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THE LEARNING CYCLE 5E MODEL: MOTIVATION AND LEARNING OUTCOMES IN PHYSICS LEARNING

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Abstract :
Motivation to learn is an important point that students must have so that learning becomes enjoyable. This research aims to determine the relationship between learning motivation and physics learning outcomes after using the 5E learning cycle model. The type of research used is quantitative research. The sample for this research was students of class XI Science from one of the high schools in Jambi City. Data collection techniques include learning motivation questionnaires and test instruments regarding temperature and heat. The data analysis technique in this research uses the IBM SPSS Version 22 application. Based on the results of data analysis in this study, the significance value between learning motivation and student learning outcomes was obtained, namely 0.002, where 0.002 < 0.05, so it can be stated that Ho is rejected and there is a relationship between Learning Motivation and Student Learning Outcomes in Physics learning. The conclusion from the results of this research is that there is a relationship between motivation and students' physics learning outcomes after the teacher uses the 5E learning cycle model.

Keywords: Learning Outcomes, 5E Learning Cycle Model, Motivation

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INTRODUCTION

Physics is a subject that can provide knowledge about the universe to train thinking and reasoning, so that it can develop and increase students' thinking and knowledge (Annisa et al., 2023; Putra & Hidayusa, 2019). In physics learning, student involvement is very necessary to create meaningful physics learning through scientific activities carried out by students, so that it can build motivation to learn scientific physics in each student (Alutu & Adubale, 2020; Ernawati et al., 2023; Pratiwi et al., 2019; Puspitasari et al., 2022). Many people think that physics is a very difficult subject to learn, because the many difficult formulas in physics lessons cause students to become unmotivated and experience difficulties in physics lessons (Diani et al., 2020; Setiya Rini et al., 2020; Syahrial et al., 2022).

Motivation is an internal process that activates, guides, and maintains human behavior over time (Astalini et al., 2023; Cahyani et al., 2020; Simamora et al., 2020). Motivation to learn plays a very important role for students and teachers (Perdana et al., 2019; Putri et al., 2021). Factors that influence students' motivation to study or not in physics can be seen from the tendency of students to accept or refuse when asked to work on the questions given. Students tend to be active if students have the motivation to learn physics lessons. On the other hand, passive students tend not to be motivated towards physics lessons. Another factor that influences students' motivation to learn physics is the lack of facilities for conducting experiments in physics learning so that students experience difficulty in developing their curiosity about physics material (Astalini et al., 2018; D. A. Kurniawan et al., 2019).

The learning motivation that students have in the learning process is very important to improve student learning achievement in certain subjects. Students who have a high level of learning motivation are likely to obtain high learning outcomes, whereas if students have a low level of learning motivation it is likely that they will obtain low learning outcomes (Chang & Chiou, 2017; Maison et al., 2019; Tanti et al., 2020). Learning outcomes are changes in student behavior as a whole, not just one aspect of human potential but many aspects of the potential they experience (Patonah, 2018; Winardi, 2018). Learning outcomes are the culmination of a process that has been carried out in the learning process. The peak will always be accompanied by further activities. Learning outcomes must show changes in student behavior that are permanent, functional, positive and conscious. This change in behavior will produce learning outcomes that must be comprehensive or holistic, not just in one aspect but in many aspects (Ahmadiyanto, 2016; Fitriani et al., 2021; Zubaidillah, 2018).

Improving the quality of education and teaching must always be sought and implemented through improving the quality of learning (Efendi & Ambarita, 2021; Lubis et al., 2022). By improving the quality of learning, students will be more motivated in learning, student creativity will increase, student attitudes will become positive, the type of knowledge and skills mastered by students will increase, and understanding of the material studied will increase. become more stable (Dasilva et al., 2019; Nurdyansyah & Riananda, 2016; Supriadi, 2019). One way that can be done to increase learning motivation and learning outcomes is to use the 5E learning cycle model.

The 5E learning cycle model has 5 stages of learning activities. This follows the constructivism paradigm, namely that students are considered to have initial knowledge so that it can become a basis for building new knowledge. Based on research by Rahmawati et al., (2021), the 5E learning cycle model can improve student learning outcomes. Likewise, research by Nisa et al., (2022) shows that Learning Cycle 5E helps students think critically, analytically, creatively, and improves student learning outcomes. The 5E learning cycle based on the STEM approach can improve scientific attitudes and science learning outcomes (Wiriani & Ardana, 2022). Research by Hidayah et al., (2019) shows that the Earning Cycle model has a positive influence on learning motivation and critical thinking skills on the human digestive system material at SMP Negeri 3 Jekulo. The novelty of this research is knowing the relationship between student learning motivation and student physics learning outcomes using the 5E learning cycle model. This research aims to determine the relationship between learning motivation and physics learning outcomes after using the 5E learning cycle model. In this study the research questions are as follows:

1. What is students' motivation to learn in physics lessons?
2. What is the relationship between motivation and student learning outcomes in physics lessons using the 5E learning cycle model?

RESEARCH METHOD

This research is quantitative research. Quantitative Research is a research method that is inductive, objective and scientific, where the data obtained is in the form of numbers or statements which are assessed and analyzed using statistics (Stoimcheva-Kolarska, 2020; Sugiyono, 2013).

This research was carried out at State Senior High School 6, Jambi City, 2020/2021 Academic Year. The population in this study were all students of Senior high school 6 Jambi City, while the sample or small part taken to represent the population was class XI Science, totaling 60 students with a sampling technique in the form of cluster random sampling (Gay et al., 2012; Lestari & Diana, 2018).

This research uses research data collection techniques in the form of learning motivation questionnaires and physics test instruments in temperature and heat. A questionnaire is a technique for

collecting data or information through a form containing questions addressed to a person or group of people in an organization to obtain responses or answers that will be analyzed by researchers. Through questionnaires, researchers can study the results of feedback provided by respondents who attempt to measure what was obtained in the process of filling out the questionnaire (Aristiawan & Istiyono, 2020; Fariyani & Kusuma, 2021; Win & Wulandari, 2023). The student motivation questionnaire sheet in physics lessons contains 20 questions with different results for each answer, where the answer Always is given a score of 4, Often is given a score of 3, Sometimes is given a score of 2, and Never is given a score of 1. Results test instrument Student learning takes the form of questions on temperature and heat, totaling 20 questions. The following is a questionnaire grid for student learning motivation.

Table 1. Student Learning Motivation Questionnaire Grid

Dimensions	Indicator	Number
Increasing student learning motivation using the 5E learning cycle model	High Learning Activity	1,2,3,4
	Diligent in doing tasks	5,6,7,8,9
	Tenacious in facing difficulties	10,11,12,13,14
	Student responses to information from the teacher	15,16,17
	Student response with feedback	18,19,20

The data analysis technique in this research uses the IBM SPSS Version 22 application. The test carried out is using descriptive statistics to see students' motivation to learn in physics lessons and the Pearson correlation test to determine the relationship between two variables in the form of learning motivation and learning outcomes (Kurniawan et al., 2020). Before carrying out a correlation test, prerequisite tests are required in the form of a normality test and a linearity test (Aishath & Omar, 2021; Priyono, 2008).

RESULTS AND DISCUSSION

This research was conducted at Senior high school 6 Jambi City, with a population of all students at Senior high school Negeri 6 Jambi City and a small sample or part taken to represent the population, namely class XI Science, totaling 60 students. From the data from research conducted on 60 samples, after tabulation the results were obtained, namely 13 people always had motivation to study, 30 people often had motivation to study, 13 people sometimes had motivation to study and 4 people never had motivation to study. If presented in percentage form, students who always have motivation to study are 21.7%, students who often have motivation to study are 50%, students who sometimes have motivation to study are 21.7% and students who never have motivation to study namely 6.7%. So the mean or average value obtained is 56.3, which is in the often motivated learning category. The median or middle value of the research results is 57, which means it is in the often motivated learning category. The minimum score is 25 and the maximum score is 78. The descriptive statistical data from the student learning motivation questionnaire can be seen in Table 2.

Table 2. Descriptive Statistics Results of Student Learning Motivation Questionnaires

	Intervals	Category	%	f	Mean	Median	Min	Max
Motivation	20.0 – 35.0	Never	6.7	4	56.3333	57	25	78
	35.1 – 50.0	Often	21.7	13				
	50.1 – 65.0	Sometimes	50.0	30				
	65.1 – 80.0	Always	21.7	13				

From the results obtained, students in class XI Science at Senior high school 6 Jambi City were on average 56.3333% more often motivated during physics lessons.

Next, the researchers carried out a normality test. Normality test to find out whether each variable is normally distributed or not. The normality test is needed in the analysis of research results because testing other variables assumes that the residual values follow a normal distribution.

Table 3. The Result of Normality test

	df	Sig.	Distribution
Motivation	60	0.200*	Normally
Learning Outcomes	60	0.200*	Normally

Table 3 shows the data from the normality test between learning motivation and student learning outcomes using SPSS software. Based on the results table from Kolmogrov-Smirnov, it can be seen that the significance value of Learning Motivation is 0.200, while the significance value of Learning Outcomes is 0.200. Based on Learning Motivation data, a Sig value of 0.200 > 0.05 was obtained, and learning outcomes obtained a Sig value of 0.200 > 0.05. Therefore, the significance value of the research data is > 0.05, so the data can be said to have a normal distribution.

Linearity Test is a step used to determine whether data is linear or not in a research data distribution. This linearity test is carried out to prove that each independent variable has a linear relationship with the dependent variable (Purwanti, 2013). The results of the linearity test can be shown in Table 4.

Table 4. The Result of Linearity test

	Sig.	Distribution
Motivation*Learning Outcomes	0.642	Linear

Based on the linearity test data using SPSS software, it can be seen in Table 4. It is known that the significance value of the comparison of Learning Motivation with Learning Outcomes is 0.642, where this value shows sig >, namely 0.642 > 0.05, so it can be concluded that the data is linear.

The correlation test is a statistical analysis to see the relationship between two variables using numerical data. This correlation test can determine the direction and strength of the relationship between the two variables being tested.

Table 5. The Result of Correlation test

		Motivation	Learning Outcomes
Motivation	Pearson Correlation	1	0.484
	Sig. (2-tailed)		0.002
	N	60	60
Learning Outcomes	Pearson Correlation	0.484	1
	Sig. (2-tailed)	0.002	
	N	60	60

In this research data, a significance level of 5% was used. Based on correlation test data using SPSS software from Motivation and Learning Outcomes, a significance value of 0.002 was obtained. This value shows a sig value of 0.002 < 0.05, so Ho is rejected and there is a relationship between Learning Motivation and student learning outcomes in physics learning.

Based on the results of descriptive statistics regarding student learning motivation, it is known that the average student chooses the often motivate category in learning physics with an average of 56.333 with a percentage of 50%. Furthermore, the data obtained by researchers has met the requirements before carrying out the correlation test. Based on the results of the correlation test, it is known that there is a significant relationship between learning motivation and physics learning outcomes, as evidenced by a significance value that is smaller than 0.05.

Students can get motivation from within themselves and also from outside themselves. Motivation can also come from learning methods or activities created by teachers that are interesting and meaningful. Teachers can also stimulate students' motivation to study well and be enthusiastic in physics lesson activities. The existence of student learning motivation is related to student interest in learning, resulting in good student learning outcomes. Based on the results obtained, it is proven that learning motivation is one of the determining factors in improving student learning outcomes in physics

learning. Students with better motivation to learn physics will have an impact on good physics learning outcomes as well. Likewise, if students' learning motivation in physics subjects is not good, it will have an impact on student learning outcomes in physics subjects.

Based on previous research by Rahmawati et al., (2021), the 5E learning cycle model can improve student learning outcomes. Likewise, research by Nisa et al., (2022) shows that Learning Cycle 5E helps students think critically, analytically, creatively, and improves student learning outcomes. Research by Hidayah et al., (2019) shows that the Earning Cycle model has a positive influence on learning motivation and critical thinking skills on the human digestive system material at secondary school 3 Jekulo. The novelty of this research is knowing the relationship between student learning motivation and student physics learning outcomes using the 5E learning cycle model.

This research is important to carry out so that teachers can be one of the factors that can encourage students to enjoy studying physics and change the bad stigma towards studying physics. With interesting learning created by teachers, it is hoped that student motivation will be stimulated for the better. The implication of this research is that the use of 5E learning cycle model can be related to student motivation and learning outcomes.

CONCLUSION

Based on the research results, it can be concluded that students' learning motivation in physics lessons on average, students often choose to be motivated and there is a relationship between learning motivation and physics learning outcomes using the 5E learning cycle model, proven by a significance value of less than 0.05 with a Pearson correlation of 0.484. Suggestions for future researchers to develop media or teaching materials that integrate the 5E learning cycle model to increase student motivation and learning outcomes.

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