

THE INFLUENCE OF MOTIVATION TO PHYSICS LEARNING ACHIEVEMENTS GRADE XI MIA STUDENTS OF SMA MUHAMMADIYAH 2 SURABAYA

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Abstract

This research aims to described the influence of learning motivation to physics learning achievements grade XI MIA Students of SMA Muhammadiyah 2 Surabaya. The type of research is non experiment. The subject of research uses 185 students of XI science classes. This research method used is test and questionnaire with the questionnaire sheets and physics learning achievements tests. The questionnaire analyze with factor analyze KMO and Bartlett's Test of sphericity and for the data used normality test, linearity test, simple regression linearity test, coefficient product moment correlation (R) and coefficient determination (R square). The results of the research show the motivation questionnaire is significant with coefficient KMO value 0,779 and bartlett's test significant ($\chi^2 = 1164,161$, $df = 231$, $p < 0,000$) with six factor loading cumulative variance 57,647%. For the result, simple regression linear test show that motivation influenced to physics learning achievement 38,4% expressed the regression equation that is $Y' = -10,811 + 0,381x$ with coefficient product moment correlation R value 0.619 includes having a high level of relationship between motivation and physics learning achievement.

Keyword : Learning Motivation Learning, Physics Learning Achievement

INTRODUCTION

Teaching and learning process is the most important activity in the education process. An important role to carrying out the mandate to achieve educational goals. To create an atmosphere of good teaching and learning, the teacher as a facilitator of educational activities namely teaching and learning activities in schools has an important role in achieving a good teaching and learning process.

Learning is a process that is marked by changes in a person (Sudjana, 2017). Changes as a result of the learning process can be shown as forms such as changing knowledge, understanding, attitudes and behavior, skills, skills, habits, and changes in other aspects that exist in individuals who learn. Learning is a means for students to understand science to becoming a better person than before.

The success of education can be seen from the learning process carried out by students. Learning outcomes from students are evidence of how successful education in a country is carried out. the learning outcomes that teacher want are usually good or optimal learning achievements. However, in achieving good learning outcomes, there are still difficulties and achievements that have not been achieved optimally. In improving student learning outcomes are influenced by

many factors, which consist of internal and external factors. Internal factors are factors that are in students. Among them are intelligence, interest, motivation and locus of control, while external factors are factors outside students. Among them are family, school and community surrounding students (Slamet, 2015).

Learning motivation can cause learners to be encouraged to learn by themselves. The learning motivation (psychologically) influences students' actions so that they are categorized as psychic factors that are non-intellectual. The learning motivation has an important role in increasing passion, feelings of pleasure and enthusiasm for learning (Sadirman, 2012) so that someone who has the learning motivation to that someone will has a self-trigger or motivator in doing something. In learning activities the teacher must know when to provide motivation to make learning activities take place more enjoyable, flow of communication more smoothly, reduce student anxiety, improve creativity and learning activities.

The achievement of curriculum standards is the main goal of education in schools so mastery of the material that has been conveyed by the teacher must be mastered by students. From the results of the pre observation, in Muhammadiyah 2 Surabaya Senior High School it was found that the average physics value of the 11th grade students in the first semester was 69 while the minimum criteria in physics were 75. This indicated that students'

learning achievement on physics subjects was still low.

This happens because of several things including the lack of motivation of the students themselves to study physics, students believe and think that physics subjects are difficult to learn and understand because they use too many formulas when working on questions.

Therefore, the researcher raised the research with the title "The Influence of Motivation to Physics Learning Achievements Grade XI MIA Students of SMA Muhammadiyah 2 Surabaya"

METHOD

The type research in non experiment research which called ex post facto experiment. The subject of research uses all of students XI grade science classes at SMA Muhammadiyah 2 Surabaya. which amounted to 185 students. This research method used is test and questionnaire with the motivation questionnaire sheets and physics learning achievements tests were distributed face to face requests. This made sure that all the participants to take part in and to respond to the questionnaires. At the beginning of the surveys, the students were informed of the aim of this study and the purposes of the questionnaires. This research was conducted at after odd semester was done actually at the beginning of the even semester of 2017/2018 school year The motivation questionnaire sheets and physics learning achievements tests was translated into Indonesian language. The software SPSS version 20 used to calculate the statistic analyze. The questionnaire analyze used factor analyze KMO (Kaiser Meyer Olkin) and Bartlett's Test of sphericity and for the data used simple regression linear test.

RESULT AND DISCUSSION

This study was first carried out to determine the validity and reliability of the physics learning achievements tests that will be used as a post test problem. After testing, the physics learning achievements tests were tested, namely, the level of difficulty test, the validity and reliability test. Next set up the post test problem.

Table 1. The Result of Validity and Reliability Test of Physics Learning Achievements Tests

Material	Number of question	
	Initial	Final
Equilibrium and Dynamics of Rotation	5	4
Elasticity	9	8
Static Fluid	5	5
Dynamic Fluid	6	5
Gas Kinetic Theory	5	3
Total	30	25

The motivation questionnaire used KMO (Kaiser Meyer Olkin) and Bartlett's Test of sphericity to determine the validity and reliability of instrument. According to criteria of validation exploratory factor analyze, the retained item valid if the value greater than 0,4, so the items of motivation questionnaire with value less than 0,4 were deleted (Suprpto, 2018). The extraction component used orthogonal (varimax) rotation to find the number of factor loading. The Cronbach's alpha coefficient determine the reliability of instrument. The final result the simple regression linear test used to determine the influence of motivation to physics student achievement.

Table 2. The Result KMO dan Bartlett

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.779
Bartlett's Test of Sphericity	Approx. Chi-Square	1164.161
	Df	231
	Sig.	.000

The result of the KMO coefficient is 0,779 which the middling category. This is done by calculating the correlation rate between 0.700 - 0.799. The results of the Bartlett test sphericity are significant ($\chi^2 = 1164,161$, df = 231, $p < 0,000$). On the graph there are 6 self-interested factors like the following:

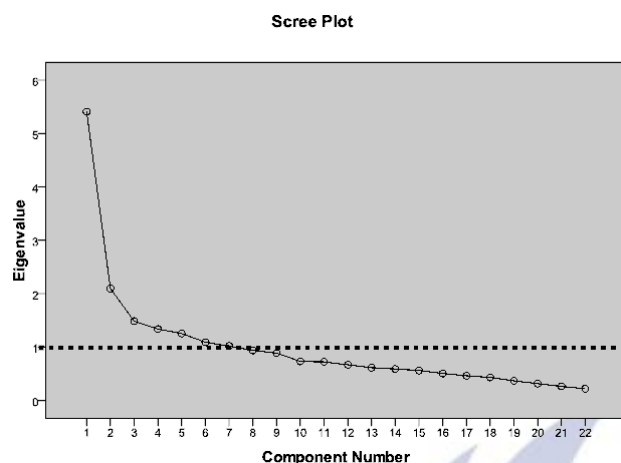


Fig. 1 Factor Loading of Motivation Learning

Table 3. Calculation 6 Factor Loading

Component	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	5,411	24,594	24,594
2	2,098	9,537	34,131
3	1,488	6,763	40,894
4	1,338	6,082	46,976
5	1,256	5,709	52,685
6	1,092	4,962	57,647

The results of the 6 factors amounted to 57,647% of the total variance and with the calculation that the loading factor affecting greater than 0,400 according to Steven (in Suprpto, 2016) can be made as follows:

Table 4. Factor Loading Learning Motivation

Item	1	2	3	4	5	6
M1	0,781					
M2	0,750					
M4	0,619					
M5	0,547					
M24	0,471					
M14		0,664				
M18		0,501				
M20		0,671				
M21		0,597				
M6			0,549			
M7			0,757			
M9			0,655			
M10			0,517			
M11				0,889		
M12				0,828		
M15				0,276		
M19					0,580	
M22					0,531	
M25					0,699	
M8						0,414
M13						0,266
M23						0,831

With the calculation results of each item, motivation questionnaire can be calculate the motivation variable for a total cumulative variance is 57,647 %% or it can be seen that learning motivation is influenced by 6 factors with a total effect of 57,647%.

Table 5. Reliability Motivation Questionnaire

Cronbach's Alpha	N of Items
.797	25

The value of coefficient Cronbach's Alpha is 0,797 which has a high category. This is indicated by the range of the correlation between 0.600 - 0.799 (Suharsimi, 2010)

Table 6. Normality test result

	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Physics Learning Achievemets	0,766	0,249	0,548	0,493
Motivation	-0,169	0,249	1,283	0,493

This normality test was tested on questionnaire and physics learning achievemets tests, the value was valid for all samples. The sample is said to be normally distributed if the value of Skewness and Kurtosis data is close to zero (Wahana Komputer, 2017).

Table 7. Linearity Motivation Toward Physics Learning Achievemets

		Sig.
Between Groups Motivation	(Combined)	.000
	Linearity	.000
	Deviation from Linearity	.399

Based on the table results of the linearity test, the questionnaire data variable on the value of physics learning achievement shows a significance value less than 0.05 (significant $\alpha = 0.05$), thus, it can be concluded that all four data are linear.

Then the simple regression linear used to determine the influence of variable (X) Motivation on the dependent variable (Y) Physics Learning Achievemets.

Table 8. The Result of Simple Linear Regression

ANOVA					
	F			Sig	
Regression	57,233			.000 ^a	
Coefficients					
	Unstandardized Coefficients		Standardized Coefficient s	t	Sig .
	B	Std. Error	Beta		
(Constant)	-10,811	2,681		-4,033	,000
Motivasi	,381	,050	,619	7,565	,000

From the calculation data above shows that from the ANOVA table the significance value is less than 0.05, it means that H_0 is rejected so that there is a relationship of learning motivation towards physics learning achievement. In the table of coefficients obtained a constant value of a of -10.811, this value departs from negative because there is a influence of Beta or a coefficient of effect that is far from the value of 1. The coefficient of b is 0.381 so that the equation of the output is as follows:

$$Y' = a + bx$$

$$Y' = -10,811 + 0,381x$$

The regression coefficient is positive, it means that there is a positive relationship between learning motivation and physics learning achievements. If value of learning motivation is higher so value of physics learning achievement is higher too. The constant value is -10,811. If the coefficient of learning motivation is 0, then the student learning achievement is -10.811. The value of the simple linear regression coefficient on the learning motivation variable is 0.381. These results can be interpreted every major student motivation occurs increased by 1, then student learning achievement will increase by 0.381.

Table 8. Coefficient Correlation Result

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.619 ^a	.384	.377	3.77074
a. Predictors: (Constant), Motivasi				

The value of R square is 0.384 which can be interpreted as 38.4% is the influence of learning motivation on student learning achievement. The value of R is 0.619 with a strong category according correlation table (Sugiyono, 2014) so that it can be concluded that learning motivation has an effect on the physics learning achievements of students of class XI MIA Muhammadiyah Surabaya with high category.

CLOSING

Conclusion

Learning motivation influence the physics learning achievement of class XI MIA Muhammadiyah 2 Surabaya Senior High School expressed by regression equation $Y' = -10,811 + 0,381x$; based on the interpretation of the correlation coefficient, the calculated R value 0.619 includes having a high level of relationship between the two variables in the hypothesis. The percentage of the contribution of learning motivation has an effect on student learning achievement of 38.4%

Suggestion

For school and teacher should provide treatment to students by applying various learning patterns in the classroom according to the way students study, giving the role of students to become active participants, giving instructions for success, giving awards as a form of motivation, able to instill confidence in students the meaning of success achieved based on hard work and giving a lot of the experience "i can do it". For the students of class XI science Muhammadiyah 2 Surabaya Senior High School, try to increase the portion of physics learning time outside school hours, increase interest in learning, always try optimally, make learning groups that can help and encourage each other and continue to dare to try until succeed.

REFERENCES

- Sadirman, A. (2012). *Interaksi dan Motivasi Belajar Mengajar*. Jakarta: CV. Rajawali.
- Slamet. (2015). *Belajar dan Faktor yang Mempengaruhinya*. Bandung: Rineka Cipta.
- Sudjana, N. (2017). *Penilaian Hasil Belajar Mengajar*. Jakarta: Remaja Rosdakarya.
- Sugiyono. (2014). *Metode Penelitian Kuantitatif, Kualitatif R&D*. Bandung: Alfabeta.

Suharsimi, A. (2010). *Prosedur Penelitian Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta.

Suprpto, N. (2018). *Demographic sources as a local wisdom: Potency of Indonesian physics education researchers in conducting survey research*. Article Presented in Seminar Nasional Fisika (SNF 2018) August 11 2018 (Surabaya, Indonesia: Universitas Negeri Surabaya)

Suprpto, N. (2016). *Students' Attitudes towards STEM education: Voices from Indonesian Junior High School*. *Journal of Turkish Science Education*, 13(Special Issue), 75-87.

Wahana Komputer. (2017). *Ragam Model Penelitian & Pengolahannya dengan SPSS*. Surabaya: Andi Publisher.

