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The Relationship Between Motivation to Learn Biology and Discipline With Students' Cognitive Learning Outcomes During Online Learning

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ABSTRACT

Biology learning and teaching process become more challenging during the Covid-19 pandemic since it is done online. The learning outcomes of the biology lesson during online learning are important for students' academic achievement. Motivation to learn biology and discipline of students are factors that can influence students' learning outcomes during online learning. This study aims to determine the correlation between motivation to learn biology and discipline with students' cognitive learning outcomes during online learning. The research was conducted in February to June 2021 using a descriptive quantitative method with correlational study technique. The sample used was 179 students of grade X MIPA who were selected through simple random sampling technique. The data was collected by survey technique using motivation to learn biology questionnaire, discipline in learning biology during online learning questionnaire, and multiple-choice tests of cognitive learning outcomes. The research results showed that there is a positive correlation between motivation to learn biology with students' cognitive learning outcomes, a positive correlation between discipline in learning biology during online learning with students' cognitive learning outcomes, and a positive correlation between motivation to learn biology and discipline in learning biology during online learning with students' cognitive learning outcomes.

Keywords: Biology, Covid-19, Discipline in Learning, Motivation to Learn, Online Learning

Introduction

The learning system has changed due to the Covid-19 pandemic. In accordance with the government policies to reduce the rate of Covid-19 transmission, the learning system, which was originally based on face-to-face, was changed to an online learning system (Winaya, 2020; Wulandari et al., 2020). Online learning is learning that uses technology to connect students with their learning resources that are physically separated but can still communicate, interact, or collaborate directly or indirectly (Arizona et al., 2020). Online learning is defined as learning that connects teachers and students using web-based technology (Lee, 2017; Moore et al., 2011; Ryan et al., 2016).

Online learning that takes place at home is different from normal learning that takes place at school (Sudarsana, 2020). Normal learning at school takes place face-to-face and teachers can supervise students directly. Online learning at home takes place remotely and there is a lack of supervision from the teacher (Pakpahan & Fitriani, 2020; Rigianti, 2020). During learning at home, many students do not use online learning media properly, students attend only at the beginning of learning, literacy awareness and students' concern for collecting assignments are reduced (Asmuni, 2020). Students are not enthusiastic to learn, feel bored, and play more during online learning (Anggianita et al., 2020; Pawicara & Conilie, 2020).

Studying at home without being physically accompanied by the teacher may possibly make the students do not understand the material and assignments given (Asmuni, 2020; Basar, 2021; Kusumawati, 2020). Many of the assignments submitted are not in accordance with the instructions given by the teacher (Trisnadewi & Muliani, 2020). Research conducted by Elianur (2020) showed that as many as 94.1% of teachers stated that online learning was not effective and only 5.9% of teachers stated that online learning was effective. The reason is, during online learning, the material explained by the teacher is not clear, students are not focusing on the learning process because they are playing with cellphones, and there is a lack of interaction between teachers and students (Basar, 2021; Mustakim, 2020; Purwanto et al., 2020; Setyorini, 2020).

Changes in the learning system have an impact on student learning outcomes in learning (Aji, 2020). Students' learning outcomes tend to decline during online learning (Amri et al., 2020; Pasaribu et al., 2021). Research conducted by Susanto (2020) shows that during online learning, students' enthusiasm for learning has decreased as indicated by decreased student learning outcomes and students are not disciplined in collecting assignments. Research conducted by Utami & Cahyono (2020) shows that during online learning, the learning outcomes achieved by students are low because learning with an online system is not easy compared to normal face-to-face learning. Learning outcomes play an important role in the learning process and as an indicator of learning success (Latief & Jamil, 2017; Rosyida et al., 2016; Sembiring et al., 2018; Siregar, 2012).

Discipline is one of the factors that determine student success in learning (Gorbunovs et al., 2016; Saputro & Pardiman, 2012). The achievement of good learning outcomes is not only affected by the level of intelligence but also supported by strict and consistent school discipline, individual discipline in learning, and good behavior (Tu'u, 2004). Discipline in learning is important to be implanted in every student. Students who have high learning discipline will achieve success in their academics (Fiana et al., 2013; Mulyasih & Suryani, 2016).

Other factors that can influence student success in learning are motivation (Fath, 2015; Elly, 2016; Indrianti et al., 2018). Motivation is defined as the process of initiating, guiding, and nurturing goal-oriented behaviors. Motivation leads individuals to take action to achieve goals, fulfill needs, or expectations (Gopalan et al., 2017). Motivation is a conscious effort to move, direct, and maintain a person's behavior to be compelled to do something to achieve a certain goal (Purwanto, 2004). Motivation to learn plays a very important role for students and

teachers (Sjukur, 2013). Students who have strong motivation will be enthusiastic in carrying out learning activities so that the learning outcomes obtained will be optimal (Sulfemi, 2018).

The online learning system cannot fully meet the learning needs in some subjects, one of which is biology. Biology is a subject that requires direct learning experience in its learning activities. Learning biology does not only include theory, but also includes field practice. Biology learning requires a thorough and in-depth understanding of the material (Jayawardana, 2017).

Learning biology online has become a learning challenge during the Covid-19 pandemic. Research conducted by Jayawardana & Gita (2020) states that biology learning is still considered as a difficult learning by most students because of the complex material and there is Latin in it. Research conducted by Selvianus et al., (2013) states that biology learning is considered scary and difficult to understand by most students because there is a scientific language that will impact on low motivation and student learning outcomes.

Student learning outcomes in online biology learning is important for student academic achievement. The discipline and students' motivation to learn biology during online learning can encourage students to achieve good learning outcomes. Learning objectives can be achieved with discipline and motivation (Gorbunovs et al., 2016). Learning outcomes are one of the learning goals that students want to achieve (Nasution, 2017). Research conducted by Haryono (2016) states that both discipline and motivation affect student learning achievement. Students who have high discipline and motivation will obtain a well learning outcomes.

The research on motivation, discipline, and learning outcomes have been conducted by Arens et al., (2015), Manazila & Purwanti (2017) and Dewi et al., (2019). The results showed that there was a positive relationship between motivation and discipline with student learning outcomes. The higher motivation and discipline that students have, the higher learning outcomes obtained by students. The difference between this research and the previous research is that this research is focused on an online biology learning. This study aims to determine the relationship between motivation to learn biology and discipline with students' cognitive learning outcomes during online learning. The research results are expected to provide information and as a literature reference for further research on motivation, discipline, and student learning outcomes in an online biology learning.

Methods

The research was conducted in February to June 2021. This study has three variables, which are motivation to learn biology as variable X_1, discipline in learning biology during online learning as variable X_2, and cognitive learning outcomes as variable Y. The method used is a quantitative descriptive method with correlational study techniques that aim to determine the relationship between variables X_1 and X_2 with Y.

The target population of this study is all students in the research location. The reachable population is the students of class X MIPA who are selected through purposive sampling techniques. The research sample was taken using a simple random sampling technique with a total sample of 179 students from 324 students based on calculations of the Taro Yamane formula.

The data was collected by survey technique using motivation to learn biology questionnaire, discipline in learning biology during online learning questionnaire, and multiple-choice tests of cognitive learning outcomes to measure students' cognitive learning outcomes. The research instruments were given to respondents via Google form.

The research instruments consisted of cognitive learning outcomes instrument, motivation to learn biology instrument, and discipline in learning biology during online learning instrument. Cognitive learning outcomes instrument was made based on basic competencies 3.10. ecological material which can be seen in Table 1.

Table 1. Cognitive Learning Outcomes Indicators

Basic Competencies	Learning Indicators
3.10. Analyzing the components of an ecosystem and the interactions between these components	Ecosystem Components
	Interactions Between Ecosystem Components
	Energy Flow
	Biogeochemical Cycle

Motivation to learn biology instrument was made based on the Science Motivation Questionnaire (SMQ) developed by Glynn et al. (2009), then modified by researchers into Biology Motivation Questionnaire (BMQ) which can be seen in Table 2.

Table 2. Motivation to Learn Biology Components

Components
Intrinsic motivation and Personal relevance in learning biology
Self-efficacy and Assessment anxiety in biology learning
Self-determination in learning biology
Career motivation in learning biology
Grade motivation in biology learning

Discipline in learning biology during online learning instrument was made based on the component of discipline proposed by Damrongpanit (2019) which can be seen in Table 3.

Table 3. Discipline in Learning Biology During Online Learning Components

Components	Indicators
Responsibility (RES)	Success in completing tasks
	Attention in learning activities
	Preparation in studying
	Participation in learning activities
	Punctuality
Honesty (HON)	Acceptance of consequences
	Not cheating
Compliance with regulations (COM)	Compliance with school rules and regulations
Patience, determination, and intention (PAT)	Effort in completing tasks
	Effort in learning
	Self-control

The validity of the cognitive learning outcomes instrument was tested using Biserial Point ($\alpha = 0.05$) and reliability was calculated using Kuder Richardson (KR-20) ($\alpha = 0.05$). The results of the validity test on 50 items obtained 33 valid items and 17 invalid items. The results of the reliability test obtained a coefficient value of 0.731> 0.05, which means that the results of cognitive learning instruments are reliable. The motivation to learn biology instruments and discipline in learning biology during online learning instruments were tested for validity using Pearson Product Moment ($\alpha = 0.05$) and reliability was calculated using Cronbach's Alpha ($\alpha = 0.05$). The results of the validity test on 40 statement items of motivation to learn biology instrument obtained 37 valid statements and 3 invalid statements. The results of the reliability test obtained a coefficient value of 0.912> 0.05, which means that motivation to learn biology instrument is reliable. The results of the validity test on 40 statement items of discipline

in learning biology during online learning instrument obtained 39 valid statements and 1 invalid statements. The results of the reliability test obtained a coefficient value of 0.888> 0.05, which means that the discipline in learning biology during online learning instrument is reliable.

Data analysis techniques are carried out with descriptive tests, analysis prerequisite tests, and hypothesis tests. The analysis prerequisite test consists of a normality test and a homogeneity test. The normality test uses the Kolmogorov-Smirnov test (α = 0.05) and the homogeneity test uses the Bartlett test (α = 0.05). The first and second hypothesis tests include a simple linear regression analysis test (α = 0.05) and a Pearson Product Moment correlation test (α = 0.05). The third hypothesis test includes multiple regression analysis test (α = 0.05) and Pearson Product Moment multiple correlation test (α = 0.05).

Results and Discussion

Results

Based on the calculation results, the data description of students' cognitive learning outcomes can be seen in Table 4.

Table 4. Statistics Description of Students' Cognitive Learning Outcomes

Description	Score
Minimum	68
Maximum	100
Total	15476
Average	86
Standard Deviation	7
Variance	50

Based on the interpretation criteria according to Arikunto (2013) there are two criteria of cognitive learning outcomes in 179 students, which are very high amounted to 138 students (77%) and high amounted to 41 students (23%). Interpretation criteria of students' cognitive learning outcomes can be seen in Table 5.

Table 5. Interpretation of Students' Cognitive Learning Outcomes

Score	Criteria	Amount	Percentage (%)
81–100	Very High	138	77
61–80	High	41	23
41–60	Quite High	0	0
21–40	Low	0	0
0–20	Very Low	0	0

Based on the calculation results, the of students' motivation to learn biology can be seen in Table 6.

Table 6. Statistics Description of Students' Motivation to Learn Biology

Description	Score
Minimum	51
Maximum	92
Total	13032
Average	73

Description	Score
Standard Deviation	9
Variance	77

Based on the interpretation criteria according to Arikunto (2013) there are three criteria of motivation to learn biology in 179 students, which are very high amounted to 37 students (21%); high amounted to 130 students (72%); and quite high amounted to 12 students (7%). Interpretation criteria of students' motivation to learn biology can be seen in Table 7.

Table 7. Interpretation of Students' Motivation to Learn Biology

Score	Criteria	Amount	Percentage (%)
81–100	Very High	37	21
61–80	High	130	72
41–60	Quite High	12	7
21–40	Low	0	0
0–20	Very Low	0	0

Based on the calculation results, the description of the students' discipline in learning biology during online learning can be seen in Table 8.

Table 8. Statistics Description of Students' Discipline in Learning Biology Online

Description	Score
Minimum	57
Maximum	96
Total	13595
Average	76
Standard deviation	8
Variance	62

Based on the interpretation criteria according to Arikunto (2013) there are three criteria of students' discipline in learning biology online in 179 students, which are very high amounted to 48 students (27%); high amounted to 127 students (71%); and quite high amounted to 4 students (2%). Interpretation criteria of the students' discipline in learning biology online can be seen in Table 9.

Table 9. Interpretation of Students' Discipline in Learning Biology Online

Score	Criteria	Amount	Percentage (%)
81–100	Very High	48	27
61–80	High	127	71
41–60	Quite High	4	2
21–40	Low	0	0
0–20	Very Low	0	0

Statistical Hypothesis Test

1. **Relationship between Motivation to Learn Biology with Students' Cognitive Learning Outcomes**

Based on the results of the simple linear regression model test, obtained a significance result (p) = 0.020 <0.05, so it can be concluded that the regression model is significant. The regression equation model formed is = 76.223 + 0.141X1, for the motivation to learn biology (X_1) and

students' cognitive learning outcomes (Y). The relationship between motivation to learn biology with students' cognitive learning outcomes can be seen in Figure 1.
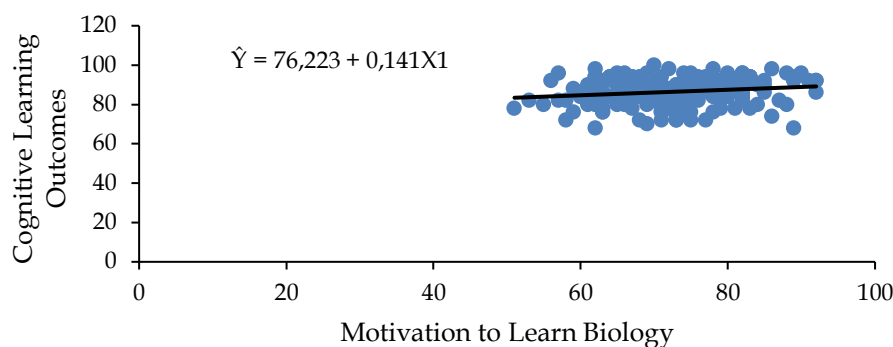

Figure 1. Simple Linear Regression Model of Relationship between Motivation to Learn Biology with Students' Cognitive Learning Outcomes

Figure 1. shows that each addition of one score of motivation to learn biology (X_1) will increase the score of students' cognitive learning outcomes (Y) by 0.141 at a constant 76.223. Based on the results of the linearity test, obtained a significance value (p) = 0.905 > 0.05, which means that there is a linear relationship between motivation to learn biology (X_1) with students' cognitive learning outcomes (Y). This shows that every increase in the variable of motivation to learn biology (X_1) will also cause an increase in the variable of students' cognitive learning outcomes (Y).

Based on the results of the correlation test, obtained a significance value (p) = 0.020 < 0.05, which means that there is a positive relationship between motivation to learn biology with students' cognitive learning outcomes. Based on the calculation, the correlation coefficient value (rx1y) is 0.174, which means that the strength of the relationship between motivation to learn biology with students' cognitive learning outcomes is included in the very low criteria. The coefficient of determination is 0.030, which means that motivation to learn biology contributes 3% to students' cognitive learning outcomes.

2. Relationship between Discipline in Learning Biology Online with Students' Cognitive Learning Outcomes

Based on the results of the simple linear regression model test, obtained a significance value (p) = 0.025 < 0.05, so it can be concluded that the regression model is significant. The regression equation model formed is = 75,063 + 0.150X2, for the discipline in learning biology online (X2) and students' cognitive learning outcomes (Y). The relationship between the discipline in learning biology online with students' cognitive learning outcomes can be seen in Figure 2.
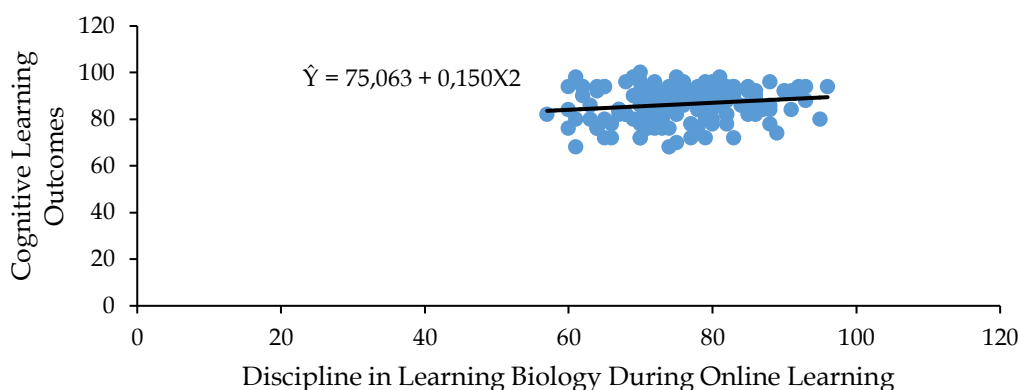

Figure 2. Simple Linear Regression Model of Relationship between Discipline in Learning Biology Online with Students' Cognitive Learning Outcomes

Figure 2. shows that each addition of one score of discipline in learning biology online (X_2) will increase the score of students' cognitive learning outcomes (Y) by 0.150 at a constant 75.063. Based on the results of the linearity test, obtained a significance value (p) = 0.716> 0.05, which means that there is a linear relationship between discipline in learning biology online (X2) with students' cognitive learning outcomes (Y). This shows that every increase in the variable of discipline in learning biology online (X_2) will also cause an increase in the variable of students' cognitive learning outcomes (Y).

Based on the results of the correlation test, obtained a significance value (p) = 0.025 <0.05, which means that there is a positive relationship between discipline in learning biology online with students' cognitive learning outcomes. Based on the calculation, the correlation coefficient value (rx2y) is 0.167, which means the strength of the relationship between discipline in learning biology online with students' cognitive learning outcomes is included in the very low criteria. The coefficient of determination is 0.028, which means that discipline in learning biology online contributes 2.8% to students' cognitive learning outcomes.

3. Relationship between Motivation to Learn Biology and Discipline in Learning Biology Online with Students' Cognitive Learning Outcomes

Based on the results of the multiple linear regression model test, obtained a significance value (p) = 0.046 <0.05, so it can be concluded that the regression model is significant. The regression equation model formed is = 73.763 + 0.090X1 + 0.081X2, for motivation to learn biology (X1), discipline in learning biology during online learning (X2), and students' cognitive learning outcomes (Y).

Based on the multiple linear regression equation model formed, it shows that each addition of one score of motivation to learn biology will increase the score of students' cognitive learning outcomes by 0.090 at a constant 73,763, and each addition of one score of discipline in learning biology online, will increase the score of students' cognitive learning outcomes by 0.081 at a constant 73,763.

Based on the results of the correlation test, obtained a significance value (p) = 0.020 <0.05 for the relationship between motivation to learn biology with students' cognitive learning outcomes, and a significance value (p) = 0.025 <0.05 for the relationship between discipline in learning biology online with students' cognitive learning outcomes, so it can be concluded that there is a positive relationship between motivation to learn biology and discipline in learning biology online with students' cognitive learning outcomes.

Based on the calculation, the correlation coefficient value (rx1x2y) is 0.185, which means that the strength of the relationship between motivation to learn biology and discipline in learning biology online with students' cognitive learning outcomes is included in the very low criteria. The coefficient of determination is 0.034, which means that both motivation to learn biology and discipline in learning biology online contribute 3.4% to students' cognitive learning outcomes.

Discussion

Based on the first hypothesis testing, the results show that there is a positive relationship between motivation to learn biology with student cognitive learning outcomes. The result shows that the relationship between motivation to learn biology with students' cognitive learning outcomes is very low. The results of this study are not much different from the results of Susanto's research (2016) which obtained a correlation coefficient value of 0.168, which means the relationship between motivation with student learning outcomes is very low.

The relationship between motivation to learn biology with students' cognitive learning outcomes shows a positive relationship, which means the higher motivation to learn biology students have, the higher cognitive learning outcomes obtained. This is in accordance with the statement by Liu et al., (2012); Münz, et al., (2007) that the motivation has an influence on a

person's learning outcomes. High motivation can improve the learning outcomes obtained by a person. Research results of Ismaïl et al., (2020); Utari & Widodo (2018) conclude that learning motivation has a positive and significant effect on the learning achievement. The better learning motivation the students have, the better learning achievements students will achieve.

The coefficient of determination obtained is not much different from the results of Susanto's research (2016) which obtained a coefficient of determination of 0.028, which means that motivation contributes 2.8% to the student learning outcomes, while 97.2% is related to other factors. The low value of the coefficient of determination is because the motivation to learn biology is not the main internal factors that affect students' cognitive learning outcomes. Dalyono (2015) states that there are several internal factors and external factors that can affect student learning outcomes. These internal factors include health, intelligence, talents, interests, motivation, and student's learning style, whereas the external factors are family, school, community, and the surrounding environment. Therefore, students' cognitive learning outcomes can be influenced by many factors other than motivation. These factors are students' conditions, students' abilities, talents, interests, student's learning style, family environment, school environment, and community environment.

The students' motivation to learn biology tends to be high because the students of class X MIPA in the research location have an interest and concern in learning biology. By having an interest and concern to begin with, it will bring up motivation for students to learn biology. This is in accordance with the statement of Tomlinson & McTighe (2006) that interest can affect students' learning motivation. Supriyatin et al. (2017) also stated that interest in learning is one of the intrinsic factors that can affect students' learning motivation. In addition, having the learning needs and the aspirations or desire of students to succeed can be increasing the students' motivation to learn biology. This is in line with the statement by Lestari (2014) that indicators of learning motivation are the motivation and need to learn, showing attention and interest in the tasks given, being diligent in doing assignments, being tenacious in the face of difficulties, and having a desire to succeed. Family support, the teacher's efforts in teaching students, the abilities of the students, and the condition of the students can also be factors of students' high motivation to learn biology. This is as stated by Kompri (2016) that there are several elements that influence motivation in learning, such as students' goals and aspirations, students' abilities, students conditions, and students' environmental conditions. The student's environmental conditions are in the form of family environment, school environment, and community environment.

Based on the second hypothesis testing, the results show that there is a positive relationship between discipline in learning biology online with students' cognitive learning outcomes. The results show that the relationship between discipline in learning biology during online learning with students' cognitive learning outcomes is very low. The results of this study are not much different from the results of Dianah's (2017) research which obtained a correlation coefficient value of 0.353, which means that the relationship between learning discipline with the student learning outcomes is very low. The relationship between discipline in learning biology online and students' cognitive learning outcomes shows a positive relationship, meaning that the higher student's discipline in learning biology online, the higher cognitive learning outcomes obtained. The results of this study are in accordance with the statement by Gorbunovs et al. (2016) that discipline is one of the important factors that can affect student learning outcomes and enable students to achieve their learning goals. Research conducted by Sulfemi (2018) obtained the results that there is a positive and significant relationship between discipline with learning outcomes. Students who have a high discipline attitude will have high learning outcomes as well. The research of Dewi et al., (2019) also obtained the same result that there is a significant relationship between learning discipline with student learning outcomes. The higher student's learning discipline, the higher student's learning outcomes. Discipline is a form of student obedience which is characterized by good

attitudes and behavior, obeying rules and regulations, as well as controlling and self-regulating in order to achieve success. Students who have a self-discipline will be able to manage their lives and train their personalities so that they will succeed.

The coefficient of determination obtained is not much different from the results of Dianah's (2017) research which obtained a coefficient of determination of 0.125 which means that learning discipline contributes 12.5% to student learning outcomes, while 87.5% relates to other factors. The low value of the coefficient of determination is because the motivation to learn biology is not the main internal factors that affect students' cognitive learning outcomes. Syafi'i et al., (2018) mentions that there are several internal and external factors that can affect student learning outcomes. The internal factors include physical and psychological factors, whereas the external factors include family conditions, school conditions, and community environmental conditions. Therefore, there are many factors that may affect students' cognitive learning outcomes other than discipline. These factors consist of internal factors, which are the factors that come from within students, such as students' conditions, student's psychology, physical and psychological maturity of the students, and external factors, which are the factors that come from outside the students, such as the family, school, and community environment.

Students' discipline in learning biology online tends to be high, indicating that class X MIPA in the research location obeys the rules and regulations in learning biology online, behave well in learning, and able to control and organize themselves in learning to achieve academic success. The students have an awareness of their responsibilities in learning and the importance of discipline in their lives. The students have been able to complete assignments on time, able to pay attention to learning well, active in learning, present on time, able to accept consequences, honest, and try to complete assignments well. This is in accordance with the theory by Sobri & Moerdiyanto (2014) that the student's learning discipline can be seen from 3 aspects, which are: 1) Discipline, including being on time, not leaving the class during learning process, and asking for permission when leaving the class, 2) Ability to self-control, including collecting assignments on time, calm during the learning process, and being honest, and 3) Ability to concentrate, including doing assignments well, paying attention to the teacher's explanations, and being active in learning activities.

Based on the third hypothesis testing, the results show that there is a positive relationship between motivation to learn biology and discipline in learning biology online with students' cognitive learning outcomes. The result shows that the relationship between motivation to learn biology and discipline in learning biology online with students' cognitive learning outcomes is very low. The relationship between motivation to learn biology and discipline in learning biology online with students' cognitive learning outcomes shows a positive relationship, meaning that the better motivation to learn biology and discipline in learning biology online, the better cognitive learning outcomes of students. These results are in line with research conducted by Dewi et al., (2019) regarding the contribution of learning discipline and achievement motivation to mathematics learning outcomes. The results show that there is a significant relationship between learning discipline and achievement motivation with students' mathematics learning outcomes. The higher learning discipline and achievement motivation the students have, the higher mathematics learning outcomes obtained.

The coefficient of determination obtained is low because there are other factors that affect students' cognitive learning outcomes other than motivation to learn biology and discipline in learning biology online. Pangondian et al., (2019) suggests three things that can be a factor that influence student learning success in online learning, which is: 1) Technology, an adequate network will facilitate student access in learning, 2) Characteristics of teachers, teachers who have a positive nature and understand technology will make the learning process more positive, 3) Characteristics of students, students who are smart, disciplined, and have high self-confidence will be able to achieve learning success in online learning. Mahadiraja & Syamsuarnis (2020) stated that the factors that can affect the student's learning outcomes consist of educators, facilities and infrastructure, as well as teaching materials or learning media. Therefore, the cognitive learning outcomes obtained by students can be influenced by other factors such as technology or infrastructure, teachers' characteristics, students' intelligence, teaching materials, and learning media.

The coefficient of determination of the relationship between motivation to learn biology and discipline in learning biology online with students' cognitive learning outcomes obtained a greater value rather than the coefficient of determination only the relationship between motivation to learn biology with students' cognitive learning outcomes, or only the relationship between discipline in learning biology online with students' cognitive learning outcomes. This shows that the students' motivation to learn biology supported by students' discipline in learning biology online contributes more and influences students' cognitive learning outcomes. This is proven by the cognitive learning outcomes obtained by students tend to be high. The high cognitive learning outcomes of students indicate that students have a good mastery of the learning material taught. Students are able to understand and analyze ecological material well. In addition, the high cognitive learning outcomes obtained by the students are also affected by the contribution of students' motivation to learn biology and students' discipline in learning biology online. This is in line with the statement of Gorbunovs, Kapenieks & Cakula (2016) that the learning objectives can be achieved with discipline and motivation. Students who have a good motivation to learn biology as well as discipline in learning biology online will be able to improve students' cognitive learning outcomes.

Conclusion

Based on the results of the study, it can be concluded that there is a positive relationship between motivation to learn biology with students' cognitive learning outcomes, there is a positive relationship between discipline in learning biology online with students' cognitive learning outcomes, and there is a positive relationship between motivation to learn biology and discipline in learning biology online with students' cognitive learning outcomes.

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