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## Analysis of students' motivation level for biology subject at SMA Muhammadiyah 1 Bantul

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### ABSTRACT

The learning process is closely related to learning motivation. Learning motivation is defined as an impulse that arises both from within and from outside the student to behave in achieving learning success. The existence of high learning motivation will make students become enthusiastic in learning so that they will easily get maximum learning results. Under different conditions with different subjects, student learning motivation can also produce different values. The purpose of this study was to determine the level of learning motivation of students in grade XI MIPA at SMA Muhammadiyah 1 Bantul towards Biology subject and to determine the learning motivation factor that most influences the learning motivation of students in grade XI MIPA at SMA Muhammadiyah 1 Bantul towards Biology subject. This research used quantitative method with survey research design. The research was conducted from August to September 2022 at SMA Muhammadiyah 1 Bantul. The sample in this study were 40 students of class XI MIPA SMA Muhammadiyah 1 Bantul. The data collection technique used a questionnaire. The findings in this study are the learning motivation of students in grade XI MIPA at SMA Muhammadiyah 1 Bantul towards Biology subject is in the medium category. When viewed by aspect, external factors have a higher percentage than aspects of internal factors.

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## Introduction

Biology is a science that studies everything related to life and living things, derived from the Greek, *bios* which means life and *logos* which means science. As a science that is in the science family, Biology does not only study facts or concepts, but also a discovery process based on curiosity that is systematically organized<sup>1</sup>. Furthermore, Ziraluo states that as a science, Biology can be identified through natural objects, phenomena that occur in nature, and

scientific processes in examining Biology concepts<sup>2</sup>. Therefore, in its development, Biology is taught with the aim of fostering scientific attitudes, developing experiences based on experiments and research, and developing analytical, inductive and deductive thinking skills based on scientific concepts and principles. To realize this goal, a learning process is needed.

The learning process produces output in the form of changes in individuals that involve several aspects, one of which is changes in learning behavior. Behavioral changes in learning include three aspects, Bloom states that these three aspects consist of cognitive, affective, and psychomotor domains<sup>3</sup>. Thus, a person is said to have experienced the learning process if there is an increase in behavior in terms of cognitive, affective, and psychomotor in that person. The learning process in Biology can be defined as the creation of conducive situations and conditions so that there is interaction between the student subject and the learning object in the form of living things and all aspects of life<sup>2</sup>. The learning process of students in studying Biology is certainly influenced by several factors, both internal factors from students and external factors such as the learning environment.

Preliminary study that has been conducted at SMA Muhammadiyah 1 Bantul shows the difficulty in learning Biology. This was expressed by several students who stated that the scope of Biology learning was very broad. This is supported by the opinion of Ziraluo who said that the challenge in learning Biology is the wide range of material<sup>2</sup>. This has an impact on students' seriousness and interest in learning which can be reduced. The results of the preliminary study in learning also stated this, it was found that the seriousness of most students in class XI MIPA at SMA Muhammadiyah 1 Bantul towards Biology was less visible.

The learning process is closely related to learning motivation. Learning motivation as an impetus that arises both from within and from outside the student to behave in achieving learning success<sup>4</sup>. The existence of high learning motivation will make students become enthusiastic in learning so that they will easily get maximum learning results, on the other hand, low motivation will make students lose their enthusiasm and passion for learning so that motivation must be instilled in students from an early age so that students feel happy in participating in every learning process without pressure and coercion. Learning motivation is not just an encouragement for students to know the learning process but also important to understand the results of the learning that has been done.

Motivation to learn starts with the goals that each individual wants to achieve. If the individual is determined to achieve the goals that have been set, motivation will consciously form in him. This will make individuals feel comfortable following learning, have high enthusiasm and be able to control emotions when facing learning difficulties. In contrast to individuals who do not understand the goals set, of course, motivation will not arise in themselves. So that in the learning process the individual only goes according to the demands given by the teacher and the environment. Learning motivation is a psychological factor that determines whether or not there is a drive from within the individual to achieve goals characterized by awareness in learning, high enthusiasm and attention to the learning process<sup>5</sup>.

The learning process, students' learning motivation in science is influenced by factors that come from within students and teachers<sup>6</sup>. Furthermore, the two factors are categorized as internal factors and external factors. Factors that come from students are included in the group of internal factors, including, among others, motivation to learn science, factors of student interest in science lessons, factors of student learning orientation or goals, and factors of student desire to learn more about nature. Factors from the teacher that are summarized in external factors, including the curriculum, teacher interaction with students and the learning model applied by the teacher. In line with the description above, Saputra, et al., also describe that student learning motivation is influenced by internal factors such as student ideals and aspirations, physical and spiritual conditions of students and student abilities, while external factors are environmental conditions, encouragement from teachers, and curriculum<sup>7</sup>.

Student motivation can be measured using instruments developed based on aspects of learning motivation. Research on the motivation of students in class XI IPA at SMA Negeri 1 Tanete Rilau with the results of student learning motivation towards Biology subjects statistically at a good level<sup>8</sup>. In line with these results, Daud found that student learning motivation at SMA Negeri 3 Palopo City was also at a high level of learning motivation<sup>9</sup>. However, another study conducted by Atmaja, et al., showed that students' learning motivation towards Biology subjects was at a moderate level<sup>10</sup>. Based on the description above, there are differences between the results of the two studies, this can be influenced by several factors such as differences in environmental conditions, differences in curriculum or differences in other conditions that cause student learning motivation in the two studies to be different. This shows that under different conditions with different subjects, student learning motivation towards Biology subjects can also produce different results.

Based on the description above, research is needed to determine the level of motivation of students in class XI MIPA at SMA Muhammadiyah 1 Bantul towards Biology. This is based on the factor of learning motivation plays an important role in the learning process, and the level of student learning motivation that has been known can be used as a teacher's guide in carrying out a better learning process. The purpose of this study was to determine the level of learning motivation of students in grade XI MIPA at SMA Muhammadiyah 1 Bantul towards Biology subject and to determine the learning motivation factor that most influences the learning motivation of students in grade XI MIPA at SMA Muhammadiyah 1 Bantul towards Biology subject.

## Method

This study uses quantitative methods with a survey research design. Survey research design is used to obtain data that describes the attitudes, behaviors, and characteristics of the population obtained through sample data analysis<sup>11</sup>. This research was conducted from August to September 2022 located at SMA Muhammadiyah 1 Bantul. The population in this study were all students at SMA Muhammadiyah 1 Bantul while the sample in this study were students in grade XI MIPA. The sample determination was carried out using purposive sampling technique and obtained as many as 40 students.

The data collection technique in this study was to use a questionnaire distributed to a predetermined sample. There are 36 items in the questionnaire consisting of 18 items for aspects of internal factors and 18 items for aspects of external factors. The scale on the questionnaire presented uses a Likert scale with a score of 1 if you strongly disagree with the statement on the item to a score of 5 if you strongly agree. Descriptive statistics were used in this study to determine the level of student learning motivation towards Biology subjects and used to determine the effect of internal factors and external factors on student learning motivation. The criteria for grouping the learning motivation of students in class XI MIPA SMA Muhammadiyah 1 Bantul towards Biology subjects are presented in table 1<sup>12</sup>.

Table 1. Criteria for Grouping Student Learning Motivation

Score Range	Category
$X > \underline{X} + SD$	High
$\underline{X} - SD \leq X \leq \underline{X} + SD$	Medium
$X < \underline{X} - SD$	Low

With X is the total value of respondents' answers to the questionnaire,  $\underline{X}$  is the average value of the total answers of respondents and SD is the standard deviation of the total answers of respondents. Based on the criteria for grouping the learning motivation of students in class

XI MIPA SMA Muhammadiyah 1 Bantul towards Biology above, the number of students with high, medium and low motivation levels can be determined.

## Results and Discussion

The questionnaire that was built must go through the validity and reliability testing stage first before being used as a research instrument. The item validity test uses the corrected item-total correlation value or the correlation between the value of the *i*-th item and the total value of all items, for a significant level of 5% with 40 students as respondents, the item is declared valid if the *r*-value exceeds 0.2573. There are 4 invalid items, namely item 1 and item 18 contained in internal factors as well as item 24 and item 39 contained in external factors. The invalid items cannot be reused as an instrument to measure and analyze the learning motivation of students in class XI MIPA at SMA Muhammadiyah 1 Bantul towards Biology subject.

After the items on the questionnaire are tested for validity, the questionnaire also needs to be tested for reliability. The questionnaire research instrument can be declared reliable if the Alpha Cronbach count value for each aspect in the instrument exceeds 0.60<sup>13</sup>. Furthermore, a reliability test was carried out to test whether the questionnaire was suitable for use as a research instrument or not. The Alpha Cronbach value for internal factors is 0.801 and the Alpha Cronbach value for external factors is 0.795. Both values are greater than 0.60 so that the questionnaire in this study can be declared reliable and feasible to use to measure and analyze the learning motivation of students in class XI MIPA at SMA Muhammadiyah 1 Bantul towards Biology subject.

To determine the level of learning motivation of students in class XI MIPA SMA Muhammadiyah 1 Bantul towards Biology subject, data is needed in the form of descriptive statistics of the total value of the questionnaire.

Table 2. Descriptive Statistics

Descriptive Statistics	Learning Motivation
Number of Samples	40
Minimum Value	126
Maximum Value	168
Average	146.5
Standard Deviation	9.359

Source: Data processed by researchers, 2022

After obtaining the amount of descriptive statistics regarding the learning motivation of students in class XI MIPA SMA Muhammadiyah 1 Bantul towards Biology subjects, calculations can be made based on table 1. So that a score range is obtained that can categorize students based on their motivation scores.

Table 3. Number of Students according to Student Motivation Grouping Criteria

Score Range	Number of Students	Category
$X > 155,859$	7	High
$137,141 \leq X \leq 155,859$	29	Medium
$X < \underline{X} - SD$	4	Low

Source: Data processed by researchers, 2022

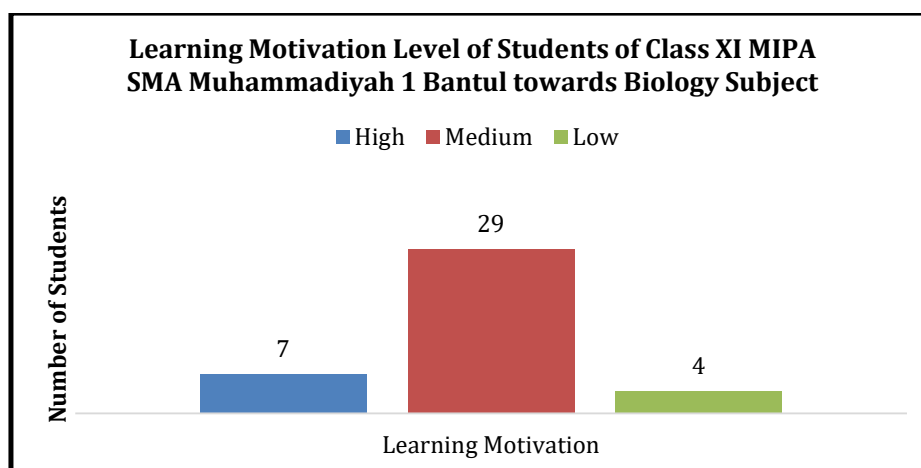


Fig 1. Learning Motivation Level of Students of Class XI MIPA SMA Muhammadiyah 1 Bantul towards Biology Subjects

The learning motivation measured in the study was influenced by internal factors and external factors. The percentage of internal factors and external factors is presented in graph 2.

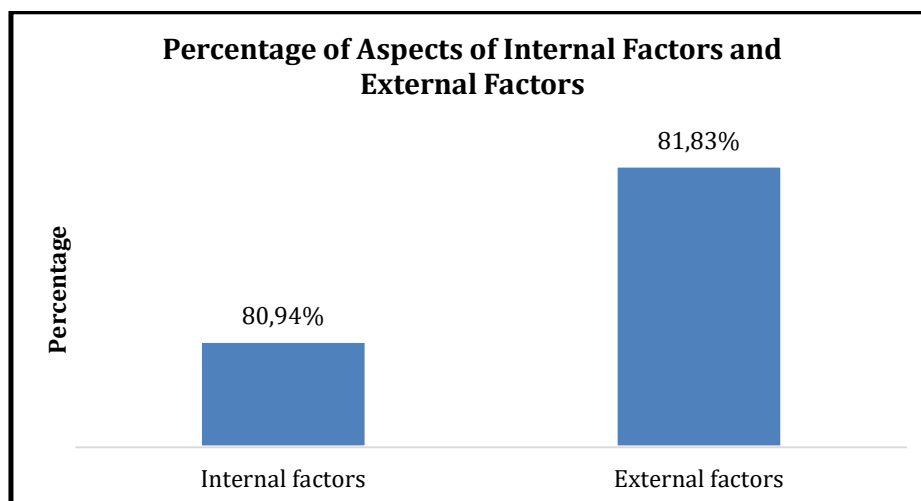


Fig 2. Percentage of Aspects of Internal Factors and External Factors

Learning motivation is one of the drivers of individual learning success. Each individual has different levels of motivation. Starting from very low learning motivation to very high learning motivation, it depends on each individual and their environment. To measure and analyze the learning motivation of students in class XI MIPA SMA Muhammadiyah 1 Bantul towards Biology subject, a questionnaire with 40 items with aspects of internal factors and external factors was used.

Learning motivation is one of the factors that cause success in educational programs. The higher the motivation of students in learning a particular teaching subject, the higher the chance of learning success. One of the objectives in this study was to determine the level of learning motivation of students in class XI MIPA at SMA Muhammadiyah 1 Bantul towards Biology. The process of measuring and analyzing student learning motivation can be through an approach to aspects of internal factors that come from students and external factors such as the relationship between students and teachers, the learning environment and curriculum.

Student learning motivation can be categorized into 3 groups, high, medium, and low learning motivation. The categorization of the three groups can be done by making a range of

values obtained from the operation of the mean and standard deviation<sup>12</sup>. The findings of this study show that the average learning motivation of students in class XI MIPA at SMA Muhammadiyah 1 Bantul towards Biology subject has a value of 146.5 and has a standard deviation value of 9.359. Furthermore, table 4 shows that student learning motivation falls into the high category if the value exceeds 155.859. The value of student learning motivation which is included in the moderate category has a value range between 137.141 to 155.859. Meanwhile, student learning motivation can be declared low if the value is less than 137.141.

The findings of this study indicate that most of the students of grade XI MIPA at SMA Muhammadiyah 1 Bantul fall into the moderate category. A total of 29 out of 40 samples representing the population of students of grade XI MIPA at SMA Muhammadiyah 1 Bantul fall into the category with moderate learning motivation. This finding is supported by the results of the preliminary study which shows that the seriousness of most students in grade XI MIPA at SMA Muhammadiyah 1 Bantul towards Biology is less visible. Research conducted by Atmaja, *et al.*, also shows results that reinforce the findings of this study, that student learning motivation in general towards Biology subjects is at a moderate level<sup>10</sup>. The results of measuring student learning motivation in the moderate category show that most students already have each of the indicators both internal and external that make them motivated. Furthermore, moderate learning motivation means that students have a positive desire, have high expectations but have low confidence that they are able to solve existing problems<sup>14</sup>. Motivation that is in the moderate stage can be increased to be more optimal through several ways, including maximizing the role of each indicator and factors that affect student learning motivation<sup>15</sup>.

Biology subjects are still considered difficult by some students. This can be seen from the research findings which show that there are still 4 students who have low learning motivation. These results are supported by the results of observations which show that students with low learning motivation look less enthusiastic when learning biology is taking place. In addition, students with low learning motivation results are also less focused on receiving lessons and are reluctant to solve problems related to Biology material completely. The preliminary study findings show that the difficulties experienced by students are due to the very broad scope of Biology material. In line with these findings, that Biology is one of the subjects that contains various Latin terms and complex material which sometimes makes students find it difficult to understand because biology has a broad scope, be it humans, animals or plants<sup>16</sup>. This means that to study Biology, students are required to be able to integrate all things in nature.

Student learning motivation in the high category was only found in 7 students out of 40 samples representing the population of students in class XI MIPA SMA Muhammadiyah 1 Bantul. This finding illustrates that only a small proportion of students are enthusiastic and have high learning motivation in learning Biology. The research findings of Taiyeb and Mukhlisa also show that only a small proportion of students in class XI IPA SMA Negeri 1 Tanete Rilau who have high motivation to learn Biology<sup>8</sup>. The conclusion was obtained from the results of the study which showed that there were only 9% of the total students with high Biology learning motivation.

Student learning motivation in this study is measured based on aspects of internal factors and external factors. This is in line with the opinion which states that student learning motivation is strongly influenced by external stimuli and from within themselves<sup>7,17,18</sup>. Based on graph 2, internal factors have a percentage of 80.94% and external factors have a percentage of 81.83%. Internal factors in this study include 2 aspects, namely physiological (physical) and psychological (spiritual) aspects. The focus on psychological aspects that affect student learning includes aspects of students' ability to understand lessons, student attitudes, student interests and goals, and student perceptions. Internal student factors which include physiological and psychological aspects greatly affect student learning activities<sup>19</sup>. Most of the students in class XI MIPA SMA Muhammadiyah 1 Bantul have a considerable interest in

learning due to their aspirations related to Biology subjects. This is based on the results of the questionnaire on items that refer to students' interests and aspirations have a higher total value compared to other items. On the other hand, aspects of internal factors such as students' ability to understand lessons in class XI MIPA SMA Muhammadiyah 1 Bantul are not so good. This is based on the preliminary study findings that most students still find it difficult to learn Biology because the scope of the material is very broad. This is supported by the opinion of Ziraluo who said that the challenge in learning Biology is the wide coverage of material<sup>2</sup>.

External factors such as the relationship between students and teachers, learning environment and curriculum have slightly higher scores than internal factors. This is due to the good relationship between teachers and students during learning so that students feel more interested in learning. Teachers as educators have a huge influence in building student learning motivation<sup>18</sup>. By creating learning conditions that are conducive, creative and not monotonous can help teachers attract students' attention. On the other hand, the learning environment and adequate curriculum at SMA Muhammadiyah 1 Bantul also influence this finding. This is in accordance with the opinion which states that a conducive learning environment that supports the creation of interesting learning can increase students' extrinsic motivation in learning in class<sup>5</sup>.

Internal factors have a smaller influence on the learning motivation of students in class XI MIPA SMA Muhammadiyah 1 Bantul towards Biology subject. This finding can be used as a basis for teachers to focus more on building student learning motivation from the aspect of internal factors. In line with the description above, that building intrinsic motivation in students will be better than extrinsic motivation<sup>17</sup>. With intrinsic motivation, students learn because of their sincerity, so that positive results will appear and the results of their learning efforts. Teachers in their efforts to increase learning motivation can be done by giving numbers, prizes, rivals or competition, ego-involvement, giving tests, knowing the results, praise, punishment, desire to learn, interest, and recognized goals<sup>20</sup>.

## Conclusion

Based on the results and discussion in the study, it was found that the learning motivation of students in class XI MIPA SMA Muhammadiyah 1 Bantul towards Biology was in the moderate category. The average student learning motivation in the moderate category is caused by the lack of student interest and interest in learning Biology. When viewed by aspect, external factors have a higher percentage than aspects of internal factors. This supports the research findings that learning motivation factors arising from within students such as interest are still not optimal.

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