The Correlation between Learning Motivation and Learning Outcomes on Mathematics Subjects in XII Science Class Senior High School 4 Bone

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Students experience problems related to low learning motivation, causing their mathematics learning outcomes to become low. The purpose of this study was to determine the relationship between learning motivation and learning outcomes on mathematics subjects in XII science class senior high school 4 Bone. The subjects in this study were 30 students of XII science class senior high school 4 Bone. The sampling technique in this research is cluster random sampling. The method used in this study is a quantitative method using a scale of learning motivation scale and results of semester exams in mathematics. The data analysis technique used in this study is a product-moment correlation. Based on the results of data analysis obtained correlation coefficient (r) of 0.41 and a significance of 0.02 (p < 0.05), which means there is a positive relationship between learning motivation with learning outcomes in mathematics subjects in XII science class senior high school 4 Bone. The subjects in this study were 30 students of XII science class senior high school 4 Bone, high motivation to learn to make grades and predicate mathematics learning outcomes become high. This study provides an overview of learning motivation with student learning outcomes, especially on learning motivation that can affect learning outcomes in students' mathematics subjects.

Keywords: correlation, learning motivation, mathematics learning outcomes, education, students

INTRODUCTION

Education is a very important requirement for humans because it is able to achieve progress in various fields of life, especially in the context of improving the quality of Human Resources (HR). This was done to educate the nation's life in accordance with the objectives of National Education. Considering the importance of education in this globalization era, the government pays great attention to creating quality education, so as to create quality human resources as well. This is indicated by the government's efforts to increase the frequency of training and increase teacher competence, procurement of books and learning tools, improvement of educational infrastructure, and improve the quality of school management. Through these efforts, it is hoped that a better teaching and learning process will occur which will ultimately lead to an increase in learning outcomes.

Teaching and learning activities are a core activity, to achieve educational goals. The purpose of education will be achieved in the form of behavior in students, and it has become the hope of all

parties so that each student can achieve the best learning outcomes in accordance with their respective abilities. Alhadi and Saputra (2017) argue that the success of achieving educational goals depends on the learning process experienced by students as learners. The success of the learning process is also influenced by the functions contained in the learning system, both the learning function carried out by students, the learning function, and the evaluation function carried out by the educator. A good teaching and learning process will improve learning outcomes, especially in mathematics.

Mathematics is often complained of as a subject that is difficult for students to understand. Complex formulas and difficult problems to solve make students afraid of mathematics. In general, mathematics is one of the subject units that students dislike and hate the most. This, causes students to have no interest in mathematics. This negative attitude certainly impacts on achieving low learning outcomes. Students who don't like and hate math will avoid it.

Senior High School 4 Bone is a school institution that is suspected to be inseparable from the problems above. Based on the results of interviews conducted by researchers with one of the mathematics teachers in the school, it was found that the average student did not like mathematics because it was difficult to understand, boring, and not interesting. The results of the interview can be said that students seem reluctant to study mathematics. This is in line with the results of the semester exams on mathematics subjects obtained by students of class XII MIA with a total of 91 students which shows that there were no students who achieved a Minimum Passing Criteria (KKM) score of 82 with a percentage of 100%.

Mathematics subjects in schools in general students are reluctant to learn, so it is very influential with their mathematics learning outcomes. To overcome this, factors that influence student learning outcomes need to be explored. Slameto (2010) stated that the factors that influence learning outcomes can be broadly divided into two, namely internal factors and external factors. External factors are factors that arise from outside the student's self-including teacher, friends, learning facilities, school environment, learning resources, parents' income, and others. While internal factors are factors that arise from within the students themselves including physical condition, intelligence, talent, interest, motivation, independence, and attention.

Achieving quality learning outcomes is one of the learning objectives of various subjects. Likewise, mathematics is the subject of this study. Student learning outcomes in high mathematics subjects are the hope of all students, parents, and teachers of these subjects so that motivation is needed so that students are encouraged to learn mathematics well. Motivation can appear by itself if students feel they need math. The task of the mathematics subject teacher is to grow and accommodate student motivation so that they feel compelled to learn and need the mathematics lesson.

Motivation is a very important factor in the learning process in order to achieve the expected achievements. Makmun (2000) stated that motivation is a complex condition and readiness in individuals to move towards certain goals, both consciously and unconsciously. Darwis (2014) stated that motivation is a process that encourages persistence in behavior so that it is directed and lasts a long time. Motivation is closely related to learning activities because motivation can be said to be the overall driving force within oneself that gives rise to learning activities, which ensures continuity of learning activities and gives direction to learning activities so that desired goals can be achieved.

Standards of both the value of mastery learning and graduation set nationally that must be achieved by students can increase student motivation so as to foster student interest in learning. At all ages, motivation plays a very important role in a person's life and has a big impact. Alhadi and Saputra (2017) suggest that students who have high learning motivation tend to have a positive attitude to succeed. In contrast to students who have no motivation in themselves, it will cause student learning outcomes below. Like the lack of student attention when the teacher explains the material in class and

talks to his classmates when the teacher explains the material, this happens because of the lack of motivation to learn in students' motivation to get high results.

Motivation is very instrumental in learning, with this motivation students become diligent in the teaching and learning process, and with that motivation also the quality of student learning outcomes can be realized properly. High motivation for learning is related to high learning outcomes. In addition, individuals who do not have the motivation to learn, will not be possible to do learning activities and learning outcomes will below. Conversely, someone who has the motivation to learn, will do well with learning activities and have better learning outcomes. This shows that students who are intelligent if they have low learning motivation, he will not achieve good learning outcomes. Conversely, students who are less intelligent, but have high motivation to learn, then he will achieve good learning outcomes.

Students who are well motivated in learning will do more and faster activities, compared to students who are less motivated on learning. Achievements will be better if they have high motivation. Learning motivation is one of the factors that is suspected to have a large influence on learning outcomes. Students with high motivation are expected to get good learning outcomes. The importance of student learning motivation is formed among others so that learning changes occur in a more positive direction.

Based on the results of an initial survey of the motivational scale distribution designed by Rosanti (2012) that was distributed to 30 students of XII Science Class Senior High School 4 Bone, showed that there were two respondents in the very high category with a percentage of 6.67%, there were six respondents in the high category with a percentage 20.00%, there were fourteen respondents in the moderate category with a percentage of 46.67%, there were six respondents in the low category with a percentage of 20.00%, and there were two respondents in the very low category with a percentage of 6.67%.

The results of the initial data collection conducted in the field by interviewing one of the mathematics subjects and seeing the results of the XII Science Class's semester student test results indicate that the learning outcomes on the mathematics subjects achieved were less than optimal. These results are also in line with the division of motivation scale which shows that the motivation of XII Science Class students is in the average category, so students are not too enthusiastic in achieving a target, especially learning outcomes in mathematics.

Many problems have been described from the background above, so researchers are interested in conducting research by taking the title "The Correlation between Learning Motivation and Learning Outcomes on Mathematics Subjects in XII Science Class Senior High School 4 Bone".

METHOD

This research uses quantitative methods. Azwar (2018) stated that quantitative research is a type of research that emphasizes his analysis of quantitative data collected through measurement procedures and processed by statistical analysis methods. The independent variable in this study is learning motivation, and the dependent variable is learning outcomes. Learning motivation is a force that drives individuals to change their behavior as a result of their observations and interactions with their environment. Learning outcomes are students' abilities in the form of mastery of knowledge, attitudes, and skills achieved in learning after learning activities. This research was conducted at Senior High School 4 Bone. The population in this study were all students of XII Science Class Senior High School 4 Bone. The sample in this study amounted to 30 respondents obtained using cluster random sampling techniques. Azwar (2010) stated that cluster random sampling is a sampling technique by randomizing groups in the population.

Data collection in this study uses a scale of learning motivation and mathematics learning outcomes of students of Senior High School 4 Bone. The intended learning motivation scale is the learning motivation scale adapted from the Rosanti (2012) scale which consists of twenty-two items. The scale consists of three components proposed by Hamzah (2007), namely needs, encouragement, and goals. The value of the validity of the results of the correlation coefficient shows that items move from 0.313 to 0.636, so it can be said that the scale of learning motivation has good validity. The reliability coefficient value is 0.815, which means that the scale of learning motivation is reliable with either category. Student mathematics learning outcomes in this study were obtained from the average results of the semester exam scores of mathematics subjects, which aim to measure and determine the level of student mastery of mathematics subjects that have been taught.

Analysis of the data used in this research is descriptive and inferential analysis. Azwar (2018) stated that descriptive analysis is an analysis technique that aims to provide a description of the data from variables obtained from a group of research subjects and not included to do hypothesis testing. Azwar (2018) stated that inferential analysis is an analysis technique that aims to draw conclusions in hypothesis testing. Azwar (2010) stated that the hypothesis is a temporary answer to the research question. Hypothesis testing in this study is to use the product-moment correlation coefficient method. Azwar (2018) stated that the product-moment correlation coefficient is a data analysis method used to see the relationship between several variables. The assumption test in using the product-moment correlation coefficient is the test for normality and linearity.

Sugiyono (2014) stated that the normality test is a statistical test that aims to test the assumption that the data on each research variable to be analyzed produces a normal distribution. The normality test used in this study uses the Kolmogorov Smirnov One Sample method. The significance level of the data stated is normally distributed if it is greater than 0.05. Winarsunu (2009) stated that the linearity test is a statistical test that aims to determine the linear status of research data distribution. The linearity test used in this study is the Ramsey RESET test. Suhartono (2008) stated that Ramsey's RESET test is a test contained in the R program package and aims to detect non-linear relationships between variables. The significance level of the data stated is linearly distributed if it is greater than 0.05. Hypothesis testing using the product-moment correlation coefficient test in this study was used to see the relationship of learning motivation with student mathematics learning outcomes, with the help of R program version 3.6.2.

FINDINGS

The subjects in this study were students of XII Science Class Senior High School 4 Bone with a total of 30 students, consisting of fourteen men and sixteen women. The results of the description of research subjects can be seen in the table below.

Table 1
Research subject description

Subject	Gender	Total	Percentage (%)
Students on XII Science Class Senior High School 4 Bone	Men	14	46.67
	Women	16	53.33
Total		30	100

Based on the results of the description of the research subjects showed that the subjects in this study were dominated by women with a percentage of 53.33%. Descriptive results of research motivation learning data can be seen in the table below.

Table 2
Description of empirical data on learning motivation

Variable	Empirical			
	Min	Max	Mean	SD
Learning Motivation	54	76	63.83	5.90

Based on the descriptive results of the study motivation learning data obtained from a scale of learning motivation totaling 22 items with a vulnerable score of 1 to 5. The above table shows that the empirical mean of the learning motivation scale is 63.83 with a standard deviation of 5.90. The data in the results of this study indicate that the lowest score is 54 and the highest score is 76. The categorization of learning motivation scale scores is obtained by using the average data of research variables. The results of learning motivation scale score categorization can be seen in the table below.

Table 3
Categorization of learning motivation scores

Categorization	Interval Score	Categorization	F	Percentage (%)
X< (μ - 1,0σ)	X<58	Low	6	20%
(μ - 1,0σ) ≤ X< (μ + 1,0σ)	58 ≤ X<70	Medium	19	63%
(μ + 1,0σ) ≤ X	70 ≤ X	High	5	17%
Total			30	100%

Note. X = The total value of the respondent; μ = The average value of the respondent; σ = The standard deviation of the respondent; F = Frequency.

Based on the results of the categorization of learning motivation scores show that there are 6 subjects in the category of low learning motivation with a percentage of 20%, there are 19 subjects in the category of moderate learning motivation with a percentage of 63%, and there are 5 subjects in the category of high learning motivation with a percentage of 17 %, so it can be said that the level of student learning motivation is in the medium category. The categorical learning outcomes of students can be seen in the table below.

Table 4
Categorization of learning outcomes (X) based on KKM

KKM	Interval Score	Predicate	Frequency	Percentage (%)
82	82 < X	D	30	100%
	82 ≤ X ≤ 87	C	0	0%
	88 ≤ X ≤ 94	B	0	0%
	95 ≤ X ≤ 100	A	0	0%
Total			30	100%

Note. KKM = Minimum Passing Criteria

Based on the results of the categorization of scores of mathematics learning outcomes obtained based on the predicate interval with a KKM value of 82 shows that there are 30 subjects who are in the predicate D with a percentage of 100%, and no subject is in the predicate A, B, and C with a percentage of 0%, so that it can be said that student mathematics learning outcomes are in a low category and do not pass.

Hypothesis testing in this study uses the product-moment correlation coefficient method. The product-moment correlation coefficient method has an assumption test that is a test for normality and linearity. The results of the normality test can be seen in the table below.

Table 5

Normality test results

Variable	D	p	Explanation
Learning Motivation	0.13	0.66*	Normal
Learning Outcomes	0.23	0.07*	Normal

Note. *p > 0.05 (Normal).

Based on the results of the normality test data indicate that the learning motivation variable obtained a D value of 0.13 with a significance value of 0.66 (p > 0.05), while for the learning outcome variable obtained a D value of 0.23 with a significance value of 0.07 (p > 0.05), so it can be said that the data for learning motivation variables and learning outcomes have a normal distribution. The results of the linearity test can be seen in the table below.

Table 6

Linearity test results

Correlation	RESET	p	Explanation
Learning Outcomes*Learning Motivation	3.267	0.054*	Linier

Note. *p > 0.05 (Linear).

Based on the results of the linearity test data shows that the RESET value of 3,267 with a significance value of 0.054 (p > 0.05), so it can be said that there is a linear relationship between learning motivation and learning outcomes. The results of the hypothesis test data with the product-moment correlation coefficient method can be seen in the table below.

Table 7

Hypothesis test results

Variable	r	p	Explanation
Learning Motivation Learning Outcomes	0.41	0.02*	Significant

Note. *p < 0.05 (Significant).

Based on the results of the hypothesis test the data shows that the significance value obtained is 0.02 (p < 0.05), so there is a significant relationship between learning motivation variables and learning outcomes. Correlation coefficient values obtained at 0.41 indicate that there is a positive relationship between the two variables.

DISCUSSION

The findings of this study prove that there is a positive relationship between learning motivation and student learning outcomes. Mudjiman (2007) stated that learning activities are preceded by the process of making decisions to do or not do. Students who have sufficiently strong motivation then will decide to do learning activities. Conversely, if students do not have sufficient motivation, they will decide not to do learning activities. Purwanto (2010) stated that motivation is a conscious effort to influence the behavior of individuals in order to be moved to act to do something, so as to achieve certain results or goals.

Spector (2007) argues that motivation is a state in an individual that leads to certain behaviors. Santrock (2007) stated that motivation is a process that gives enthusiasm, direction, and persistence to behavior that is full of energy, directed, and enduring. The relationship of motivation in learning activities, namely motivation is a driving force in individuals that lead to learning activities, which ensures the continuity of learning activities and gives direction to learning activities, so that the learning objectives desired by students can be achieved.

Gomez, Wu, dan Passerini (2010) suggest that there are two types of motivation, namely: intrinsic and extrinsic motivation. Intrinsic motivation is an individual's self-condition that affects the tendency to learn, intellectual curiosity, and the tendency to challenge. This type of motivation can also influence the learning situation in meeting the needs and goals of students. Extrinsic motivation, namely external factors from students that will affect students' interests and attitudes towards learning experiences. It includes grades, teacher influence, rewards, and incentives from learning. Purwanto (2010) stated that the purpose of motivation is to move individuals so that they want and want to do something so that they can get results or achieve certain goals, especially learning outcomes. Adam (2004) argues that learning outcomes are written statements about what students who are expected to do with success at the end of the course can be observed and measured from the results of the qualifications that students get. Sudjana (2004) stated that student learning outcomes are behavioral changes that have occurred through the learning process. Changes in behavior in the form of abilities students after learning activities that are the result of learning.

Preliminary data retrieval results indicate that the learning outcomes of students of class XII MIA are low due to the influence of student motivation. Low learning motivation causes students to experience learning difficulties. This is because students are not interested in activities related to the learning process. Students also do not know the importance of their attention and mastery of the subject being conveyed by the teacher. Students who are not interested and do not understand the purpose of learning, then tend not to have the desire to master and engage in learning activities.

The results also showed that learning motivation has a positive relationship with student learning outcomes, which means that if student motivation is high, student learning outcomes are also high. Conversely, if student motivation is low, it will lead to low student learning outcomes. The results obtained in this study are consistent with the study of the theory that posits that student motivation has a positive relationship with student learning outcomes. The results of the study are also in line with the results of Jatmiko (2015) research showing that learning motivation has a positive and significant relationship to student learning outcomes. Students who have high motivation perform academically better than students with low motivation.

Several studies have shown that student motivation is a significant dimension of learning outcomes. Pape, Bell, and Yetkin (2003) reported that students who have good motivation can manage their study time efficiently so that they can give the best results. The results of research by Palupi, Anitah, Budiyono (2014) found that there was a positive relationship between learning motivation and learning outcomes. Students who are well motivated in learning, do activities more and faster, compared to students who are less motivated in learning. The achievement will be better if you have high motivation.

The above results are also reinforced by the findings of previous studies that have been conducted. The study concluded that learning motivation has a significant relationship with student learning outcomes (Peklaj & Levpuscek, 2006). If the motivation to learn is high, the student learning outcomes are also high. Conversely, the lower the learning motivation of students with parallel status, the lower the student learning outcomes.

Subsequent research that has been conducted concludes that there is an effect of student motivation on mathematics learning achievement (Indriani, 2016). This study provides recommendations for students to be able to increase learning motivation because learning motivation is one of the factors that affect student achievement, especially in mathematics.

In addition, another study was conducted by Abuameerh and Al Saudi (2012) who reported that there were significant differences in student achievement motivation due to academic achievement. Students

who graduate show more motivation than students who fail. The research provides clear indications that learning motivation is an important aspect that determines student learning outcomes.

Then another study conducted by Emmanuel, Adom, Josephine, and Solomon (2014) confirmed that student achievement motivation and student achievement. The results showed that most high school students who were highly motivated had high self-concept and performed well on mathematics achievement tests. This study also found a significant relationship between self-concept and academic achievement which showed a positive relationship between achievement motivation and academic achievement. This study emphasizes the importance of achievement motivation and academic self-concept with academic achievement. Chetri (2014) reports that there is a relationship between achievement motivation and academic achievement that also produces a significant relationship. Furthermore, there is also a study that examines achievement and its relationship with achievement motivation and self-concept, involving as many as 336 students (172 women and 146 men) as subjects, reporting the results of research that achievement motivation and self-concept are significantly related to learning achievement (Cloud, Noureen, & Naz, 2011).

Another study aimed to identify patterns of relationship between learning motivation and student learning outcomes. The results of this study are based on statistical methods using a simple correlation. There is a positive relationship between learning motivation and student learning outcomes. Based on this study using a correlation coefficient, it shows that the higher the student's learning motivation, the better or the higher the student's learning outcomes (Trinora, Riswandi, & Mustakim, 2015). Other studies have identified how motivation affects academic performance and academic achievement. Data analysis reports that motivation tends to have a positive effect on academic performance through the right strategy to achieve better study results, and do maximum effort (Kusurkar, et al., 2013).

The academic motivation that affects academic achievement is influenced by the home environment. The results of previous research found a positive relationship between academic achievement motivation and the home environment. The home environment is one of the determinants of academic achievement motivation (Muola, 2010). Other studies have shown that the home environment is a determining factor for study habits and academic achievement (Kakkar, 2016; Obeta, 2014).

The results of this study and the results of previous studies have shown a clear picture that learning motivation is an important aspect for achieving student learning outcomes. Students who have great learning motivation will show interest, attention, concentration, persistence, and are process-oriented and learning outcomes. Conversely, students who lack learning motivation will show boredom, easily give up, and try to avoid learning activities. High motivation to learn generates great enthusiasm for learning, hard work, high endurance, resilience, and is diligent in studying without feeling bored. This is certainly an encouragement for students to develop their potential in learning so that it has an impact on improving learning outcomes.

In line with the previous statement, it was revealed that students who have high learning motivation always want to work hard to succeed without expecting rewards (Amrai, et al., 2011). According to Palupi, Anitah, and Budiyono (2014) suggest that there are three factors that influence learning motivation, namely the beginning of the learning process, learning affects stimulation and learning activities. Learning motivation has a significant influence on the intensity and quality of student learning. The motivation for learning encourages students to increase persistence and enthusiasm in learning. In addition, learning motivation plays an important role in providing pleasure to students in carrying out learning activities. This can encourage students to improve their learning outcomes. If students' learning motivation is low, it will lead to low motivation and enthusiasm for students in carrying out learning activities. As a result, the impact on student learning outcomes tends to below.

CONCLUSION

Based on the research results shown by data analysis and discussion, it can be concluded that there is a positive and significant relationship between learning motivation and learning outcomes in Mathematics Subjects for students in XII Science Class Senior High School 4 Bone.

RECOMMENDATIONS

Recommendations for further research can involve other variables that can affect mathematics learning outcomes. In addition, further research also needs to involve other high school equivalents on a broader scale, in order to obtain broader and more complete results.

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