24 (1), 2023, 59-71

Jurnal Pendidikan MIPA

e-ISSN: 2685-5488 | p-ISSN: 1411-2531

http://jurnal.fkip.unila.ac.id/index.php/jpmipa/

Relationship between Interest and Independence in Learning toward Physics Learning Outcomes: A Case of SMA Negeri 2 Gowa

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Abstract: This research is survey research that aims to determine the relationship between (1) interest in learning with learning outcomes of physics, (2) independent learning with learning outcomes of physics, (3) interest in learning and independent learning together with learning outcomes of physics, (4) interest in learning with physics learning outcomes if it controls learning independence and (5) independent learning with physics learning outcomes if it controls learning interest. The research sample of 110 students was obtained through a multistage random sampling technique. Data collection was carried out through questionnaires and tests. The analysis technique used is descriptive statistical analysis and inferential statistical analysis. The results of the descriptive statistical analysis showed that the average score of learning interest was in the high category, learning independence was in the high category, and physics learning outcomes were in a low category. For inferential statistics, there is a positive and significant relationship between learning interest and physics learning outcomes, there is an insignificant positive relationship between learning independence and physics learning outcomes, and there is a positive but not significant relationship between learning interest and learning independence together with learning outcomes physics, there is a positive but not significant relationship between learning interest and physics learning outcomes if controlling for independent learning, there is no positive and significant relationship between independent learning and physics learning outcomes if controlling for interest in studying physics for Students of SMA Negeri 2 Gowa.

Keywords: learning outcomes of physics, independent learning, interest in learning.

Abstrak: *Penelitian ini adalah penelitian survei yang bertujuan untuk mengetahui hubungan antara : (1) minat belajar dengan hasil belajar fisika, (2) kemandirian belajar dengan hasil belajar fisika, (3) minat belajar dan kemandirian belajar secara bersama-sama dengan hasil belajar fisika, (4) minat belajar dengan hasil belajar fisika jika mengontrol kemandirian belajar, dan (5) kemandirian belajar dengan hasil belajar fisika jika mengontrol minat belajar. Sampel penelitian sebanyak 110 peserta didik diperoleh melalui teknik multistage random sampling. Pengumpulan data dilakukan melalui kuesioner dan tes. Teknik analisis yang dilakukan adalah analisis statistik deskriptif dan analisis statistik inferensial. Hasil analisis statistik deskriptif, skor rata-rata minat belajar berada pada kategori tinggi, kemandirian belajar berada pada kategori tinggi, dan hasil belajar fisika berada pada kategori rendah. Untuk statistik inferensial, terdapat hubungan positif dan signifikan antara minat belajar dengan hasil belajar fisika, terdapat hubungan positif yang tidak signifikan antara kemandirian belajar dengan hasil belajar fisika, terdapat hubungan positif yang tidak signifikan antara minat belajar dan kemandirian belajar secara bersama-sama dengan hasil belajar fisika, terdapat hubungan positif yang tidak signifikan antara minat belajar dengan hasil belajar fisika jika mengontrol kemandirian belajar, tidak terdapat hubungan yang positif dan signifikan antara kemandirian belajar dengan hasil belajar fisika jika mengontrol minat belajar fisika Peserta Didik SMA Negeri 2 Gowa.*

Kata kunci: *hasil belajar fisika, kemandirian belajar, minat belajar.*

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DOI: http://dx.doi.org/10.23960/jpmipa/v24i1.pp59-71
Received: 02 February 2023
Accepted: 25 February 2023
Published: 28 February 2023

▪ INTRODUCTION

Education in Indonesia through the Minister of Education and Culture does not stop making updates that follow the times, especially in the education system. The Indonesian education system has at least changed the learning curriculum several times, until now the curriculum applied at each level of education is the 2013 curriculum.

The 2013 curriculum is a curriculum developed from the previous curriculum, namely the 2006 curriculum (KTSP). This 2013 curriculum aims to prepare Indonesian people to have the ability to live as individuals and citizens who are faithful, productive, creative, innovative, and effective and able to contribute to the life of society, nation, state, and world civilization (Permendikbud No. 69 of 2013). One of the characteristics of the 2013 curriculum is its student-oriented or focused nature. Teachers are only facilitators and motivators, and students are allowed to learn by actively asking questions and being given books so that they can explore their lessons together with their study groups. Based on this, it can be said that the 2013 curriculum supports the attitude of student learning independence.

In addition to the 2013 curriculum, in February 2022 the government through the Ministry of Education, Culture, Research, and Technology announced a new curriculum, namely the prototype curriculum. The Prototype curriculum or new paradigm curriculum is a revision of the 2013 curriculum and is given as an additional option for educational units to carry out learning recovery as a result of the covid-19 pandemic. The 2022 Prototype Curriculum encourages learning that suits the interests, learning styles, and abilities of learners. In addition to learning that is by learning interests, another characteristic of this curriculum is project-based learning for the development of soft skills and character of students. Based on the previous explanation, it can be said that these two new educational curricula support increasing the interest and independence of learning students.

Interest is a psychological state characterized by an increase in attention, effort, and influence that appears at certain moments, and a long-term tendency to re-engage with a specific object or topic over time (Harackiewicz, Smith, & Priniski, 2016). Meanwhile, according to (Lestari, 2014), Interest is a condition that occurs when a person sees temporary characteristics or meanings of situations that are linked to their wants and needs. Interest is described as a tendency to engage or re-engage (Hidi, 2006). Interest is the driving force that is believed to be the most powerful in the learning process. Therefore, teaching should provide greater opportunities for the development of a student's interests.

Interest plays an important role in the learning process. When people are interested in a topic, then they show greater focus, perseverance, and performance in that area (Ainley, 2006). Interest describes the tendency and liking of the individual towards certain objects, including cognitive and affective processes. (Keller, Neumann, & Fischer, 2017). Learners who have a high interest in learning usually have a strong desire to succeed in their learning. In addition, they have a tendency and strive to understand the concept to the maximum (Arafah, 2020). Learner interest can be a factor in their emotional and cognitive involvement in learning tasks and thus can play a role in learners' choices about what to learn and how to learn (Wijnia, Loyens, Derous, & Schmidt, 2014). A person will be motivated to spend his time realizing their target interests (McIntyre, Gundlach, & Graziano, 2021).

The interest in learning can be expressed through the learner's liking for a particular subject or approach. Every student always has an interest in learning, whatever the low interest is. Therefore, a teacher must be able to arouse the interest of learners. Teachers must be able to make students learn happily (Triarisanti & Purnawarman, 2019). When the learner already has a high interest in learning, then he will be focused and serious in following the lesson and hope to achieve good learning outcomes. Based on some of the explanations above, it can be concluded that interest in learning is a state in which students have their desire to learn and know something with indicators of pleasure in learning, there is a focus on learning, there is a willingness to learn, there is a willingness to be active in learning, and there is an effort to realize the desire to learn.

Learning independence is a behavior and learning process in which learners are the main objects of learning and realize individual learning goals through analysis, exploration, practice, questioning, and independent creation (Zhang, 2022). Furthermore, (Madrazo & Dio, 2020) defines learning independence as the process, method, and philosophy of education by which learners acquire knowledge and develop inquiry abilities and critical abilities through hard work. On the other hand, (Mukhlis, Japar, & Maksum, 2018) define learning skills as attitudes and behaviors in which a person carries out learning activities independently and does not rely on others, to solve the problems at hand.

Learning is not a talent or innate from birth, learning independence must be grown and developed in the educational process (Moh Ghoizi Eriyanto, M.V. Roesminingsih, Soedjarwo, & Ivan Kusuma Soeherman, 2021). Learners must also be able to plan their learning activities and carry them out systematically and regularly so that they can monitor and evaluate their learning (Van Der Stel & Veenman, 2014). Based on some of the explanations above, it can be concluded that learning independence is an activity carried out by students to find out information without any direction or command from teachers, friends, or other people, and this is done on the initiative oneself with indicators that are having initiative and motivation to learn, being able to diagnose learning needs, setting learning targets, applying learning strategies, utilize and search for relevant sources, and evaluate learning outcomes.

Learning is a relatively permanent behavior change that results from past experiences or purposeful or planned learning. Learning is an activity carried out by each individual in the entire educational process to obtain behavioral changes in the form of knowledge, skills, and attitudes (Nurrita, 2018). Learning outcomes are behavioral changes that cover the cognitive, affective, and psychomotor fields (Ida & Maksum, 2021). Furthermore, (Wulandari & Surjono, 2013) defines learning skills as a measure or success rate that can be achieved by a student based on the experience gained after an evaluation in the form of a test and is usually realized with certain values or numbers and causes cognitive, affective, or psychomotor changes. Learning outcomes are indicators for measuring the learning influence of learners, and are also the main item for evaluating the quality of teaching (Lin, Chen, & Liu, 2017). (Watson, 2002) also defines learning as things that learners can do now that they could not do before. The changes are a result of the learning experience. The more activities and learning outcomes, the more successful the learning process is combined with character education (Malmia et al., 2019).

Each learning outcome depends on teaching pedagogy, demographic factors, and other academic factors (Yamarik, 2010). Learning outcomes are also influenced by learning models, course design, and teaching (Jude, Kajura, & Birevu, 2014). High and low learning outcomes are also influenced by the teacher himself (Fries, Horz, & Haimerl, 2006). Learners need teacher intervention at the beginning of the learning process to achieve cognitive and affective learning outcomes (Lycko & Galanakis, 2021). (Nurjanah, 2018) also stated that several factors affect student learning outcomes, including factors that come from within (internal) students and factors that come from outside (external) students. The internal factors are in the form of psychological factors and external factors in the form of family factors and school factors (Jufrida, Fibrika Rahmat, Pangestu, & Prasetya, 2019). Furthermore, (Hardika, Sebayang, & Sembiring, 2013) stated that three factors affect learning outcomes, namely internal and environmental factors consisting of students' interests, motivations, and student associations. The second is the supporting factor consisting of parental motivation, the quality of teacher teaching, and school facilities. And the third is that the additional factor consists of home learning facilities, extracurriculars, and additional tutoring.

From some of the explanations above regarding learning outcomes, it can be concluded that learning outcomes are results given to students after following the learning process that describes the level of ability of students based on what has been given accompanied by changes in behavior. The cognitive aspects in Bloom's taxonomy of Anderson's revisions are remembering, understanding, applying, analyzing, evaluating, and creating.

The results of learning physics are thought to be closely related to the interest and independence of learning students. The interest and independence of learning are psychological aspects that come from within the learner. This shows that each learner's interest and independence in learning are different and depend on other factors that also come from outside the learner. Based on this, the relationship between interest and independence in learning with learning outcomes needs to be known because it will help teachers in knowing the causes of the low learning outcomes scores obtained by students. In addition, teachers can evaluate the teaching methods that have been carried out so far if this interest and independence in learning greatly affect the learning outcomes of students' physics.

▪ METHOD

Research Design

The type of research used is survey research with a correlational approach. This correlation research is multiple correlation study because it uses three variables consisting of two free variables and one bound variable. The research paradigm used is a dual research paradigm with two free variables. The free variable is symbolized by X, where this free variable consists of an interest in learning (X1) and independence of learning (X2). For its bound variable, it is symbolized by Y, where this bound variable is the result of studying physics.

Participants

The population in this study was all students of class XI IPA at SMA Negeri 2 Gowa for the 2021/2022 school year as many as 299 people consisting of nine classes. The number of learners in each class for level XI IPA is shown in Table 1.

Table 1. Number of Students of Class XI IPA SMA Negeri 2 Gowa

Class	Number of Learners
XI IPA 1	33
XI IPA 2	34
XI IPA 3	32
XI IPA 4	32
XI IPA 5	33
XI IPA 6	35
XI IPA 7	31
XI IPA 8	34
XI IPA 9	35
Total	**299**

Sampling in this study used a multistage random sampling technique with a minimum sample size obtained based on the Slovin Formula of 103 people and a selected error rate of 8% (0,08). Furthermore, five of the nine classes were selected as research sample classes and the remaining four classes were used as trial classes.

From the five classes, a proportional sample was selected so that the number of samples for each class was: class XI IPA 1 as many as 22 students, class XI IPA 4 as many as 20 students, class XI IPA 5 as many as 22 students, class XI IPA 6 as many as 23 students, and class XI IPA 9 as many as 23 students. Based on these details, the total number of samples in this study was 110 students.

Research Instruments

Non-Test Instruments

The non-test instruments used in this study were in the form of a learning interest questionnaire sheet containing 20 statements and a learning independence questionnaire sheet containing 28 statements. These instruments are arranged according to the grid of instruments that have been made. In determining the score of the study results, the researchers gave five alternative answers using the Likert Scale, namely: Strongly Agree (SS), Agree (S), Hesitate (R), Disagree (TS), and Strongly Disagree (STS) with score weights of from 5 to 1 for positive statements, and from 1 to 5 for negative statements, respectively.

Test Instruments

The test instrument used in this study was a multiple-choice objective test with 13 questions. These instruments are arranged according to the grid of instruments that have been made. In determining the score of the study results, the researcher gave a score of 1 for the correct answer and a score of 0 for the wrong or unanswered answer. Furthermore, after the instrument is made, a test of the validity and reliability of the instrument is carried out.

The instruments used were validated by experts and then analyzed with Gregory's analysis. The results of the content validity test (expert) on the non-test instrument of interest learning from 24 items of statements are all valid items. On a non-test instrument, the independence of learning from 32 items of the statement is all valid items. And on the test instrument, the results of learning physics from 16 points of questions, all items are valid.

In the empirical validity test, the instrument was tested on 80 respondents, namely students of class XI IPA of SMA Negeri 2 Gowa for the 2021/2022 school year who were not included in the research sample. After analysis, for non-test instruments, the number of statement items before empirical testing was 24 statements. After the empirical test, 20 valid statements were obtained, and 4 invalid statements. For non-test instruments, the number of items of the statement before the empirical test is carried out as many as 32 items of statement. After the empirical test, 28 valid statements were obtained and 4 invalid statements. And for the test instrument of physics learning results, the number of questions before the empirical test was carried out as many as 16 questions. After the empirical test, 13 valid questions were obtained, and 3 invalid questions.

The reliability test results for non-learning interest test instruments obtained a reliability coefficient of 0,85 which means that 85% of the variance in the scores of learning interest instruments depends on the variance of truth in the measured traits and another 15% depends on the variance of error. Furthermore, non-test instruments of learning independence obtained a reliability coefficient of 0,91 which means that 91% of the variance in the scores of learning independence instruments depends on the variance of truth in the measured traits and the other 9% depends on the variance of errors. And for the reliability test results on the physics learning result test instrument, a reliability coefficient of 0,66 is obtained, which means that 66% of the variance in the scores of the physics learning outcomes instrument depends on the variance of truth in the measured traits and the other 34% depends on the error variance.

Data Analysis

Descriptive data analysis is used to describe or describe the data that has been collected including average scores, variances, standard deviations, and score determinations (score range, many interval classes, class length, decisive scores). In addition to descriptive data analysis, inferential data analysis is also used. Before the inferential statistical analysis is carried out, a basic statistical test consisting of a normality test, homogeneity test, linearity test, and multicollinearity test is first carried out as a prerequisite before the correlation test and linear regression test are carried out.

Normality tests are performed to determine whether the analyzed data come from normally distributed populations or not. The Kolmogorov-Smirnof normality test was performed using the IBM SPSS Statistics 24 application. After analysis, it was found that the data for each variable was normally distributed. Furthermore, for homogeneity Anova One Line Test (One Way Anova) is also carried out using the IBM SPSS Statistics 24 application. After analysis, the results were obtained that the variants of each of the two data groups were homogeneous.

▪ RESULT AND DISSCUSSION

Descriptive Analysis

Interest in Learning Physics

The results of a descriptive analysis of interest in learning physics showed that the average score was obtained by 76,20, the standard deviation was 9,10 and the variance was 82,79. Furthermore, an empirical maximum score of 96 and an empirical minimum score of 39 out of 100 possible scores were obtained. Based on the average obtained, which is 76,20, it can be said that student's interest in learning physics is in the high category.

Independence to Learn Physics

The results of the descriptive analysis of independence in learning physics showed that the average score was obtained by 106,54, the standard deviation was 14,19 and the variance was 201,22. Furthermore, an empirical maximum score of 140 and an empirical minimum score of 45 out of 140 scores were achieved. Based on the average obtained at 106,54, it can be said that the independence of learning physics students is in the high category.

Physics Learning Outcomes

The results of the descriptive analysis of independence in learning physics showed that the average score was obtained by 4,01, the standard deviation was 1,65, and the variance was 2,72. Furthermore, an empirical maximum score of 10 and an empirical minimum score of 1 out of 13 possible scores were obtained. Based on the average obtained, it is 4,01 and it can be said that the results of learning physics students are in a low category.

Relationship between Interest in Learning and Learning Outcomes in Physics

Before a simple correlation analysis is analyzed, a linearity test is first carried out. The linearity test is used to find out whether a free variable with bound variables has a linear relationship. The linearity test was conducted through a test of linearity using the IBM SPSS Statistics 24 application. For the linearity test of learning interest (X1) with the results of learning physics (Y) obtained the significance value of Deviation from Linearity of 0,132 > 0,05 so that it can be said that there is a linear relationship between interest in learning (X1) and the results of learning physics (Y).

The results of a simple correlation of learning interest (X1) with physics learning outcomes (Y) showed a significance value obtained of 0,016 < 0,05 and the results of a simple linear regression analysis of learning interest (X1) with physics learning outcomes (Y) showed the value of the correlation coefficient ry1 of 0,228 which indicates that there is a weak relationship between learning interest and student physics learning outcomes. Furthermore, the value of the coefficient of determination r 2 y1 was obtained between the interest in learning (X1) and the result of learning physics (Y) of 0,052 which means that only 5,2% of the variation that occurs in physics learning outcomes (Y) can be explained by variations in learning interest (X1) through regression equations $\hat{Y}$=0,853+0,041X_1, while another 94,8% of physics learning outcomes (Y) are influenced by other variables that are not studied. So it can be concluded that H0 is rejected and H1 is accepted.

From the results of the analysis above, it was obtained that students' interest in learning has a positive relationship with physics learning outcomes, which means that if the interest in learning is high, then the student's physics learning outcomes will also be high. However, the relationship obtained is still relatively weak, so the role of teachers in making students excited and serious about learning physics still needs to be improved to improve student physics learning outcomes. This corresponds to the research conducted (Fitriani & Erna, 2022) and (Lee, Chao, & Chen, 2011) in which they stated that interest has a significant positive influence on learning outcomes. (Permatasari, Gunarhadi, & Riyadi, 2019) also stated that students who have a high interest in learning are more eager to learn and get better results than students with moderate and low interest in learning. Interest in learning is one of the most important things that students must have when they want to learn. High interest in learning arises when students have the desire to achieve the best grades and are diligent, passionate, and earnest in the learning process which results in high learning outcomes.

Relationship between Learning Independence and Physics Learning Outcomes

Before a simple correlation analysis is analyzed, a linearity test is first carried out. The linearity test is used to find out whether a free variable with bound variables has a linear relationship. The linearity test was conducted through a test of linearity using the IBM SPSS Statistics 24 application. For the linearity test of learning independence (X2) with the results of learning physics (Y) obtained the significance value of Deviation from Linearity of 0,430 > 0,05 so that it can be said that there is a linear relationship between learning independence (X2) and physics learning outcomes (Y).

The results of a simple correlation of learning independence (X2) with physics learning outcomes (Y) showed a significance value obtained of 0,066 > 0,05 and the results of a simple linear regression analysis of learning independence (X2) with physics learning outcomes (Y) showed the value of the correlation coefficient ry2 of 0,176 which indicates that there is a very weak relationship between learning independence and student physics learning outcomes. Furthermore, the value of the coefficient of determination r2y2 between learning independence (X2) and physics learning outcomes (Y) of 0,031 is obtained, which means that only 3,1% of variations occur in physics learning outcomes (Y) which can be explained by variations in learning independence (X2) through regression equations $\hat{Y}$=1,831+0,020X_2, while 96,9% of other physics learning outcomes (Y) are influenced by other variables that are not studied. So it can be concluded that H0 is accepted and H1 is rejected.

Based on the results of the analysis, the results were obtained that there was an insignificant positive relationship between learning independence and student physics learning outcomes. This is certainly contrary to the results of research that have been carried out (Yanti, Trisoni, & Fajar, 2018) and (Harjanto, Istianti, & Sarsono, 2021), which says that learning independence greatly affects student learning outcomes. The authors consider that the insignificant results obtained can be caused by the time of data collection, respondents/learners gave answers that were difficult to measure the level of trust/honesty.

Relationship between Interest in Learning and Independence of Learning with Physics Learning Outcomes

Before double linear regression analysis, a multicollinearity test is first carried out. The multicollinearity test is used to test whether a regression model correlates with free variables, namely X1, and X2. A good regression model should not correlate with its free variables. The multicollinearity test in this study used the IBM SPSS Statistics 24 application. The multicollinearity test is seen from the amount of Variance Inflation Factor (VIF) and tolerance. After a multicollinearity test was carried out between learning interest (X1) and learning independence (X2) a tolerance value of 0,390 > 0,10 was obtained and a VIF value was obtained of 2,563 < 10,00, Based on these two values, it can be said that there is no multicollinearity between free variables.

The results of the analysis double correlation of interest in learning (X1) and independence of learning (X2) with learning results in physics (Y) showed a significance value obtained of 0,057 > 0,05 and the results of a double linear regression analysis of learning interest (X1) and learning independence (X2) with physics learning outcomes (Y) showed a value of ry12 correlation coefficient of 0,228 which showed that the weak relationship between interest in learning and independence of learning with learning outcomes Learner Physics. Furthermore, the value of the coefficient of determination r2y12 between learning interest (X1) and learning independence (X2) with physics learning outcomes (Y) of 0,052 is obtained, which means that only 5,2% of variations occur in physics learning outcomes (Y) which can be explained by variations in learning interest (X1) and learning independence (X2) through regression equations $\hat{Y}$=0,863+0,042X_1-0,001X_2, while 94,8% of other physics learning outcomes (Y) are influenced by other variables that are not studied. So it can be concluded that H0 is accepted and H1 is rejected.

Based on the results of the analysis above, it was found that there was no positive and significant relationship between interest and independence in learning together with the results of learning physics. These results are certainly not in line/contrary to the results of research that have been carried out (Yanti et al., 2018) entitled "The Relationship between Interest and Independence in Learning with Student Science Learning Outcomes in Class VIII at SMPN 1 Pariangan", he stated that "there is a positive and significant relationship together between interest and independence in learning with learning outcomes".

Furthermore, in the regression equation, a constant of 0,863 shows the consistency value of the learning outcomes variable of 0,863 and the regression coefficient X1 of 0,042 and X2 of – 0,001 which means that every addition of 0,01 to the value of the learning interest variable, the value of learning outcomes increases by 0,042 and every addition of 0,01 learning independence variables, the learning outcomes increase by – 0,001. The regression coefficient of positive learning interest means that the direction of the relationship between interest in learning and learning outcomes in physics is positive, if interest in learning is high, the results of learning physics are also high. Then the regression coefficient of learning independence which is negative in value means that the direction of the relationship between learning independence and physics learning outcomes is negative, if learning independence is high, physics learning outcomes are low.

The high interest in learning and independence of learning should be in line with the improvement of physics learning outcomes. But the results of the analysis obtained are not in line with the statement. In addition to the assumptions that the author has explained before, there is another assumption that students tend to choose the best option in each statement because they want to be known as students who are diligent and care about the lessons by their teachers. In addition, the teacher's presence in the classroom while working on the questionnaire makes students feel reluctant to give the best option to each statement. This is what causes some analysis results to be insignificant.

Relationship between Learning Interest and Physics Learning Outcomes if Controlling Learning Independence

Based on the results of the partial correlation test using the IBM SPSS Statistics 24 application, two outputs were obtained. The first output of "-none-a" shows the value of the correlation or relationship between interest in learning and the results of learning physics before the inclusion of the learning independence variable as a control variable in the analysis. From the output, the value of the correlation coefficient of 0,228 (positive) and the Significance (2-tailed) value of 0,016 < 0,05 were obtained, so it can be concluded that there is a positive and significant relationship between interest in learning and the results of learning physics without the variable of learning independence as a control variable. Meanwhile, the correlation value of 0,228 is included in the category of weak relationships. Furthermore, the second output of "learning independence" shows the value of the correlation or relationship between learning interest and physics learning outcomes after the inclusion of the learning independence variable as a control variable in the analysis. From the output, it can be seen that there is a decrease in the value of the correlation coefficient (correlation) to 0,148 (positive value and very weak relationship category) with a Significance (2-tailed) value of 0,124 > 0,05, so it can be said that if the learning independence variable is controlled, there is an insignificant positive relationship between learning independence and physics learning outcomes of SMA Negeri 2 Gowa students, and it can be concluded that H0 is accepted and H1 is rejected.

Based on the analysis and explanation above, it is known that if the learning independence variable is added and used as a controlled variable, it will influence the relationship between learning interest and learning outcomes. Thus, it can be concluded that the variable of interest in learning is not the only variable that determines the learning outcomes of physics students, because there is another variable that is also related to learning outcomes, namely the variable of learning independence. In addition, (Moh Ghoizi Eriyanto et al., 2021) stated that without motivation from within students, learning independence cannot be done.

Relationship between Learning Independence and Physics Learning Outcomes if Controlling Learning Interests

Based on the results of the partial correlation test using the IBM SPSS Statistics 24 application, two outputs were obtained. The first output of "-none-a" shows the value of the correlation or relationship between learning independence and learning outcomes in physics before the inclusion of the learning interest variable as a control variable in

the analysis. From the output, the value of the correlation coefficient of 0,176 (positive) and the Significance (2-tailed) value of 0,066 > 0,05 were obtained, so it can be concluded that there is an insignificant positive relationship between learning independence and physics learning outcomes without the learning interest variable as a control variable. Meanwhile, the correlation value of 0,176 is included in the category of very weak relationships. Furthermore, the second output of "learning interest" shows the value of the correlation or relationship between learning independence and physics learning outcomes after including the learning interest variable as a control variable in the analysis. From the output, it can be seen that there is a decrease in the value of the correlation coefficient (correlation) to - 0,004 (negative value and very weak relationship category) with a Significance (2-tailed) value of 0,965 > 0,05, so it can be said that if the learning interest variable is controlled, there is no positive and significant relationship between learning independence and physics learning outcomes of SMA Negeri 2 Gowa students, and it can be concluded that H0 is accepted and H1 is rejected.

Based on the analysis and explanation above, it is known that the addition of the learning interest variable as a controlling variable will have a negative influence on the relationship between learning independence and physics learning outcomes. Thus, it can be concluded that the learning independence variable is not the only variable that determines the learning outcomes of students' physics, because there is another variable that is also related to physics learning outcomes, namely the learning interest variable. In addition, other factors can affect learning outcomes outside of students' interest and independence in learning, including external factors in the form of teacher communication skills (Bimas Saputra, 2022) and learning facilities (Firdausy, Setyaningsih, Ishabu, & Waluyo, 2019). The internal factor is in the form of the motivation of the students themselves (Taurina, 2015).

▪ CONCLUSION

Based on the results of research that researchers have conducted at SMA Negeri 2 Gowa, about the relationship between interest and independence in learning physics with physics learning outcomes, the author concludes that the interest and independence of learning students are each in the high category and physics learning outcomes are in a low category. In addition, based on the analysis that has been carried out, it is also concluded that there is a positive and significant relationship between interest in learning and physics learning outcomes, there is an insignificant positive relationship between learning independence and physics learning outcomes, between interest in learning and independence in learning physics together with physics learning outcomes, between interest in learning and learning results in physics if by controlling the variables of learning independence, and there is no positive and significant relationship between learning independence and physics learning outcomes if by controlling the variables of learning interest.

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