The Relationship of Learning Motivation With The Biology Learning Outcomes in Senior High School

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ABSTRACT (ARIAL NARROW, 10PT)

This study aims to determine the relationship between motivation and learning outcomes biology in class XI MIPA SMAN 1 Luhak Nan Duo, Pasaman Regency West. This type of research is descriptive with quantitative research methods. The research was carried out at SMAN 1 Luhak Nan Duo, West Pasaman Regency with a population of 126 students of class XI MIPA enrolled in the odd semester of the year the 2021/2022 academic year, with a sample of 94 students. The sampling technique is simple random sampling that is done randomly, using significance = 5%. Collecting data in this study using a questionnaire that contains a statement of student learning motivation using a Likert scale, and the value of odd semester exams for the 2021/2022 academic year. The results of the Pearson product moment correlation test were obtained at 0.611 (61.1%/) at extrinsic motivation and intrinsic motivation of 0.505 (50.5)%, meaning that there are quite strong relationship between extrinsic motivation and intrinsic motivation with outcomes learn biology in class XI MIPA SMAN 1 Luhak Nan Duo, Regency West Pasaman. The results of the t test obtained the results of tcount extrinsic motivation of 7.410 and tcount of intrinsic motivation of 5.618 indicates that there is a significant relationship significant. Results The coefficient of determination of extrinsic motivation is 37.4% and intrinsic motivation of 25.5%, this means extrinsic motivation (X1) and motivation intrinsic (X2) contributes to students' biology learning outcomes (Y).

1. Introduction

Education is the most important thing in a country, because developing and developed countries depend on education. This education aims to develop the potential of students so that they are useful for the homeland and the nation, and become quality resources. In line with that Hamalik (2014) Education is a process in order to influence students so that they are able to adapt as best as possible to their environment, thereby causing changes in themselves to function as a whole in community life. Educators are in charge of directing this process so that the goals of the change can be achieved as desired. Educational goals are a set of educational outcomes achieved by students after educational activities are held. All educational activities, namely teaching guidance, and exercises are directed to achieve educational goals that occur in the learning process in the classroom. Meanwhile, according to Aunurrahman (2012) in the learning process, the introduction of oneself or one's personality is very important in self-empowering efforts.

Self-knowledge means that we know the strengths or strengths we have to achieve the learning outcomes we expect is called motivation, furthermore it is known that motivation is an impulse that exists within a person to fulfill their needs by making efforts to change behavior for the better. In the learning process students are less motivated in the teaching and learning process. This is because students have relatively less self-confidence, where this self-confidence is seen from psychological factors that influence learning such as intelligence, attention, interest, talent. Motivation is a combination of both internal and external factors that encourage a person to achieve predetermined goals. In general, learning motivation can be grouped into 2 types, namely intrinsic motivation and extrinsic motivation.

The motivation of students in learning will affect the learning outcomes, students who have high motivation will have high learning energy so that they get high learning outcomes, and vice versa (Palittin 2019). In the teaching and learning process, the teacher must be able to encourage, guide, and provide direction to students in the learning process so that they can arouse students' motivation in learning. Therefore, it is very important for teachers to know the learning motivation of students (Awe, 2017). Motivation to learn will encourage enthusiasm for learning in students and their lack of it learning motivation will weaken the enthusiasm for learning which will also affect student learning outcomes. (Nurmala *et al*, 2014). The interview results show that biology learning is the problem that causes it low motivation to learn so that student learning outcomes are low. These problems include: (1) students are less motivated to study biology, (2) according to students, biology lessons do not attract attention and (3) biology subjects are difficult to understand. If students lack motivation in learning, of course, the learning process in class will not run optimally. Therefore the encouragement and motivation of the teacher given to students can help students be more active and balanced so that students will be involved in learning. The teacher has a role as a motivator for students in learning in class (Rahmi & Neviyarni, 2022). Motivasi belajar siswa perlu ditingkatkan baik dari dalam maupun dari luar siswa karena semakin tinggi motivasi siswa akan menghasilkan prestasi yang lebih tinggi (Fitriwati, 2018).

Based on the description above, this study aims to determine the relationship between motivation and learning outcomes biology in class XI MIPA SMAN 1 Luhak Nan Duo, Pasaman Regency West

2. Method

The type of this research is descriptive research, with quantitative research methods. This study aims to determine the extrinsic and intrinsic motivation of class XI MIPA students at SMA Negeri 1 Luhak Nan Duo, West Pasaman Regency, and to determine the relationship between extrinsic and intrinsic motivation towards biology learning outcomes for students in class XI MIPA at SMA Negeri 1 Luhak Nan Duo, West Pasaman Regency.

The research was carried out at SMAN 1 Luhak Nan Duo, West Pasaman Regency with a population of 126 students of class XI MIPA enrolled in the odd semester of the year the 2021/2022 academic year, with a sample of 94 students. The sampling technique is simple random sampling that is done randomly, using significance = 5%. Collecting data in this study using a questionnaire that contains a statement of student learning motivation using a Likert scale, and the value of odd semester exams for the 2021/2022 academic year.

3. Results and Discussion

Research result

Based on the results of the data acquisition, the results of research regarding the relationship between learning motivation and learning outcomes in class XI MIPA SMA Negeri 1 Luhak Nan Duo, West Pasaman Regency, will be described. In this study there were 26 students who were sampled from a population of 126 students. Each respondent who was the sample in this study filled out the extrinsic motivation ($X1$) and intrinsic motivation ($X2$) questionnaires. Data on students' biology learning outcomes (Y) were obtained from the odd midterm exam scores for the 2021/2022 academic year.

The data obtained were analyzed by conducting a validity test of the learning motivation questionnaire, reliability test, descriptive analysis test, normality test, homogeneity test and correlation test which are described as follows:

Questionnaire Validity Test Results

The validity test was carried out using item analysis by looking for the average of the assessment results from the experts. The instrument is said to be valid if the average rating of the major experts is from 3.50 to 4.00 which is very valid. The results of the assessment by the validator can be seen in table 8.

Table 1. Results of the Questionnaire Validity Test

Validators	Average result of Assessment (r)	Category
Linguist	3.93	Very Valid

Content Expert	3.50	Very Valid

Based on Table 1 above, the average rating of linguists is 3.93 which is in the very valid category and so is the content expert which is 3.50 which is in the very valid category. And it can also be seen that the results of the validity test by linguists were 3.93 and the results of the validity tests by content experts were 3.50. This means that the extrinsic and intrinsic motivation questionnaires were declared valid by the validator both in terms of language and content.

Questionnaire Reliability test results

The reliability test of the questionnaire was analyzed using the Alpha Cronbach formula to determine the reliability level of the instrument used. From the data analyzed, the results are obtained in Table 12

Table 2. Questionnaire Reliability Test Results

Variable	*Alpha Cronbach*	**Number of Question Items**
Extrinsic Motivation (X1)	0.915	20
Intrinsic Motivation (X2)	0.939	20

After doing the calculation, the reliability of extrinsic motivation (X1) is 0.915, which has a very high reliability. Likewise with extrinsic motivation (X2) of 0.939 which means very high reliability.

Descriptive Analysis Results

The data obtained were analyzed using the SPSS 17 For Windows program to obtain the mean, mode, median, maximum value, minimum value, and standard deviation for each variable in this study. Based on the research results, it is known that learning motivation and student learning outcomes are as follows:

Table 3. Description of Extrinsic Motivation (X1)

Extrinsic Variables	N	Average Score	std. Deviation	Category
Praise	94	3.72	1,4	Tall
Present	94	4,1	1.17	Tall
Punishment	94	3,9	1.42	Tall
Rival	94	4,1	1.25	Tall
Knowing Results	94	4,1	1.37	Tall
Valid N (listwise)	94			

From Table 3 above, the results of the calculation of the praise indicator from a total of 94 samples obtained an average value of 14.9 with an average score of 3.72 and a standard deviation of 1.4 which is in the high category. Meanwhile, the prize indicator obtained an average value of 16 with an average score of 4.1 and a standard deviation of 1.17 which is in the high category. And for the penalty indicator, a total of 94 samples obtained an average value of 16 with an average score of 3.9 and a standard deviation of 1.42 which is in the high category. And in the rival indicators of a total of 94 samples, an average value of 16 was obtained with an average score of 4.1 and a standard deviation of 1.25 which was in the high category, as well as the indicator of knowing the results of a total of 94 samples obtained an average value of 16 with an average score of 4.1 and a standard deviation of 1,

Table 4. Description of Intrinsic Motivation (X2)

Variable Entrinsic	N	Average Score	std. Deviation	Category
Passion for learning	94	4,1	1.32	Tall
Interest	94	4	1,2	Tall
Ambition	94	3,9	1.35	Low
Recognized Purpose	94	3,9	1.27	Low
Ego Involvement	94	3,8	1.35	Tall
Valid N (listwise)	94			

From Table 4 above, the results of calculating the desire to learn indicator from a total of 94 samples obtained an average value of 16 with an average score of 4.1 and a standard deviation of 1.32 which is in the high category. Meanwhile, the interest indicator obtained an average value of 16 with an average

score of 4 and a standard deviation of 1.2 in the high category. And for the ideals indicator, a total of 94 samples obtained an average value of 16 with an average score of 3.9 and a standard deviation of 1.35 which is in the low category. And in the recognized goal indicator, out of a total of 94 samples, an average value of 16 was obtained with an average score of 3.9 and a standard deviation of 1.27 which was in the low category, as well as the ego involvement indicator.

Learning Outcomes (Y)

Study result data (Y) were obtained from the midterm exam scores of students who were the sample in this study. While data on the motivation variable (X) was obtained from a learning motivation questionnaire of 26 respondents as a sample and processed based on the scores on the questionnaire, the results are obtained in Table 5 below.

Table 5. Description of Learning Outcomes

Descriptive	Mark	Meanscore
Means	53.98	0.67
Median	53.00	0.66
mode	63.00	0.78
Standard Deviation	15,28	0.67
Min Value	10.00	0.50
Maximum Value	90.00	1,12

From Table 16 above, the calculation results obtained mean (average) 53.98; median (middle score) 53.00; mode (highest score) 63.00; standard deviation (standard deviation) 15.28; minimum value 10.00; maximum value of 90.00. Based on the table above, the average score obtained is 2.96, which is in the low category. This means that class XI MIPA students have low learning outcomes in biology.

Prerequisite Analysis Test Results

Extrinsic Motivation (X1)

To find out whether the data obtained from the research results are not normally distributed or normally distributed, a normality test is carried out. If the probability significance value < Alpha 0.05 (probability significance level value is 95%) it means that the data is not normally distributed, otherwise if the probability significance value is ≥ Alpha 0.05 (the probability significance level is 95%) it means the data is normally distributed. From the results of the normality test performed, the following results were obtained:

Table 6. Summary of Normality Test Results

Variable	L Count	Alpha	Category
Extrinsic Motivation (X1)	0.618	0.05	Normal Distribution

From Table 6 above it is known that the Lcount of the extrinsic motivation variable (X1) is 0.618 and is greater than 0.05 meaning that the Lcount X1 is greater than the significance level of 95% probability and it can be stated that the data is normally distributed.

A homogeneity test was carried out to find out whether the data obtained from the research results were homogeneous or not. At an error level of 0.05 (95%) if Fcount > Ftable means the data is not homogeneous, otherwise Fcount <Ftable means the data is homogeneous. From the results of the homogeneity test performed, the following results were obtained:

Table 7. Summary of Homogeneity Test

Variable	F count	F table	Category
Extrinsic Motivation (X1)	7,994	3,10	Homogeneous

From Table 7 above, the homogeneity test results of extrinsic motivation were obtained at 7.994. It can be seen that the Fcount value of extrinsic motivation (X1) and small of Ftable = 3.10, it is stated that learning motivation has a homogeneous variance.

Inspiring Motivation (X2)

To find out whether the data obtained from the research results are not normally distributed or normally distributed, a normality test is carried out. If the probability significance value < Alpha 0.05 (probability significance level value is 95%) it means that the data is not normally distributed, otherwise

if the probability significance value is ≥ Alpha 0.05 (the probability significance level is 95%) it means the data is normally distributed. From the results of the normality test performed, the following results were obtained:

Table 8. Summary of Normality Test Results

Variable	Lcount	Alpha	Category
Intrinsic Motivation (X2)	0.618	0.05	Normal Distribution

From Table 8 above it is known that the Lcount of the extrinsic motivation variable (X2) is 0.618 and is greater than 0.05, meaning that Lcount X2 is greater than the 95% probability significant level value and it can be stated that the data is normally distributed.

A homogeneity test was carried out to find out whether the data obtained from the research results were homogeneous or not. At an error level of 0.05 (95%) if Fcount > Ftable means the data is not homogeneous, otherwise Fcount <Ftable means the data is homogeneous. From the results of the homogeneity test performed, the following results were obtained:

Table 9. Summary of Homogeneity Test

Variable	F count	F table	Category
Intrinsic Motivation (X2)	4,121	3,10	Homogeneous

From Table 9 above, the homogeneity test results of intrinsic motivation were obtained at 4.121. It can be seen that the Fcount value of intrinsic motivation (X2) and small of Ftable = 3.10, it is stated that learning motivation has a homogeneous variance.

Correlation Coefficient Test Results

Extrinsic Motivation (X1)

Hypothesis testing aims to test whether the proposed hypothesis is accepted or rejected. The correlation coefficient test was carried out to determine the closeness of the relationship between the two variables using the product moment correlation formula from Pearson. Product moment correlation is denoted (r) with the condition that if the value of r count is less than r table, then Ho is accepted, and Hi is rejected. Conversely, if r count is greater than r table (r count > rtable), then H1 is accepted. The results of the correlation analysis of the analyzed data can be seen in Table 10.

Table 10. Summary of Correlation Coefficient Test

Variable	Correlation Coefficient	r table	Information
Extrinsic Motivation (X1)	0.611	0.207	H1 Accepted

From Table 10 above it is known that the correlation coefficient of the extrinsic motivation variable (X1) is 0.611 (61.1%). Thus it can be seen that the correlation coefficient of extrinsic motivation (X1) is greater than rtable = 0.207, it can be stated that H0 is rejected and H1 is accepted. So it means that there is a relationship between extrinsic motivation and learning outcomes in biology in class XI MIPA SMAN 1 Luhak Nan Duo.

Then a t test was performed to test the significance of the product moment correlation. If the price of tcount > ttable at the real level α = 0.05 then there is a significant relationship. The relationship is not significant if tcount < ttable. From the results of the t test conducted, the following results were obtained:

Table 11. Test Summary t

Variable	t count	t table	Information
Extrinsic Motivation (X1)	7,410	0.677	Significant Relationship

From the results of the t test calculation, the tcount value of the extrinsic motivation variable (X1) is 7.410, it can be seen that the tcount of learning motivation is greater than ttable = 0.677. This means that there is a significant relationship between motivation and biology learning outcomes in class XI MIPA students at SMAN 1 Luhak Nan Duo, West Pasaman Regency. To obtain information on the contribution of the independent variable (X) to the dependent variable (Y), the formula for the coefficient

of determination can be used. From the results of the calculation of the coefficient of determination carried out, the following results are obtained:

Table 12. Calculation of the Determination Coefficient

Variable	Percentage
Extrinsic Motivation	37.4%

From the data analyzed, the percentage of extrinsic motivation variable (X1) was 37.4%. So it can be stated that motivation contributes to biology learning outcomes in class XI MIPA students of SMAN 1 Luhak Nan Duo, West Pasaman Regency.

Intrinsic Motivation (X2)

Hypothesis testing aims to test whether the proposed hypothesis is accepted or rejected. The correlation coefficient test was carried out to determine the closeness of the relationship between the two variables using the product moment correlation formula from Pearson. Product moment correlation is denoted (r) with the condition that if the value of r count is less than r table, then Ho is accepted, and Hi is rejected. Conversely, if r count is greater than r table (r count > rtable), then H1 is accepted. The results of the correlation analysis of the analyzed data can be seen in Table 13.

Table 13. Summary of Correlation Coefficient Test Results

Variable	Correlation Coefficient	r table	Information
Intrinsic Motivation (X2)	0.505	0.207	H1 Accepted

From Table 31 above it is known that the correlation coefficient of the intrinsic motivation variable (X2) is 0.505 (50.5%). Thus it can be seen that the correlation coefficient of intrinsic motivation (X2) is greater than rtable = 0.207, it can be stated that H0 is rejected and H1 is accepted. So it means that there is a relationship between extrinsic motivation and learning outcomes in biology in class XI MIPA SMAN 1 Luhak Nan Duo.

Then a t test was performed to test the significance of the product moment correlation. If the price of tcount > ttable at the real level α = 0.05 then there is a significant relationship. The relationship is not significant if tcount < ttable. From the results of the t test conducted, the following results were obtained:

Table 14. Summary of Test Results t

Variable	t count	t table	Information
Intrinsic Motivation (X2)	5,618	0.677	Significant Relationship

From the results of the t test calculation, the tcount value of the intrinsic motivation variable (X2) is 5.618, it can be seen that the tcount of learning motivation is greater than ttable = 0.677. This means that there is a significant relationship between motivation and biology learning outcomes in class XI MIPA students at SMAN 1 Luhak Nan Duo, West Pasaman Regency. To obtain information on the contribution of the independent variable (X2) to the dependent variable (Y), the formula for the coefficient of determination can be used. From the results of the calculation of the coefficient of determination carried out, the following results are obtained:

Table 15. Calculation of the Determination Coefficient

Variable	Percentage
Intrinsic Motivation	25.5%

From the data analyzed, it was obtained that the percentage of intrinsic motivation variable (X2) was 25.5%. So it can be stated that motivation contributes to biology learning outcomes in class XI MIPA students of SMAN 1 Luhak Nan Duo, West Pasaman Regency.

Discussion

The research was conducted at SMAN 1 Luhak Nan Duo with a sample of 94 students from a total population of 126 students. Based on the results of the previous data analysis in the correlation test, the correlation coefficient of extrinsic motivation (X1) was 0.611 (61.1%) > 0.207, this stated that the correlation coefficient of extrinsic motivation (X1) was greater than r table. Likewise with intrinsic

motivation (X2) 0.505 greater than r table. So it can be concluded that HI is accepted because there is a relationship between extrinsic motivation and intrinsic motivation with biology learning outcomes in class XI MIPA students of SMAN 1 Luhak Nan Duo, West Pasaman Regency.

This can also be seen in the t test to see the significance of the relationship between the extrinsic motivation variable (X1) and the results obtained by tcount > ttable, namely 7.410 > 0.677 for the extrinsic motivation variable (X1), and intrinsic motivation (X2) with the results obtained by tcount > ttable, namely 5.618 > 0.677, so there is a significant relationship between intrinsic motivation and learning outcomes in biology in class XI MIPA SMAN 1 Luhak Nan Duo, West Pasaman Regency. This means that the lower the student's learning motivation, the lower the student's biology learning outcomes. However, if the extrinsic and intrinsic motivation of students in biology is high, then the results of students' biology learning will also be higher (Irmadora *et al,* 2020; Yonita *et al*, 2022; Wini, Nerita, & Sari, 2022). Explains that learning motivation can be an encouragement within students that creates learning activities, which strengthens the continuity of learning activities and directs learning activities so that the desired goals are achieved. If students have high learning motivation, students will have great energy to carry out learning activities (Sardiman, 2014; Handayani, 2017; Afzal, 2010)

Intrinsic motivation can be said to be an encouragement that comes from within a person to carry out learning activities in order to achieve the desired goals from the learning process he is doing. The impetus that drives it comes from necessity. Needs that contain the necessity to become an educated and knowledgeable person, so students who have intrinsic motivation will have a goal to become an educated, knowledgeable person and master the skills in their field. Meanwhile, extrinsic motivation is an encouragement that functions and is active because there are stimuli from the outside. Extrinsic motivation is also known as a form of motivation carried out because it wants to achieve goals that lie beyond the things it learns (Sardiman, 2014; Rahmi & Neviyarni, 2022; McCombs, Daniels, & Perry, 2008).

In line with that Damopolii (2017) said that motivation has a relationship with learning outcomes. Student learning outcomes will be good because they have strong motivation within them. Learning outcomes are very important to determine the extent to which the mastery of the material achieved by students includes cognitive, affective, and psychomotor abilities. High learning outcomes describe the success of students in learning. The research results also show that student learning motivation has a positive effect on biology learning activities (Irmadora, Djufri, & Pada, 2020; Firmansyah, Komala, Rusdi, 2018; Wulandari, 2021). Students who have high learning motivation will have the desire and encouragement to move to learn. Students who have the desire and drive to learn are caused by the existence of a need to be able to achieve high learning outcomes which is one of the guarantees to be able to complete the learning activities well (Maryam, 2016; Irsyad & Fauzi, 2020). Correlation analysis in this study was continued by calculating the coefficient of determination, from the data analyzed, the percentage of extrinsic motivation variable (X1) was 37.4%. This means that 37.4% extrinsic motivation and 25.5% intrinsic motivation means that intrinsic motivation contributes to students' biology learning outcomes (Y). Thus motivation greatly contributes to student biology learning outcomes in class XI MIPA students at SMAN 1 Luhak Nan Duo, West Pasaman Regency.

Motivation is an encouragement that comes from within and from outside a person to move to achieve their goals and needs. If a student wants to achieve his goal of getting good learning results, then a student will meet his needs by studying seriously. High learning motivation in students will get high learning outcomes, but conversely if student learning motivation is low then student learning outcomes are also low. Irsyad (2020) says that learning motivation will provide encouragement and foster students' enthusiasm to learn various things, especially biology lessons.

So with the motivation to learn, students will try more to study the lesson seriously in achieving the objectives of the subject. This research is in line with Damopolii's research (2017) which shows that learning motivation has a relationship and contributes to student biology learning outcomes. If the motivation to learn is high, the learning outcomes obtained will be even better. This is also in line with the results of Irsyad's research (2020) which states that there is a positive relationship between learning

motivation and students' biology learning outcomes. Motivation to learn with learning outcomes has a moderate level of correlation and the relationship between the two is positive, meaning that the higher the motivation to learn, the higher the learning outcomes will be.

4. Conclusion

Based on the results of the study, it can be concluded that the Pearson product moment correlation test were obtained at 0.611 (61.1%/) at extrinsic motivation and intrinsic motivation of 0.505 (50.5)%, meaning that there are quite strong relationship between extrinsic motivation and intrinsic motivation with outcomes learn biology in class XI MIPA SMAN 1 Luhak Nan Duo, Regency West Pasaman.

The results of the t test obtained the results of tcount extrinsic motivation of 7.410 and tcount of intrinsic motivation of 5.618 indicates that there is a significant relationship significant. Results The coefficient of determination of extrinsic motivation is 37.4% and intrinsic motivation of 25.5%, this means extrinsic motivation (X1) and motivation intrinsic (X2) contributes to students' biology learning outcomes (Y).

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