



Correlation between Learning Motivation and Learning Outcomes in Circulation System Learning Materials in Grade XI

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ABSTRACT

Learning motivation is a force that drives a learner to perform something in a learning activity. In this research, motivation is viewed through four dimensions: tenacity, interest, self-confidence and joy. This research aimed to analyze students' learning motivation and learning outcomes in blood circulation system materials. The method used in this research was descriptive-quantitative. The hypothesis test used was double correlation, using Pearson Product Moment with $\alpha=0,05$. The subject of research consisted of 120 students of grade XI IPA SMAN 95 and SMAN 96 Jakarta. The sample was taken using a simple random sampling method. Data were acquired using a set of questionnaires on learning motivation and learning result tests. Several analysis requirement tests were conducted such as normality and homogeneity tests. The research results show that learning motivation was able to improve students' learning outcomes in Biology with the coefficient correlation (r_{xy}) of 0,269.

Keywords: *Learning Motivation, Learning outcomes, State Senior High School.*

INTRODUCTION

The advancement in the education world has been aimed to improve human resources. Potential and quality human resources produce individuals with high competences for facing the global change. In fact, however, the quality of human resources in Indonesia is still low. Such notion is supported by the data from Program for International Student Assessment (PISA) 2015 which suggest that Indonesian students are still in low tier due to a poor education system. Among 72 countries, Indonesia ranked 62th (OECD, 2015).

An attempt which can be performed to improve human resources is to give motivation for students to study harder and diligently. Learning motivation plays a special role in strengthening passion, joy and spirit in learning process. Student who possesses strong motivation would be energetic and active in learning activity.

Learning motivation strongly influences learning outcomes because it allows students to engage in learning activities fully. This notion is supported by Hadinata (2009) who posits that learning motivation serves not only as a powerful drive to achieve excellent results but also an effort to achieve learning goals, namely understanding and development. The existence of high motivation in students is expected to drive students to consider school not only as a place to study but also an important need. This is in line with the results of a study by Aritonang (2008) which shows that learning motivation and interest may drive students to reach Minimum Criteria of Mastery Learning. It is also supported by Sardiman (2009) who argues that learning outcomes will be optimal if motivation is involved. The higher motivation a student has, the higher chance he gets to excel. In other words, motivation will shape the intensity of

students' learning efforts and, ultimately, improve their learning outcomes.

Biology is a natural learning concept and possesses a broad relationship with human life and environment. Biology learning is important in education and technology advancement since it has the capacity to encourage man's interest and abilities in developing knowledge and technology. In this research, blood circulation system materials were examined. It is one of materials provided in even semester for grade XI. It was selected for the research because by learning the materials, students are expected to explain how oxygen and carbon dioxide enter and exit lungs, how nutrients move from digestion system to body tissues, how excrement is returned to liver to be secreted, maintaining body temperature and circulating the functions of body tissues and hormones.

Based on the explanation above, there was a need to examine the relationship between students' learning motivation and learning outcomes of the circulation system materials in grade XI SMA Negeri 95 and SMA Negeri 96 West Jakarta in order to capture a factual image of students' learning motivation and learning outcomes.

RESEARCH METHOD

This research was conducted in SMA Negeri 95 and SMA Negeri 96 West Jakarta during the even semester of 2017. A descriptive-quantitative method was used. Each school provided three classes, one test class and two experiment classes. The classes were of grade XI IPA. Each class contained 30 students. The instruments used were observation sheets on students' learning motivation attitude and learning result tests. The observation sheets on students' learning motivation attitude was filled by students at the end of their learning activities while the observation sheets on learning result tests were administered to students at the end of

the discussion of learning materials as post-test. The data, once acquired, were analyzed and then tested using Pearson product moment correlation. The statistical test was conducted with the significance degree of 5%. Before the test was performed, requirement tests (homogeneity and normality) were tested on the data. All statistical tests were processed using software SPSS version 20.

RESULTS AND DISCUSSION

The results of research data show that the scores of students' learning motivation are 51,5 at the lowest and 99,5 at the highest. The average scores of students' learning motivation was 70,97 with the standard deviation scores of 8,214. The distribution of scores of students' learning motivation shows that the most frequency of scores of 45 students (37,50%) are in range between 69,5-75,5 while the least frequency of scores is in range 93,5-99,5, of 1 student (0,83%). The histogram of the scores of students' learning motivation is presented in Figure 1.

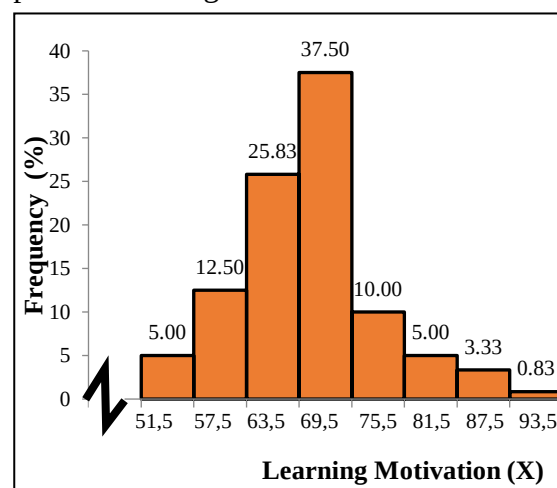


Figure 1. The Scores of Students' Learning Motivation

Based on the data, a category of scores of learning motivation was developed as presented in Figure 2.

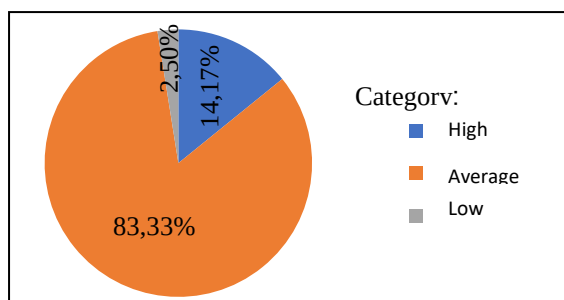


Figure 2. A Category of the Scores of Students' Learning Motivation

Based on the research data, the highest total score of learning motivation indicator is tenacity (1.918) while the total lowest score was boredom (1.266). The scores distribution of learning motivation indicators is presented in the following histogram (Figure 3).

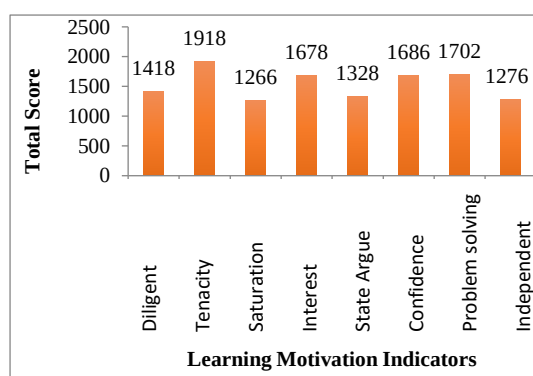


Figure 3. The Total Scores of Students' Learning Motivation Indicators

Based on the research data, a category of learning motivation scores was developed as presented in Figure 4.

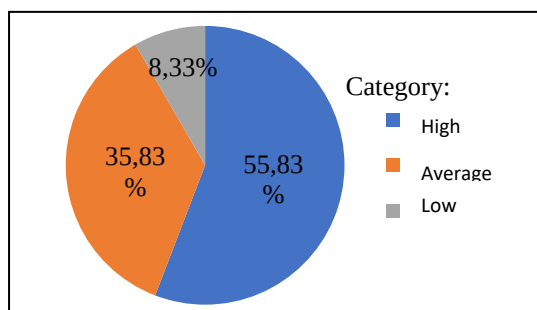


Figure 4. A Category of Students' Learning Outcomes (Y)

Based on the result of research data, the scores of students' learning outcomes are 36,5 (lowest) and 92,5 (highest). The average scores of students' learning outcomes are 74,20 and standard deviation is 10,86. The score distribution of students' learning outcomes show that the most frequency of scores are in range 73,5-80,5, of 42 students (35,00%) and the lowest frequency of scores are in range 31,5-38,5 and 80,5-87,5 of two students (1,67%). Such findings show that the higher students learning motivation scores are, the better the scores of students' learning outcomes in the circulation system materials will be. On the contrary, the lower scores of students' learning motivation are, the poorer the scores of students' learning outcomes in circulation system materials will be. The results of this research show that students' learning motivation has positive influences towards learning outcomes (one way). This is in line with Tella (2007) who posits that students who possess higher motivation learning perform better academically than the ones with lower learning motivation do. A histogram of the scores of students' learning outcomes was developed as presented in Figure 5.

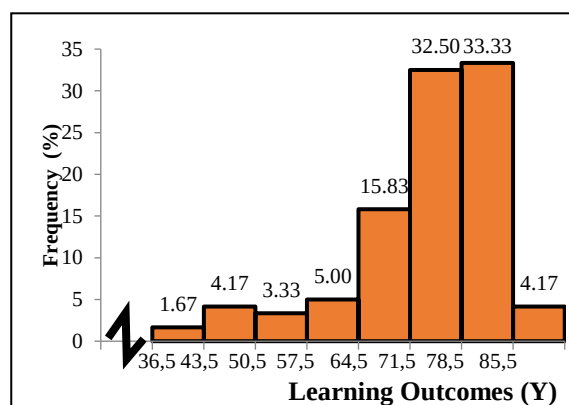


Figure 5. The Scores of Students' Learning Outcomes

Analysis Requirement Tests

Before any statistical analysis was conducted, normality test was conducted first using Kolmogorov Smirnov test and

then followed by performing homogeneity test using Bartlett test.

Normality Test

The result of normality test shows that the scores of learning motivation and learning outcomes were calculated using Kolmogorov-Smirnov with a degree of 0,05. The normality test on the data resulted in a score of learning motivation of D_{score} (0,269) and a score of learning outcomes D_{score} (0,057). Since both variables have $D_{score} > D_{table}$ (0,05), it is implied that all data were normally distributed.

Homogeneity Test

The result of homogeneity test shows that the scores of learning motivation and learning outcomes were calculated using Bartlett test with a degree of 0,05. The homogeneity test resulted in X_{score} of 2,183 and $X_{table(1)}$ of 3,841 because X_{score} (2,183) $< X_{table(1)}$ (3,841), implying that the population had well distributed or homogenous variance.

Hypothesis Testing

The hypothesis testing in this research consisted of linearity test, significance test and regression model test.

Linearity Test

Linearity test is also a requirement which should be performed before conducting simple linear regression in order to identify whether the accumulated data will be linear or not. Two variables are said to have a linear relationship when their significance is less than 0,05. The result of linearity test using software SPSS 20.0 is presented in Table 1.

Table 1. The result of linearity test

Variable	Asymp.Sig. (2-tailed)	F_{score}	Note
Learning motivation and learning outcomes	0,005	3,07	Linear

In Table 1, F_{score} is 8,338 and $F_{table(0,05)(2)(117)}=3,07$ with the significance of 0,05. Since F_{score} (8,338) $> F_{table}$ (3,07), H_0 was rejected. Based on the significant value in the sig column, $0,005 < 0,05$, H_0 was rejected, indicating that there is a linear model between learning motivation and learning outcomes.

t Significance Test

After linearity test was performed, a t significance test was performed in order to see whether the accumulated data were real or not. Two variables are said to have real relationship if its significance value is less than 0,05. The result of significance test using software SPSS 20.0 can be found in Table 2.

Table 2. The result of significance test

Data	Asymp.Sig. (2-tailed)	T_{score}	Notes
Learning motivation and learning outcomes	0,003	2,992	Real

In Table 2, t_{score} was 2,992 and $t_{table(120)}$ was 1,658 with the significance degree of 0,05. Since t_{score} (2,992) $> t_{table}$ (1,658), H_0 was rejected. Since the significance value in sig column (0,003) is smaller than 0,05, H_0 was rejected. This suggests that there is a significant relationship between learning motivation and learning outcomes.

Linear Regression Model Test

Simple linear regression test was performed to calculate regression equation. The result of relationship test between the scores of learning motivation and the learning outcomes using software SPSS 20.0 is presented in Table 3.

Table 3. The result of coefficient correlation test

Correlation	Pearson Product Moment		
	r_{score}	r_{square}	Sig.
Learning motivation and learning outcomes	0,269*	0,072	0,003

Based on Table 3, the data analysis resulted in the correlation index (r_{xy}) of 0,269. This value is higher than $r_{table(0,05)}$ which was 0,1509. From the result it can be concluded that the second hypothesis was rejected, implying that there was a relationship between learning motivation and learning outcomes. Next, the regression equation was calculated as presented in Table 4.

Table 4. The result of regression test on the scores of learning motivation and learning outcomes

Learning outcomes	B	T _{score}	Sig.
Constanta	53,044	7,167	0,000
Learning motivation	0,310	2,997	0,003

The following is a regression model of students' learning motivation (X) and learning outcomes (Y) in circulation system materials.

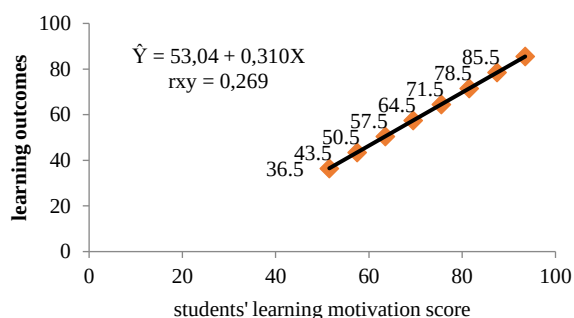


Figure 6. The model of Linear Regression between students' learning motivation (X) and learning outcomes (Y)

In Figure 6, we can see regression equation $\hat{Y} = 53,04 + 0,310X$. From the calculation we got t_{score} of 2,999 and t_{table} of 0,166, implying $2,999 > 0,166$ with the significance value of 0,003. Therefore, based on the statistical tests, H_0 was rejected while H_1 was accepted. The findings show that learning motivation has a positive relationship with and contributes in improving learning outcomes significantly. This finding is in line with Wijaya (2013) who posits that there is a positive, significant relationship between learning motivation and learning

outcomes. The former contributes to the latter. Hamdu (2011) also argues that learning motivation strongly influences learning achievement.

Students who possess higher learning motivation and good learning outcomes can be used as indicator for teacher's capability of the usage of learning methods in explaining the materials. This is in line with Biggs and Tang (2012) who argue that students' motivation plays an important role in achieving success in learning.

In this research, the indicator which has the highest score is tenacity. It allows students to keep doing their best, not giving up easily or prematurely, in solving the tasks given by their teachers on time. According to Solina et al. (2013), tenacity means 'to refuse giving up easily and to have strong will and efforts in achieving goals'. Students who have higher learning motivation do not give up easily when facing challenges in their learning process. Tenacity in facing problem can be observed from the attitude towards problems and the efforts to solve them.

The indicator which has the lowest score is boredom. When students receive inadequate amount of attention from their teacher, they tend to feel bored and indifferent towards learning materials, and ultimately start playing with their friends. Slivar (2001) argues that one of factors inducing boredom is the poor relationship between student-teacher in the school.

Students who possess lower motivation in this research had problems in understanding the materials given by their teachers. Zouganeli et al. (2014) argues that students with lower motivation possess limited understanding towards subject and their learning outcomes would not measure up to the standards in which they could implement the materials they learn.

CONCLUSION

Based on the calculation and hypothesis tests performed in this research, it can be concluded that there is a positive, significant relationship between students' learning outcomes in SMAN grade XI IPA in SMAN 95 and SMAN 96 West Jakarta. The researchers realised that there were other factors influencing the students' learning outcomes in Biology which were not examined since they only involved a independent variable (learning motivation) and a dependent variable (learning outcomes). Future study, therefore, may attempt to include other variables and use wider population and more representative samples. Students are expected to be more motivated in learning every subject taught by their teachers. For teachers, they should always provide support and motivation for their students before starting the class.

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