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Survey of The Influence of Self Efficacy and Self Resilience to Biology Education Students to Overcoming Learning Loss

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A B S T R A C T

Distance learning during the COVID-19 pandemic has encountered various challenges. Some of those include uneven internet connectivity, inadequate facilities, and an unsupportive learning environment. Those challenges gradually decreased students' learning motivation and result in learning loss. Their motivation could be influenced by several factors, including self-efficacy and self-resilience. This research aims to determine the extent to which self-efficacy and self-resilience influence learning loss compared to other factors. To achieve this goal, a quantitative approach and survey methods were applied in this cross- sectional research by using biology education students at Riau University as subjects. Its findings indicate a significant simultaneous influence of self-efficacy and self-resilience on students' learning loss. Facility disparities, unstable internet conditions, short learning time, and low interaction between instructors and students are among the factors causing learning loss in students during the distance learning. The conclusions that can be drawn from this research are learning loss is influenced by various factors, including self-efficacy and resilience. This study highlights that the low levels of self-efficacy and resilience observed in students are a result of the declining motivation for learning during remote education.

1. Introduction

The implementation of distance learning during the COVID-19 pandemic resulted in a decline in the quality of university student learning as reported by Brown Dearlina et al., (2022). As a result of online learning, students' experience of studying outside the home is reduced. The lack of experience possessed by these students has an impact on the occurrence of learning loss in students (Habebci et al., 2020). Throughout its practices, students have faced various challenges related to instructional materials, learning interactions, and the learning environment.

These ultimately lead to the occurrence of learning loss among students (Kaffenberger, 2021). According to The Education and Development Forum, learning loss refers to a situation where students lose general or specific knowledge and skills, or it can also be understood as an academic knowledge regression caused by a gap in understanding the subject matter during the educational process. Students also argue that online learning which is done by reading material and looking for references independently is not enough and they still need direct explanations from lecturers regarding some material, especially material that has practical activities in it. The main problem students face during online learning is poor time management (Fajhriani, 2020).

The main problems experienced by students who experience learning loss are a decrease in learning motivation and a gap in the learning process between students who have complete facilities and those who do not (Pratiwi, 2021). Active involvement of students in the learning process is the main indicator that causes increased student learning motivation (Daniels et al., 2021). The occurrence of the above phenomenon is associated with the level of resilience possessed by the students themselves (Munawaroh et al., 2020). It is described as the ability to adapt successfully and exert optimal effort to achieve success even in challenging circumstances. Distance learning leads to low learning motivation among students, easy disruptions during lectures, and susceptibility to stress caused by the high volume of assigned tasks (Yuzulia, 2021). If a student has a high level of self-resilience, they will be able to regulate their learning motivation and exercise self-control throughout the learning process, and vice versa (Risa et al., 2021).

The level of resilience an individual possesses is influenced by their self-efficacy (Sulastri et al., 2020). It refers to an individual's belief in their ability to control situations and produce favorable outcomes. It can also be understood as the confidence one has in their capacity to solve problems and achieve success. High self-efficacy among students supports their success in attaining good learning outcomes even when facing challenging conditions (Faradhillah et al., 2020). Self-efficacy correlates positively with self-resilience. Resilience directly influences the use of self-directed learning strategies, which encompass self-efficacy and time management. Self resilience has a direct influence on the use of independent learning management strategies which include self-efficacy and time management (Risa et al., 2021).

A preliminary survey result of this study was conducted among Biology Education students. It indicates that they faced several challenges during distance learning, which impacted their learning motivation. This study aims to demonstrate that self-efficacy and resilience among students can influence the occurrence of learning loss. The research provides a narrative report on the aspects of self-efficacy and self-resilience that can affect learning loss among students. The findings of this study contribute to the evolving literature on the relationship between self-efficacy, resilience, and learning loss, and they can serve as fundamental information for taking action regarding the implementation of teaching in higher education to enhance students' learning motivation. This

research aims to determine the extent to which self-efficacy and self-resilience influence student learning loss.

2.   Methodology

This study employs a quantitative approach with a survey method to analyze the relationship between self-efficacy, resilience, and learning loss. It focuses on Biology Education students in class of 2019-2021 who have actively participated in distance learning for a range of one to four semester. A total of 46 students participated in this study. These students come from various economic backgrounds and regions, including both urban and rural areas.

Respondents for this study were selected using a proportional stratified random sampling technique to ensure a diverse representation of characteristics within the population strata. The data for this study was obtained from a descriptive questionnaire that included items on learning loss, self-efficacy, and resilience. The learning loss questionnaire was developed based on the theoretical concept of learning by Sutrisno (2010), which encompasses aspects of knowledge, understanding and skills.

The self-efficacy questionnaire used in this study was developed based on the dimensions of self-efficacy according to Bandura (2003), which includes the aspects of the Level of difficulty of self-efficacy (Magnitude), Strength of self-efficacy (Strength) and Variation of self-efficacy situations (Generally). The resilience questionnaire used in this study was developed which encompasses aspects of emotion regulation, impulse control, causal analysis, realistic optimism, empathy, and reaching out.

To measure the extent of influence of self-efficacy and self-resilience on learning loss in this study using multiple linear regression. Multiple linear regression is a regression model that involves more than one independent variable. Multiple linear regression analysis was carried out to find out the direction and how much influence the independent variables have on the dependent variable. The formula for multiple linear analysis equations is as follows:

$$\bar{Y} = a + b_1x_1 + b_2x_2 + \ldots + b_nx_n$$

Information:
$\bar{Y}$: Dependent variable
a   : Regression constant
b   : Regression coefficient $x_1 = x_2$: Independent variable

Decision making in multiple linear regression analysis can be taken by comparing the significance value with a probability value of 0.05 or by comparing the calculated t value with t table or F calculated with F table. In this research multiple linear regression analysis was conducted using SPSS for Windows version 20.0.

3.   Results and Discussion

Table 1 presents the results of the multiple linear regression analysis conducted in this study.

Table 1. Results of The Multiple Linear Regression Analysis

Model	Coefficient	
	T	**Sig.**
Self Efficacy (X1)	3,207	0,003
Self Resilience (X2)	-0,999	0,323

Dependent Variable: Learning Loss (Y)

The research findings indicate a significant relationship between self-efficacy and learning loss, with a Sig. value of 0.003 < 0.005 and a t-value of 3.207 > the critical t-value of 2.016.

The primary expectation of distance learning is to create interactive learning that enhances student motivation (Almaleki et al., 2021). To achieve this expectation, students need to have a high level of self-efficacy (Chiu et al., 2020). When students have high self-efficacy, they are more likely to make efforts to achieve their learning goals. Self-efficacy greatly assists students in designing and managing their learning processes. Both the level of learning loss and self- efficacy among biology education students fall into the moderate category. This indicates that students are still experiencing a phase of learning loss, and their self-efficacy levels are not yet optimal. The decrease in learning motivation during distance learning is influenced by the challenges faced during the learning process, such as inadequate internet connection, unsupportive learning facilities, and non-conducive learning environments. The correlation coefficient between learning loss and self-efficacy has a positive direction, suggesting that as students' self-efficacy increases, their learning loss gradually decreases or improves.

Unlike the relationship between self-efficacy and learning loss, the research findings show that there is no significant relationship between self-resilience and learning loss, with a Sig. value of 0.323 > 0.005 and a t-value of -0.999 < the critical t-value of 2.016. The level of resilience varies for each individual depending on the conditions they encounter (Sood et al., 2020). If students are exposed to favorable or supportive conditions during distance learning, their level of resilience will be high. However, if students face obstacles that hinder the learning process, their level of resilience will be low. Supporting factors such as family enable students to manage their learning time well and have no difficulty adapting to online learning and vice versa (Irawan et al., 2021).

For students who are living away from home, distance learning can be a factor that increases their learning motivation because they can study at home and be closer to their families (Schlesselman et al., 2020). However, this can also be a challenge if the location of the student's residence has poor internet connectivity and an unsupportive living environment. Resilience has a positive relationship with self-efficacy. Self-efficacy plays a role in resilience, as students with high self-efficacy

are more likely to have higher levels of resilience. With good self- efficacy, students have the belief that they can handle unpleasant situations and are confident in facing them.

Table 2 presents the results of the analysis on the simultaneous relationship between self-efficacy, self-resilience, and learning loss.

Table 2. ANOVA

Model	F	Sig.
Regression	5,673	0,007
Dependent Variable: Learning Loss (Y)		
Predictors: (Constant), Self Reslience (X2), Self Efficacy (X1)		

Simultaneously, there is a significant relationship between self-efficacy, self-resilience, and learning loss, with an observed F-value of 5.673 > the critical F-value of 3.209 at a 95% confidence level. The students exhibit low self- resilience in aspects such as emotion regulation, impulse control, causal analysis, and empathy. However, in terms of realistic optimism and reaching out, students' self-resilience falls within the high category. This can be attributed to the resumption of face-to-face classes for approximately three semesters, which has gradually improved students' self-resilience. This improvement is also reflected in the correlation with their self-efficacy. With an average level of moderate self-resilience, students' self-efficacy also falls within the moderate category. However, specific types of resilience that can assist students in the learning process have not been explicitly identified thus far.

Self-efficacy serves as a significant initial indication of students' self-resilience. Self-efficacy plays an important role in students' self-resilience (Fakhrurrozi, 2020). The research findings indicate that the students exhibit the most prominent characteristic in the aspect of self-efficacy generally (variation in self-efficacy across situations), indicating that students are quite confident in their abilities to engage in the learning process. However, the generally aspect score obtained by the students in this study still falls within the moderate category, suggesting that students are not fully confident in their abilities to master the learning material. In theoretical learning, the learning process is carried out monotonously and lacks variety, causing students to feel bored and disinterested. This will then affect students' ability to understand learning where students complain about the difficulty of understanding the material and assignments given by the lecturer (Tangkelangi et al., 2021). The highest level of self-resilience among students is observed in the aspects of realistic optimism and reaching out, indicating that students are prepared to face the challenges encountered during the learning process and are willing to take risks by bravely exploring new things in order to gain new knowledge and experiences while maintaining an optimistic attitude towards their learning journey.

Table 3 presents the results of the analysis of the coefficient of determination for the simultaneous relationship between self-efficacy and self-resilience with learning loss.

Table 3. The Coefficient of Determination

Model	R	R Square
1	0,457	0,209
Predictors: (Constant), Self Reslience (X2), Self Efficacy (X1)		
Dependent Variable: Learning Loss (Y)		

Simultaneously, a coefficient of determination (R-squared) value of 0.209 was obtained in this study, indicating that the combined influence of self-efficacy and resilience on learning loss is 20.9%. For cross-sectional studies like the present research, this R-squared value can be considered reasonably good. To correlate, the Biology Education students at FKIP, University of Riau, faced several challenges during remote learning, including disparities in learning facilities among students, unstable internet connectivity, limited learning time, and inadequate interaction between teachers and students, which hindered students' comprehension, particularly in practical-oriented subjects. These are associated with students' self-efficacy and resilience, as those can contribute to learning loss.

4. Conclusion

Learning loss is influenced by various factors, including self-efficacy and resilience. This study highlights that the low levels of self-efficacy and resilience observed in students are a result of the declining motivation for learning during remote education. The decrease in motivation can be attributed to several factors, such as disparities in learning facilities among students, unstable internet connectivity, limited learning time, and insufficient interaction between teachers and students, all of which contribute to students' difficulty in understanding the subject matter.

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