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Analysis of the Relationship between Biology Students' Learning Motivation and Online Learning

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Abstract

Motivation to learn is an internal process that becomes one of the drivers for students to engage and direct themselves in the learning process to achieve results. To engage and direct themselves in the learning process to achieve the desired results. This study aims to analyze the relationship between biology students' learning motivation and online learning at one of the universities in Banten, Indonesia. This research uses a descriptive correlation method through a questionnaire filling approach. The collected data were analyzed using SPSS software. The significance value of online learning and student learning motivation shows, Sig. > 0.05 = Ho accepted = no difference = online learning data on learning motivation. The results of this study indicate a significant relationship between online learning and student learning motivation. This research has some limitations, such as time constraints, as well as the representation of respondents who may not cover the entire student population.

Keywords: Learning motivation, Online learning, Biology students, Correlation test

INTRODUCTION

Indonesia, as a developing country, often faces many obstacles in implementing online learning. According to Sukmawati *et al*. (2023), explained that most of the online learning implemented has not achieved the expected results. This can be seen in research conducted by (Surahman 2020; Irawan *et al*., 2020; Mirawati *et al*., 2020), showing that there is still student dissatisfaction with online learning, boredom, and decreased interest in learning, as well as discomfort due to the large number of assignments given and material that is not comprehensive. This problem can adversely affect the learning process. Research by Saputra *et al*. (2024) also revealed that students' low participation in online classes is caused by technical problems, social isolation, and heavy task loads that reduce their engagement in the learning process. In addition, Fawa'ida *et al.* (2023) emphasized that low student engagement in e-learning is caused by a lack of direct interaction, low teacher technological competence, and a lack of learning design that can affect student satisfaction and participation.

Online learning has become a major component in the modern education system, especially since the COVID-19 pandemic hit the world in early 2020. This shows that the COVID-19 pandemic has become the main driver in the massive implementation of online learning at various levels of education (Rahiem, 2020). This learning method relies on information and communication technology to provide flexible and accessible access to education from various locations. According to a study by Hodges *et al.* (2020), online learning

offers various advantages such as flexibility of time and place, but also presents challenges in terms of student engagement and motivation. Riyadi & Sudiyatno (2023) stated that students' learning motivation decreases during online learning due to inadequate facilities, poor internet connection, boredom, and changes in teaching methods that emphasize individual tasks. This is reinforced by Amin & Shahnaz's research (2022) which notes that although project-based learning methods in online classes provide benefits in increasing engagement and understanding, challenges such as distance limitations, technical problems, and virtual fatigue remain significant barriers to the success of online learning. In line with the study conducted by Allam *et al.* (2020) although students' information and communication literacy is at a high level, learning motivation in the context of online learning is still relatively low.

Universities in Banten, Indonesia, are also implementing online learning systems in response to the needs of education in the digital era. This study focuses on Biology Education 4th semester 2022 students, who are experiencing the transition from face-to-face to fully online learning. The effectiveness of online learning relies heavily on adaptive curriculum design and the use of appropriate technology to support interaction between lecturers and students.

Motivation to learn is a key factor affecting students' academic success. This is in line with Hadiapurwa *et al.* (2021) that motivation is a crucial factor in encouraging optimal learning. In addition, intrinsic and extrinsic motivation play an important role in determining the extent to which students engage in the learning process. In the context of online learning, factors such as social interaction, availability of learning resources, and support from instructors can influence the level of student motivation. Research by González *et al*. (2020), shows that although online learning can increase accessibility and flexibility, the lack of face-to-face interaction can reduce the learning motivation of some students. This is supported by Omar *et al.* (2021), who stated that although Indonesian students show high academic motivation in English online classes, they still face challenges such as online distractions, lack of direct interaction, and difficulties in time management that affect the effectiveness of online learning. In addition, Kenedi & Astuti (2021) also showed that students in Jakarta experienced a decrease in learning motivation during the COVID-19 pandemic due to boredom, lack of focus, and technical disruptions such as unstable internet connections and accumulated tasks. This study aims to evaluate and understand the effect of online learning on the learning motivation of 4th semester Biology Education students class of 2022.

By exploring the factors that influence motivation levels in the context of online learning, this research is expected to provide deeper insights into the effectiveness of online learning

methods and how they affect students' passion for learning. The results of this research will help in designing more adaptive and supportive learning strategies to increase students' motivation and academic engagement in the digital era.

METHOD

This study used a descriptive correlation method that describes and explains the relationship between two or more variables descriptively with an approach through filling out a questionnaire to measure the effect of online learning on the learning motivation of Biology Education students in the 4th semester of 2022 at one of the Universities in Banten, Indonesia. The data collection procedure began with the preparation of a questionnaire based on relevant literature, followed by validity and reliability tests. After obtaining permission from the relevant parties at the University, the questionnaires were distributed to the selected sample, and the completed questionnaires were collected for analysis. The collected data will be analyzed using SPSS with several important steps. First, the validity and reliability of the questionnaire will be tested. The results of data analysis will be interpreted to determine the effect of online learning on learning motivation. The conclusion of this study will provide an overview of whether there is an influence on the relationship between online learning and learning motivation. This study also has some limitations, such as time constraints and respondent representation that may not cover the entire student population.

RESULTS AND DISCUSSION

In this study, researchers wanted to describe the analysis of the relationship between learning motivation and online learning in Biology students in thesecond year.

Research data using SPSS.

1. Normality Test

The normality test was conducted to check whether the data from the variables of online learning and students' normal learning motivation were successfully distributed. This represents a key requirement when using parametric statistical analysis such as the Pearson product moment test. According to Khatun (2021), the normality test is used to test whether a variable is normally distributed or not, normal in this context means having a normal data distribution.

The normality test uses the Kolmogorov-smirnov test on SPSS version 25.0. Decision making in this test if the calculated value is less than the 5% significance level then the data is not normally distributed, and if the Asymp. Sig value is 0.05 then the data can be said to be normally distributed.

Table 1. Normality Test

Kolmogorov-Smirnova[a] test		
Variable	Signification	Description
Online Learning	0.2	Normal
Learning Motivation	0.2	Normal

From Table 1, it can be concluded that the significance value of online learning and student learning motivation shows, Sig. > 0.05 = Ho accepted = no difference = online learning data on learning motivation. The use of this normality test is based on quantitative research criteria. There, the importance of fulfilling the assumption of normal distribution before inference analysis continues. According to Ghasemi & Zahediasl (2012), stated that Kolmogorov-Smirnov and Shapiro-Wilk tests are the most common methods for testing health, and normal data distribution is important for the validity of statistical conclusions in many parametric procedures. Tsagrisa & Nikolaos (2020) also argue that the tests often used to assess normality are the Kolmogorov-Smirnov test and the Shapiro-Wilk test.

2. Homogeneity Test

According to Putri *et al*. (2023) the homogeneity test aims to test whether the variance between two or more data groups is homogeneous or the same. Between two or more data groups are homogeneous or the same. The main purpose of the homogeneity test homogeneity test is to determine whether the groups have similar or significantly different similar or significantly different variability.

Table 2. Anova Test

Learning online and learning motivation	Sum of Squares	Df	Mean Square	F	Sig
Between Groups	480.635	14	34.331	839	625
Within Groups	695.333	17	40.902		
Total	1175.969	31			

According to Pratama & Permatasari (2021), decisions are made based on rules:

a. If the significant value or Sig. < 0.05, then it is said that the variances of two or more groups of population data are not the same (not homogeneous)

b. If the significant value or Sig. > 0.05, then it is said that the variances of the two or more groups of population data are the same (homogeneous).

Based on the results of the homogeneity test, it shows that Sig > 0.05 = Ho is accepted = there is no difference = online learning data on learning motivation.

3. Correlation Test

The correlation test is used to determine the relationship between two variables. The correlation test used in this study uses a parametric correlation test in the SPSS version 25 application. Parametric statistics are data related to statistical inference (decision making on certain problems) that discuss population parameters, such as averages, proportions, and so on (Santoso, 2019).

The characteristics of parametric are the existence of interval or ratio data types, as well as normal or near-normal data (population) distribution (Santoso, 2019). If the data has a normal distribution or is close to a normal distribution, then parametric statistical methods are used.

Meanwhile, if the population data does not have a normal or near normal distribution, non-parametric statistical methods are used (Anam, 2020).

The basis for decision making, that:

If the Sig value. <0.05, then correlated

If the Sig value. > 0.05, then it is not correlated.

Table 3. Correlation Test

		Online Learning	Learning Motivation
Online Learning	Pearson Correlation	1	-.140
Learning Motivation	Sig. (2- tailed)	.	444
	N	32	32
	Pearson Correlation	-.140	1
	Sig. (2- tailed)	444	.
	N	32	32

In Table 3 listed above, the significant value for the online learning and learning motivation variables is 0.444. This figure shows that the significance value is greater than the alpha value usually used, which is 0.05. Thus, the online learning and learning motivation variables do not show a significant relationship or are not statistically correlated. According to Suresh & Raju (2022) Pearson's Product Moment Correlation Coefficient is a measure of the strength and direction of the relationship that exists between two variables measured at least on an interval scale.

Although the Pearson Correlation value for online learning and learning motivation shows -0.140, the correlation can be categorized as negative and very weak. In other words, there is not enough statistical evidence to support a significant relationship between online learning and learning motivation. This finding is in line with research by He and Ong (2025), who found that the sudden transition to online learning during the COVID-19 pandemic resulted in a decrease in students' learning motivation due to the lack of social interaction and support from lecturers and peers. Similarly, Fu *et al.* (2024) identified that the lack of supporting technology and changes in the learning environment drastically affected students' learning motivation in the context of online learning.

Research by Lestari *et al.* (2022) shows that the implementation of an online learning system during the COVID-19 pandemic has a significant effect on student motivation and interest in learning, especially in Islamic Religious Education subjects. However, Harun *et al.* (2022) emphasized that the lack of learning facilities, such as electronic devices and adequate internet networks, as well as boredom due to monotonous learning methods, are the main factors in decreasing students' learning motivation in vocational schools.

Khaq *et al.* (2021) showed that online learning has a negative impact on learning motivation, mainly due to the lack of direct interaction between learners and educators and the lack of innovation in teaching methods. This finding reinforces the results of this study, which show that even though online learning is evenly implemented, it does not necessarily have a positive impact on students' learning motivation. Research by Mayar *et al.* (2021) revealed that the low level of student satisfaction with the online learning process is also one of the main factors that reduce learning enthusiasm. This suggests that a monotonous, less interactive learning experience that does not meet students' expectations is the cause of weak motivation, not just the online format.

Therefore, the result of the correlation analysis that shows no significant relationship between online learning and learning motivation can be understood as the impact of the suboptimal quality of online learning implementation. In this context, it can be concluded that changes in online learning variables have no significant relationship with changes in learning motivation. This suggests that online learning has no direct impact on students' learning motivation level in this case. Therefore, it is likely that other factors have a greater influence in affecting students' learning motivation. According to Hamidah (2022), emphasizing that teacher competence and student engagement can also affect learning motivation in the online learning process. In addition, their level of confidence affects the motivation to use online tools and communicate.

Motivation plays an important role in linking competence to behavior. According to Hatlevik *et al.* (2018), students who have low confidence in communication may experience less engagement in online platforms, which fosters worry and low morale. This is in line with the opinion of Chung *et al*. (2020), low engagement in online learning platforms can be amplified among students who lack confidence to communicate, i.e., asking questions, which creates a sense of worry and low morale for online learning.

According to Sardiman (2018), student learning motivation is reflected in several attitudes, such as enthusiasm, perseverance in facing difficulties, interest in solving problems, resistance to boredom, and the ability to defend arguments. Someone who has learning motivation usually also has a drive for achievement. However, although these factors are important, online learning does not always have a significant impact on learning motivation. In line with this, Septiana (2021) also emphasizes that although learning motivation and learning independence have a positive influence on students, not all aspects of online learning directly affect learning motivation.

CONCLUSION

Based on the results of the analysis, online learning for Biology students in semester 4 does not affect learning motivation. This shows that there is no significant relationship between online learning and learning motivation. The significance value for online learning variables and learning motivation is 0.444. This number shows that the significance value is greater than the commonly used alpha value, which is 0.05. Therefore, the online learning and learning motivation variables do not show a significant relationship or are not statistically correlated.

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