4615
	Std. Deviation	2.15172	4.95690
Most Extreme Differences	Absolute	.314	.086
	Positive	.185	.077
	Negative	-.086	-.314
Kolmogorov-Smirnov Z		537	1,963
Asymp. Sig. (2-tailed)		.936	.001

a. Test distribution is Normal.

Based on the test results of the testing of normality in Table 3, the two variables had a significance p>0.05.Variabel K-S-Z self-regulated learning has amounted to 0.936 with probability (p) or significance p>0.05, then the self-regulated learning data distribution is normal distribution. It also occurs in variable mathematical reasoning abilities that have K-S-Z amounted to 1.963 with probability (p) or the significance 0.001. Thus, the data inductive reasoning skills students have normal distribution.

Linearity test

Linearity test was conducted to test the integrity of the data relationship is independent variable and the dependent variable. In other words, this test is performed to determine whether the independent variables associated with the dependent variable or not. For the calculations were performed using SPSS 20.0 series that can be seen in Table 4 below:

Table 4: The analysis of Linearity test

			Sum of Squares	df	Mean Square	F	Sig.
The score of test * The	Between Groups	(Combined)	73 394	17	4317	.884	.597
		Linearity	8085	1	8085	1656	.212

score of questioner		Deviation from Linearity	65 309	16	4,082	.836	.638
	Within Groups		102 542	21	4,883		
	Total		175 936	38			

From the results of the linearity test obtained F value of 0.836 with 0.638 significance greater than 0.05, which means there is a significant linear relationship between the variables of self-regulated learning and inductive reasoning abilities of students.

Correlation test

The calculationdata analysis conducted after the test assumptions including normality test and test linearittas. The calculations in this analysis was performed with SPSS 20.0 series. The correlation between self-regulated learning and inductive reasoning skills of students can be seen in Table 5 below:

Table 5: The analysis of Correlation test

		The score of questioner	**The score of test**
The score of test	Pearson Correlation	1	.214
	Sig. (2-tailed)		.190
	N	39	39
The score of questioner	Pearson Correlation	.214	1
	Sig. (2-tailed)	.190	
	N	39	39

Based on the calculation of the correlation coefficient correlation between self-regulated learning with students' mathematical reasoning abilities of 0.214 with 0.190 significance($p>0.05$), which means there is no significant relationship between self-regulated learning and the ability of inductive reasoning..

4. Conclusions

Self-regulated learning class VIII SMPN 1 Kelapa Dua, Tangerang district are in good category that is with an average of 96.08. Inductive reasoning skills class VIII SMPN 1 coconut Two Tangerang district are in good category that is an average of 72.37. On the calculation correlation coefficient correlation between self-regulated learning with students' mathematical reasoning abilities of 0.214 with 0.190 significance ($p>0,05$) which means there is no significant relationship between self-regulated learning and inductive reasoning ability.

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