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CORRELATION JUNIOR HIGH SCHOOL STUDENT'S LEARNING MOTIVATION AND MATHEMATICS-CREATIVE THINKING ABILITY IN KABUPATEN ACEH BARAT

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ABSTRACT

The research aims are as follows: describing the student's learning motivation and mathematics-creative thinking ability; testing their correlations; and calculating the contribution percentage of the learning motivation to the increase in the student's mathematics-creative thinking ability. The total sample size is 620 students from ten junior high schools. Data was collected by two methods, as follows: a questionnaire and a test. There are sixteen questions in the learning motivation questionnaire and one open-ended question on the student's mathematics creative thinking ability test. The data is analysed quantitatively. The correlation between the learning motivation and the students' mathematics-creative thinking ability was analysed by using Pearson Product-Moment Correlation with $\alpha = 5\%$ and $N = 620$. The research showed that the learning motivation and five of the its indicators have positive and significant correlations and have contributed to the increase with a student's mathematics creativity ability and the three of its indicators.

***Keywords**: learning motivation, correlation, mathematics, creative thinking ability.*

INTRODUCTION

Motivation is defined as an individual's will, desire, and desire to encourage others to engage in activities (Warti, 2016). Motivation plays an important role in the learning process (Krismony et al., 2020), because motivation can foster self-motivation, curiosity, and being active in learning, so that students are encouraged to study more seriously.

There are some indicators to measure motivation as follows: the desire and the wish to succeed; the encouragement and needs in learning; the hopes and aspirations for the future; the learning appreciation; and interesting

activities (Uno, 2010). The desire and wish for success have five sub-indicators as follows: active to learn, nice to learn, not hopeless to learn too quickly, not satisfied with the results obtained too quickly, and tenacious to face the learning difficulties (Sardiman, 2014). The drive and needs for learning have four sub-indicators as follows: having clear learning goals, being curious, having feedback, and being interested in learning. Hope and ambition for the future have two sub-indicators as follows: looking for things related to learning and perseverance in learning. The interesting learning activities have three sub-indicators as follows: avoiding punishment, receiving praise (an award), and achieving in class. A conducive learning environment has two sub-indicators as follows: comfortable learning place, and interested in teacher's teaching way in class. Curiosity means that learning is not just knowing but also exploring further to give meaning to what is obtained in the learning process (Mardhiyana et al., 2016).

Learning motivation and students' learning creativity have a positive and significant correlation (Yuan et al., 2011). Achievement motivation and creative thinking ability have a positive and significant correlation, with a correlation coefficient of 0.475 and a significant value of $0.000 < 0.005$ (Munandar, 2009). Students who have high motivation will also have high enthusiasm for learning (Wahyuni, 2006). Students motivate themselves to achieve something and are not easily discouraged.

The research question is "is there any positive and significant correlation between learning motivation and a student's mathematics-creative thinking ability?". Research aim is to test the correlation between learning motivation and a student's mathematics-creative thinking ability.

METHODS

The research was held in ten junior high schools, namely seven state schools and three private schools in Kabupaten Aceh Barat-Indonesia. This research is quantitative. There are two main variables to be searched for in this research, namely: learning motivation (X), and mathematics-creative thinking ability (Y).

Table 1. Indicator and sub-indicator of learning motivation and mathematics-creative thinking ability

No.	*Variable*	*Indikator*	*Sub Indikator*
1.	*Learning motivation (X)	Desire and wish for success (X_1)	Active to learn Nice to learn Not hopeless to learn too quickly Not satisfied with the results obtained too quickly Tenacious to face the learning difficulties
		The drive and need for learning (X_2)	Having clear learning goals Being curious having feedback Being interested in learning

		Hope and ambition for the future (X_3)	Looking for things related to learning Perseverance in learning
		Interesting learning activities (X_4)	Avoiding punishment Receiving praise (award) Achieving in class
		A conducive learning environment (X_5)	Comfortable learning place Interested in teacher's teaching way in class
2.	**Creative thinking ability	Fluency (Y_1)	The many ideas The many answers Many problem-solving ways
		Fexibility (Y_2)	The variety of ideas or answers from the different viewpoints Many different approaches or thoughts
		Novelty (Y_3)	The many new, unique, and/or unusual ideas or combinations

The research population is all students in SMP in Kabupaten Aceh Barat. The total sample is 620 students from ten junior high schools, with an average of 60–65 students per school. There are 321 female samples and 299 male ones. They are the first or third grade students in their school age group (13–16 years old).

The research data was collected by two methods as follows: a questionnaire and a test. There are sixteen questions in the learning motivation questionnaire, which were arranged according to each indicator and sub-indicator as mentioned in Table 1. There are five choice options in each question of the learning motivation questionnaire to be chosen by the respondents (students), namely from 1 to 5 (scale 5). The number "1" means the lowest learning motivation and the number "5" means the highest learning motivation. A score is given according to the number in the choice option, namely from a score of 1 until 5.

There is 1 open-ended question on the student's mathematics creative thinking ability test, which is designed based on the material of two-dimensional figures. An open-ended question has multiple or more than one correct answer. Here's an open-ended question about mathematics-creative thinking ability:

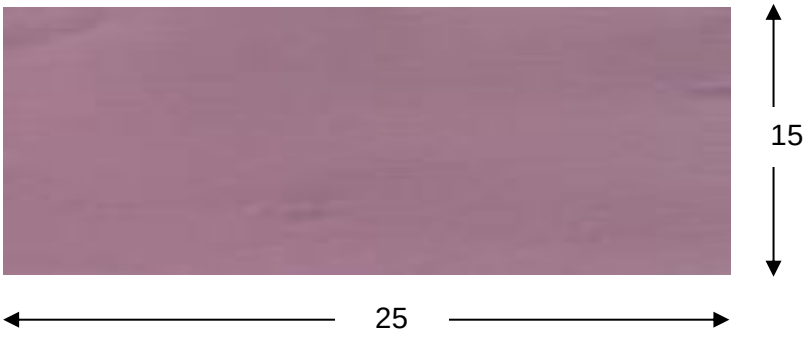

Figure 1. Picture of a rectangle

Instruction: Please divide the picture of the rectangle into two parts of the same area. Please give as many unique, novel, or uncommon answer alternatives as possible. As many as possible, provide more than 5 alternative answers.

Validation and reliability tests were also performed for the learning motivation questionnaire. The validation test used Pearson Product-Moment Correlation with α = 5% and N = 620. The reliability test used Cronbach's Alpha with N = 620 (the number of respondents) and n = 16 (the number of questions). The results showed that all the sixteen questions in the learning motivation questionnaire are valid with each of $r_{xy} > r_{table}$. The result of the reliability test is 0.897, which is very high (Ermistri, 2017). It means that the learning motivation questionnaire is reliable and acceptable.

The research data is analysed quantitatively. The correlation between the learning motivation and the students' mathematics-creative thinking ability was analysed by using Pearson Product-Moment Correlation with α = 5% and N = 620. The categories of correlation are as follows: very low (0.000-0.199), low (0.200-0.399), moderate (0.400-0.599), high (0.600-0.799) and very high (0.800-1.000) (Guilford, 1950). The correlation significance test between the learning motivation (X) and the student's mathematics-creative thinking ability (Y) is calculated by using t_{test}, with the condition that $t_{test} \leq t_{table}$ = not significant, and $t_{test} > t_{table}$ = significant.

RESULTS AND DISCUSSION

Table 2 shows the results of the correlation test between learning motivation and mathematical creative thinking ability.

Table 2. Correlation test between learning motivation and mathematics creative thinking ability

Variable (X)	*Variable (Y)*	r_{xy}	*Correlation category*	t_{test}	t_{table}
Learning motivation (X)	Mathematics creative thinking ability (Y)	0.7584	High	28.8997	1.6472
Desire and wish for success (X_1)	Fluency (Y_1)	0.7298	High	26.5186	
	Flexibility (Y_2)	0.6211	High	19.6843	
	Novelty (Y_3)	0.6255	High	19.9120	
The drive and need for learning (X_2)	Fluency (Y_1)	0.7297	High	26.5097	
	Flexibility (Y_2)	0.6359	High	20.4661	
	Novelty (Y_3)	0.6103	High	19.1387	
Hope and ambition for the future (X_3)	Fluency (Y_1)	0.5462	Moderate	16.1974	
	Flexibility (Y_2)	0.4327	Moderate	11.9227	
	Novelty (Y_3)	0.5162	Moderate	14.9719	
Interesting learning activities (X_4)	Fluency (Y_1)	0.5390	Moderate	15.8938	
	Flexibility (Y_2)	0.4482	Moderate	12.4554	
	Novelty (Y_3)	0.5031	Moderate	14.4592	
A conducive learning environment (X_5)	Fluency (Y_1)	0.5528	Moderate	16.4777	
	Flexibility (Y_2)	0.4554	Moderate	12.7073	
	Novelty (Y_3)	0.4891	Moderate	13.9279	

Table 2 shows that all r_{xy} values of variables are positive, and the t_{test} values of variables are greater than t_{table}. It means that 1) there is a positive and significant correlation between learning motivation (X) and mathematics-creative thinking ability (Y), there is a positive and significant correlation between desire and wish for success (X_1) and fluency (Y_1); there is a positive and significant correlation between desire and wish for success (X_1) and flexibility (Y_2); and there is a positive and significant correlation between desire and wish for success (X_1) and novelty (Y_3); 3) there is a positive and significant correlation between the drive and need for learning (X_2) and fluency (Y_1); there is a positive and significant correlation between the drive and need for learning (X_2) and flexibility (Y_2); and there is a positive and significant correlation between the drive and need for learning (X_2) and novelty (Y_3); 4) there is a positive and significant correlation between hope and ambition for the future (X_3) and fluency (Y_1); there is a positive and significant correlation between hope and ambition for the future (X_3) and flexibility (Y_2); and there is a positive and significant correlation between hope and ambition for the future (X_3) and fluency (Y_3); 5) there is a positive and significant correlation between interesting learning activities (X_4) and fluency (Y_1); there is a positive and significant correlation between interesting learning activities (X_4) and flexibility (Y_2); and there is a positive and significant correlation between interesting learning activities (X_4) and novelty (Y_3); 6) there is a positive and significant correlation between a conducive learning environment (X_5) and fluency (Y_1); there is a positive and significant correlation between a conducive learning environment (X_5) and flexibility (Y_2); and there is a positive and significant correlation between a conducive learning environment (X_5) and fluency (Y_3).

The research finding is supported by some opinions that say that there is a positive and significant correlation between the learning motivation and the student's mathematics creative thinking ability (Ermistri, 2017; Safitri et al., 2014). Learning motivation will increase the desire to learn, so that creativity will also increase. One of the factors that can encourage the individual's creativity is the student's own encouragement (intrinsic learning motivation). Every individual has the tendency or drive within himself to be creative, to realize his potential, to reveal and activate all his capacities. This drive is the primary motivation for creativity when individuals form new relationships with their environment. According to Treffinger et al. (2002), individuals must have intrinsic motivation to do something on their own accord, in addition to being supported by attention, encouragement, and training from the environment.

According to Arianto et al. (2015), intrinsic learning motivation has a more significant correlation with creative thinking ability than extrinsic learning motivation. It is not dependent on the encouragement and correlation of others, but comes from the students themselves, who always think about the future, full of challenges. According to Silver (1997), the higher and higher

student's mathematics creative thinking ability also has the higher and higher learning motivation, or vice versa, the lower and lower student's mathematics creative thinking ability also has the lower and lower learning motivation. According to Safitri et al. (2014), students have a strong desire to learn mathematics for their own progress. They also have the perseverance and tenacity to face the learning difficulties. According to Eftafiyana (2018), partial learning motivation has a correlation with creative thinking ability. Students with a moderate level of learning motivation also have a moderate level of creative thinking ability.

CONCLUSION

Learning motivation has a positive and significant correlation with a student's mathematics creativity ability. Five indicators of learning motivation also have positive and significant correlations with three indicators of creative thinking ability.

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