ANALYSIS OF THE RELATIONSHIP BETWEEN INTEREST AND LEARNING OUTCOMES OF PHYSICS IN SENIOR HIGH SCHOOL

Eva Novrianti BoangManalu[1], Muhammad Iqbal[2], and Colocia Garcia[3]

[1] Universitas Jambi, Jambi, Indonesia
[2] Yogyakarta State University, Yogyakarta, Indonesia
[3] Universidad Mexico, Mexico
Corresponding author email: novriantieva742@gmail.com

Abstract :
This research is research on the relationship between interest in physics and physics learning outcomes. The aim of this research is to find out how student interests relate to student learning outcomes at senior high school 8 Muaro Jambi. This type of research is quantitative research using correlational quantitative descriptive methods. The data collection technique in this research was to use a questionnaire and the questions were distributed to students with a sample of 60 people, namely class XI students at senior high school 8 Muaro Jambi. With a population of all senior high school Negeri 8 Muaro Jambi students. Data analysis in this research uses a quantitative type of research using the SPSS program to test assumptions (normality and linearity) and create hypotheses through correlational tests. The results of the research show that using the correlation test, the Pearson correlation value was 0.008 <0.05, so it can be stated that Ho is rejected or there is a relationship between the character of national spirit and student learning outcomes at senior high school Negeri 8 Muaro Jambi.

Keywords: Attitude, Interest in Learning, Learning Outcomes

INTRODUCTION

Education is basically a conscious effort to develop the potential of human resources, especially students, which is done by guiding and facilitating their learning activities. Sardiman (2011) states that learning is a process of actions carried out deliberately, as an effort to master scientific material which leads to changes in behavior and leads to complete personality development.

The 2013 curriculum implements activity-based learning, which is expected to produce productive, creative and innovative Indonesian people through strengthening integrated attitudes, knowledge and skills (Arham, 2020). The 2013 curriculum places more emphasis on language skills as a communication tool that carries knowledge and thinks logically, systematically and creatively. Therefore, a learning model is needed that helps students to think logically so that students can find the correct concepts (Kurniawan. 2010). Physics subjects are one of the subjects in the science family that can develop inductive and deductive analytical thinking skills in solving problems related to natural events, both qualitatively and quantitatively using mathematics, and can develop knowledge, skills and

self-confidence. Apart from numeracy skills, the most important thing in studying physics is that students must master the concepts of each material. If students' mastery of concepts is lacking, it can allow misconceptions to occur. So students' misconceptions can become a problem in solving physics problems. Misconceptions are concepts that do not match the concepts recognized by experts in the field. Misconceptions, on the other hand, can be described as ideas that provide a wrong understanding of ideas or events that a person has constructed based on their experiences

A student's ability to solve questions can be a benchmark for the student's understanding of a subject matter. Students who frequently practice working on questions will find it easier to complete exam questions, whether daily tests, semester exams, national exams, or college entrance exams (Depdiknas, 2003). Mundilarto (2002) said that: "Problem solving is an important part of learning Physics. Basically, problem solving is an aspect of applying physics concepts obtained through the learning process. The need to solve problems or problems arises when someone wants to achieve the desired goal. Physics questions are generally assignments that ask students to carry out a series of actions that take them from an initial condition to a desired final condition. Physics is a lesson that explains knowledge about the universe which requires the ability to continue to be trained in order to increase thinking power and reasoning abilities (Kurniawan. 2018). This is all because physics does not have to be reliable in mathematics alone, but must be reliable in logic as well. Physics lessons require a strong logic and some basic knowledge of mathematics, based on content analysis and synthesis (Pathoni. 2019). Physics learning aims to develop students' reasoning power and students are able to solve physics problems related to everyday life (Nopiani. 2019). This fact makes students always memorize facts and of course makes students less critical individuals (Rahmawati. 2019)

In this case, the subject of physics is basically mastering physics products in the form of a collection of laws, theories, principles, rules and formulas that are built on concepts according to the study process (Hendri. 2019). Students' weak mathematical abilities will automatically experience difficulties in understanding physics. This means that only students who have intelligence in the field of numbers or logic can understand physics lessons well (Jufrida, 2016). According to Kurniawan (2019), physics subjects can be categorized as subjects that are less liked by students. Students find physics a difficult subject during their school years and it becomes even more difficult when they reach college. Many factors influence the low physics learning outcomes of students, including student interest and motivation for learning. Another factor is the way the teacher delivers learning which is related to the methods and media used as well as other factors (Hendri.2019). Factors from students such as no enthusiasm within the students themselves to be the best, lack of motivation or encouragement for students from teachers, parents, lack of close communication between students and teachers (Adha. 2010).

In the process of solving problems, apart from mastering physics concepts, mathematics is often also needed as a consequence of applying a quantitative approach through the use of formulas. In this case, the role of mathematics lies in its ability to develop a numerical language that allows quantitative calculations to be carried out. Thus, mastery of mathematics becomes something that students really need, especially when solving physics problems (Mundilarto. 2001). Physics learning can be made interesting by using various interesting and creative learning models and methods. For this reason, it is necessary to apply appropriate learning models that can increase students' interest in learning, especially in physics learning, be able to develop students' thinking and reasoning and develop the ability to convey the information they know verbally and in writing. One learning model that can increase students' interest in learning is the cooperative learning model. This learning model emphasizes students working together in groups (Susanti. 2017).

According to Sudjana (2013) learning outcomes are the abilities that students have after receiving their learning experience. So it can be concluded that learning outcomes are changes in behavior and abilities shown by students regarding what they have learned. Learning Outcomes are achievements obtained by the students themselves. Success in learning is influenced by many factors, including cognitive (IQ), affective (attitude) and psychomotor (skills). Attitudes that influence student learning outcomes include students' interest in learning. Interest also has a big influence on learning activities. If a student does not have great interest and attention to the object being studied, it is difficult to hope that the student will be persistent and obtain good results from his learning. On the other hand, if the student learns with great interest and attention to the object being studied, the results obtained will

be better (Pebiyanti, 2013). In learning activities, the success of teaching and learning activities can be measured from the learning outcomes achieved by students. Learning outcomes can also be defined as changes in a person's behavior after receiving learning (Hamalik. 2004).

In the learning process, attitudes function as "dynamic forces" or can be defined as forces that will move each individual to learn (Astalini, 2019). In learning physics, teachers must provide direct experience to students. This is because learning is a process of changing behavior through experience (Darmaji, 2017). Students' attitudes towards science learning in heterogeneous groups are not influenced by different cultures and backgrounds (Anggraini. 2018). Interest in learning according to Slameto (2010) is a tendency that is carried out and even remembered by students to continue paying attention continuously to an activity. Of course, the activities that are paid attention to and even carried out by students are accompanied by their own pleasure and satisfaction. Interest has a huge influence on the learning process. People who have no interest in learning certainly find it difficult to achieve optimal learning success. Someone who is interested in a subject will achieve optimal learning outcomes. Apart from that, in the learning process we must pay attention to what can encourage students to learn well or have the motivation to think and focus attention, plan and carry out activities related to or supporting learning (Oktalia, 2017).

Students' interest in learning in the classroom is not only influenced by the teacher who teaches but also the lessons that the students don't like. One of the subjects that high school students currently dislike is physics (Jaba.2018). Students' low interest in learning physics causes students to be lazy about doing assignments, less likely to read books or things related to physics, and feel happy if they don't study physics because the teacher is not present (Sumaryanti, 2018). The purpose of writing this article is to determine the relationship between students' interests and learning outcomes on the class XI momentum and impulse subject at senior high school 8 Muaro Jambi.

RESEARCH METHOD

This research is descriptive research with a quantitative approach. Descriptive research is research that is intended to collect information regarding the status of an existing symptom, the state of the symptom according to what it was at the time the research was conducted. Apart from that, this research also uses a quantitative approach with the hope that the information obtained can be applied generally, namely to the research population. So quantitative descriptive research is an activity to obtain broad information about an event or condition of a variable as it is. The population of this research is senior high school 8 Muaro Jambi and the samples taken are class XI students of senior high school 8 Muaro Jambi.

In this research, the instrument used was a non-test instrument. The types of non-test instruments used are questionnaires and questions. According to (Rahayu, 2007) a questionnaire is a number of statements given and answered by respondents. A questionnaire or questionnaire is a method or technique used to collect data by distributing a number of papers containing questions that must be answered by respondents, where in using this method problem questions are written in questionnaire format and then distributed to respondents. After the questionnaire sheet has been answered, the answers are returned to the researcher.

From these answers, researchers will obtain data such as opinions and attitudes of respondents towards the problem being studied. Therefore, the questionnaire given must truly represent the problem to be studied (Maryati & Suryawati, 2007). The questionnaire used in this research is a closed type of questionnaire. A closed questionnaire is a number of questions or statements that have been provided with various possible answers and the respondent just has to choose the most appropriate answer (Rukajat, 2018, p. 142). The questionnaire used is a student or learner interest questionnaire. And distribute questions to students. The instrument that the researcher used was a questionnaire and questions adopted from a thesis written by Sandi Aswara in 2018. The questionnaire contained 30 questions using a Likert scale. The Likert scale used is a scale with 5 answer choice indicators, namely STS (Strongly Disagree), TS (Disagree), RR (Doubtful), S (Agree), and SS (Strongly Agree). For the questions used, there were 20 questions with the correct answer scoring 3.3 and the wrong answer being given a score of 0. The score classification based on the number obtained was analyzed using SPSS software.

In this research, before testing the hypothesis, a normality test and regression test were first carried out. Normality test to find out whether the research data obtained is normally distributed or not. The tool used is the one sample Kolmogrov-Smirnov model. This aims to reduce the standard error rate and find out whether the data used is normally distributed or not. The decision making criteria in this research are: if the Asymp Sig (2-tailed) value is > 0.05, then the data is normally distributed. Linearity test to determine whether the research data obtained is linear or not, the decision making criteria is if the Sig value is greater than 0.05, then the data is linear. Next, hypothesis testing was carried out to determine the relationship between the character of national spirit (X) and student learning outcomes (Y). In this case the researcher used a parametric correlation test with the help of SPSS software with the decision making criteria if Sig > 0.05 then Ho is accepted and Ha is rejected, and if Sig < 0.05 then Ho is rejected and Ha is accepted. Analysis to see the relationship between students' learning interests and students' physics learning outcomes is to use the person correlation test. The grid of this research can be seen at table 1.

Table 1. Grid of students' interest in learning physics

Indicator	Description
Feeling happy	• Students' feelings when participating in learning • Students' feelings about learning physics
Attention	• Students' attention during physics learning in class
Interest	• Students' curiosity in learning physics • There is a student's willingness to learn • Passionate about learning
Involvement	• Students' awareness of independent learning • Students' awareness of repeating lessons

RESULTS AND DISCUSSION

Interest and learning outcomes in this study were measured through 4 indicators, namely interest in learning, attention when studying, motivation when studying and knowledge. Basically, every human being has different traits and characteristics. According to Yusep (2017) character is a form of human image in terms of behaving or carrying out an action that already exists in humans themselves. Character can also be interpreted as basic values that can build a person's personality.

According to Agustina (in Dimyati and Mudjiono, 2006), students' learning motivation can become weak. Weak motivation or absence of motivation to learn will weaken activities, so that the quality of learning achievement will be low. Therefore, the quality of student learning achievement needs to be continuously strengthened. With the aim that students have strong learning motivation, so that their learning achievements can be optimal. The learning motivation that students have in every learning activity plays a very important role in improving student learning achievement in certain subjects.

This research was conducted at senior high school 8 Muaro Jambi, with a population of all class XI students at senior high school 8 Muaro Jambi. With a total sample of 60 students. Based on a sample size of 60 students, it is able to provide a more concrete initial picture of how big the relationship is between student interest and student physics learning outcomes so that these results are expected to be able to become a reference for further research. From the research data that was conducted from 60 samples after tabulation, the results were that 1 person had a very good interest in studying physics, and 5 people did not have a good interest in studying physics. If it is presented in presentation form, that is good. Data from the descriptive statistical results of the student interest in learning questionnaire can be seen in Table 2.

Table 2. Description of the learning interest attitudes of class XI students at senior high school 8 Muaro Jambi

Category Interval	Category	Frequency	Percent (%)
30 – 54	Not good	5	8.3
54.1 – 78	Not good	37	61.7
78.1 – 102	Pretty good	15	25
102.1 – 126	Good	2	3.3
126.1 – 150	Very good	1	1.7
Total		60	100

The normality test is needed to carry out tests on other variables by assuming that the residual values follow a normal distribution. If the assumptions are violated, the statistical test becomes invalid and parametric statistics cannot be used. Table 2 shows data from normality test results for class XI student learning outcomes and class XI questionnaire data at senior high school 8 Muaro Jambi using SPSS software. Based on the Kolmogrov-Smirnov table it can be seen that for the significance value Asymp. Sig (2-tailed)>0.05 is 0.066, for the sig value of learning outcomes and the sig value of the questionnaire is 0.200.

Table 3. Normality Test Results

	Kolmogrov-Smirnov			Shapiro-Wilk		
	Statistics	Df	Sig.	Statistics	df	Sig.
Interest_Learning_Xi	.111	60	.066	.975	60	.245
Learning_Results_Xi	.087	60	.200*	.968	60	.117

The linearity test aims to ensure that the relationship between variable X and variable Y is linear, quadratic or to a higher degree (Riduwan, 2011). Based on the data from the linear test results for class XI at senior high school 8 Muaro Jambi using SPSS software which can be seen in Table 3, it is known that the significance value of the data is 0.396. This value shows that the sig value > α = 0.396 > 0.05, so it can be concluded that the data is linear.

Table 4. Linearity Test Results

	Sig	Conclusion
Learning Outcomes * Student Interest	0.396	Linear

Correlation is used to determine how strong the relationship is between the independent variable and the dependent variable. In this study, a significance level of 5% was used. Based on the data from the correlation test or relationship test using SPSS software from the Pearson correlation table, it can be seen that the significance value is 0.008. This value shows that the sig value < α = 0.008 < 0.05, then Ho is rejected or it can be said that there is a relationship between student interest and the learning outcomes of class XI students at senior high school 8 Muaro Jambi. It can also be concluded that from the research results it was found that 1.7% or 1 student in class XI senior high school 8 Muaro Jambi had a very good interest in learning, 3.3% or 2 students had a good interest in learning. Apart from that, researchers also measured students' abilities in momentum and impulse material.

Table 5. Correlation Test Results

	Learning outcomes	Interest to learn
Pearson Correlation	1	,340**
Sig. (2 tailed)		,008
N	60	60
Pearson Correlation	,340**	1
Sig. (2 tailed)	,008	
N	60	60

After obtaining the questionnaire scores and student learning outcome scores, both results were analyzed using Pearson correlation analysis. To answer the research hypothesis, namely whether there is a significant relationship between students' learning interest and students' physics learning outcomes on momentum and impulse material. Based on the results of research data analysis, the significance value between interest in learning and student learning outcomes is 0.008. With a Pearson correlation of 0.008 < 0.05, Ho is rejected or it can be said that there is a relationship between student interest and learning outcomes.

The results of this research are in accordance with several studies, including research conducted by Rajab et al., (2018) where the results of the research show that there is a relationship between student interest in learning and student learning outcomes, where the research used the NHT learning model assisted by sticky board media. Furthermore, research conducted by Karina et al., (2017) shows that there are 2 factors that influence student learning outcomes in science learning, one of which is student interest in learning, where the results show that there is a positive relationship between demand and student learning outcomes. Furthermore, research conducted by Budiwibowo (2016) shows that students' interest in learning also influences the results of students' exam scores in social studies learning with the next suggestion being to carry out academic potential tests so that students' interests, talents and motivation will be known.

The novelty of this research is that it provides an overview of the relationship between student interest and student physics learning outcomes and a larger sample size was used. So it is hoped that the novelty of this research can become a research result that will be useful as a reference in developing students' interest in learning, especially learning physics, so that by applying techniques that are able to attract students' interest, it will be in line with increasing student learning outcomes.

This research is important as a reference for teachers and schools in finding new ways to attract students' interest not only in learning physics but in other learning so that it will be able to improve student learning outcomes. It is hoped that this research will be very important and can be applied in schools, especially in Muaro Jambi. The limitation of this research is that this research only took samples at one school, namely at senior high school 8 Muaro Jambi, so it is necessary to carry out broader research, namely all schools in one district, to see further the relationship between student interests and student physics learning outcomes.

CONCLUSION

Based on the results of the research that has been carried out, it can be concluded that by carrying out hypothesis testing using Pearson correlation, namely by looking at the significance value, namely looking at the relationship between the dependent variable and the independent variable. By using the correlation test, the Pearson correlation value is 0.008 < 0.05, so it can be stated that Ho is rejected or there is a relationship between it can be said that there is a relationship between student interest and learning outcomes at senior high school Negeri 8 Muaro Jambi. So this research is able to answer the objectives of the research and is able to strengthen the theory that students' interest in learning influences students' physics learning outcomes.

ACKNOWLEDGMENTS

REFERENCES

Adawiyah, M. R. A. (2022). Pengaruh Model Problem Based Learning Berbantuan Google Workspace Terhadap Keterampilan Komunikasi Siswa Dalam Pembelajaran Biologi Selama Pandemi. *Jurnal AL-MutaAliyah*, *2*(2), 33-39. https://doi.org/10.51700/almutaliyah.v2i2.362

Ariyanti, Y. E., & Yusro, A. C. (2023). Peningkatan Aktivitas dan Hasil Belajar Siswa Menggunakan Model Problem Based Learning (PBL) Dengan Menggunakan Media Pembelajaran Video Mata Pelajaran IPAS Kelas IV SD Negeri 2 Tegalombo. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *8*(2), 2543-2559. https://doi.org/10.23969/jp.v8i2.8435

Awaliah, N. P. (2023). Analisis Pengembangan Keterampilan Komunikasi pada Siswa SD Kelas VI SDIT Al-Madinah Pekanbaru. *Mahaguru: Jurnal Pendidikan Guru Sekolah Dasar*, *4*(2), 480-498. https://ummaspul.e-journal.id/MGR/article/download/6963/3416

Fahmi, R., Muslem, A., & Usman, B. (2021). The use of Problem Based Learning to improve students' speaking ability. *English Education Journal*, *12*(2), 260-281. https://doi.org/10.24815/eej.v12i2.17920

Firdaus, A., Asikin, M., Waluya, B., & Zaenuri, Z. (2021). Problem Based Learning (PBL) Untuk Meningkatkan Kemampuan Matematika Siswa. *QALAMUNA: Jurnal Pendidikan, Sosial, dan Agama*, *13*(2), 187-200. https://doi.org/10.37680/qalamuna.v13i2.871

Hotimah, H. (2020). Penerapan Metode Pembelajaran Problem Based Learning Dalam Meningkatkan Kemampuan Bercerita Pada Siswa Sekolah Dasar. *Jurnal Edukasi*, *7*(2), 5-11. https://doi.org/10.19184/jukasi.v7i3.21599

Huda, A. M., & Rokhman, M. (2021). The Strategy of the Principal in Improving the Quality of Institutional Education. *Attadrib: Jurnal Pendidikan Guru Madrasah Ibtidaiyah*, *4*(2), 72-80. https://doi.org/10.54069/attadrib.v4i2.142

Iftitahurrahimah, I., Andayani, Y., & Al Idrus, S. W. (2020). Pengaruh model problem based learning (pbl) terhadap kemampuan komunikasi siswa materi pokok larutan elektrolit dan non-elektrolit. *Jurnal Pijar Mipa*, *15*(1), 7-12. DOI:10.29303/jpm.v15i1.1289

Juandi, D., & Tamur, M. (2021). The impact of problem-based learning toward enhancing mathematical thinking: A meta-analysis study. *Journal of Engineering Science and Technology*, *16*(4), 3548-3561. FORMAT INSTRUCTIONS FOR SOMChE 2004 PAPERS (researchgate.net)

Kassymova, G., Akhmetova, A., Baibekova, M., Kalniyazova, A., Mazhinov, B., & Mussina, S. (2020). E-Learning environments and problem-based learning. *International Journal of Advanced Science and Technology*, *29*(7), 346-356. 9447_Article_Text_14257_1_10_20200414_2_-libre.pdf (d1wqtxts1xzle7.cloudfront.net)

Latifah, N., & Supena, A. (2021). Analisis Attention Siswa Sekolah Dasar Dalam Pembelajaran Jarak Jauh di Masa Pandemi Covid-19. *Jurnal Basicedu*, *5*(3), 1175-1182. https://doi.org/10.31004/basicedu.v5i3.887

Layliyyah, R., Wisudaningsih, E. T., & Rahayu, E. (2022). Pengaruh Model Pembelajaran Problem Based Learning Terhadap Kemampuan Komunikasi Matematis Siswa Kelas VII. *Jurnal Pendidikan dan Konseling (JPDK)*, *4*(4), 345-351. http://journal.universitaspahlawan.ac.id/index.php/jpdk/article/view/5231

Lubis, A. N., & Dewi, I. (2023). Penerapan Problem-Based Learning Berbantuan Edmodo untuk Meningkatkan Kemampuan Komunikasi Matematis Siswa Kelas XI di SMA Negeri 11 Medan TA 2022/2023. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *7*(1), 562-579. https://j-cup.org/index.php/cendekia/article/view/2067

Madhavia, P., Murni, A., & Saragih, S. (2020). Pengaruh model problem based learning terhadap kemampuan komunikasi matematis siswa kelas VII SMP kabupaten kuantan singingi. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *4*(2), 1239-1245. https://doi.org/10.31004/cendekia.v4i2.357

Nasution, A. E., Irvan, I., & Batubara, I. H. (2020). Penerapan Model Problem Based Learning dan Etnomatematik Berbantuan Geogebra Untuk Meningkatkan Kemampuan Komunikasi Matematis. *Journal Mathematics Education Sigma [JMES]*, *1*(1), 55-64. https://scholar.archive.org/work/byi4hk6fnbel5kl2jjn5xylwjq/access/wayback/http://jurnal.umsu.ac.id/index.php/jmes/article/download/7506/pdf_15

Nurrachmah, S. (2024). Analisis Strategi Komunikasi Dalam Membangun Hubungan Interpersonal Yang Efektif. *Jurnal Inovasi Global*, 2(2), 265-275. https://doi.org/10.58344/jig.v2i2.60

Pertiwi, N. R., Sabila, H. N., & Sintawati, A. (2023). Implementasi Model Pembelajaran Problem Based Learning terhadap Keterampilan Kolaboratif dan Komunikasi Sains pada Materi Sistem Ekskresi di Kelas VIII B SMP Negeri 1 Ciamis. *Bioed: Jurnal Pendidikan Biologi*, *11*(1), 47-58. http://dx.doi.org/10.25157/jpb.v11i1.10168

Putri, E. A., & Fadly, W. (2022). Analysis Of Student's Rational Thinking Ability In A Career Perspective In The Field Of Science, Technology, Engineering, Mathematics (STEM). *INSECTA: Integrative Science Education and Teaching Activity Journal*, *3*(2), 127-139. https://doi.org/10.21154/insecta.v3i2.5138

Sebatana, M. J., & Dudu, W. T. (2022). Reality or mirage: Enhancing 21st-century skills through problem-based learning while teaching particulate nature of matter. *International Journal of Science and Mathematics Education*, *20*(5), 963-980. https://doi.org/10.1007/s10763-021-10206-w

Suhairi, S., Rahmah, M., Uljannah, A., Fauziah, N., & Musyafa, M. H. (2023). Peranan Komunikasi Antarpribadi Dalam Manajemen Organisasi. *Innovative: Journal Of Social Science Research*, *3*(3), 4810-4823. https://doi.org/10.31004/innovative.v3i3.2651

Widiyanti, E., & Astuti, I. Y. (2023, September). Penerapan Model PBL Berbasis Praktikum Untuk Meningkatkan Hasil Belajar Dan Kemampuan Komunikasi Ilmiah. In *Prosiding Seminar Nasional Pendidikan Profesi Guru (PPG)* (Vol. 1, pp. 500-506). https://semnas.upstegal.ac.id/index.php/semnasppg/article/download/579/302

Widayanti, W., Rofiqah, S. A., & Julianton, T. (2021). Problem Based Learning: Pengaruh Terhadap Pemahaman Konsep dan Komunikasi Siswa SMP. *U-Teach: Journal Education of Young Physics Teacher*, *2*(1), 1-8. https://doi.org/10.30599/uteach.v2i1.38