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Self Awareness and Mitigation of Learning Loss on Students' Science Learning Outcomes During the Covid 19 Pandemic

Fajryani Simal[1], Dahlia Mahulauw[1], Marleny Leasa[1]*, John Rafafy Batlolona[2]

[1] Department of Primary Education, Faculty of Teacher Training and Education, Pattimura University, Ambon, Indonesia.
[2] Department of Physics Education, Faculty of Teacher Training and Education, Pattimura University, Ambon, Indonesia.

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Abstract: This study aimed to analyze the correlation between self-awareness, mitigating learning loss, and student science learning outcomes during the COVID-19 pandemic. Data was collected using a correlational study, a questionnaire, and data analysis using linear regression using the SPSS 16.00 application. The analysis results found that the correlation value or R correlation between self-awareness and learning outcomes was 0.020. The coefficient of determination (R2) was 0.000. In contrast, the regression between learning loss and learning outcomes was R, which was -0.073, the coefficient of determination (R2) was 0.005. The self-awareness regression coefficient on the correlation between self-awareness and learning outcomes is 0.018 or only 0.02%, so the equation becomes Y = 83,287 + 0.018X. In the correlation between self-awareness and learning outcomes, the regression coefficient of learning loss is -.119 or only <0, so the regression equation formed is Y = 94.480 -.199X. Therefore, it can be concluded that self-awareness has no correlation with students' cognitive learning outcomes, and there is no correlation between learning loss mitigation and student learning outcomes during the COVID-19 pandemic.

Keywords: Covid-19; Self-awareness; Learning loss; Learning outcomes; Student science

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Introduction

Learning outcomes describe the competencies obtained by students after going through a series of learning processes (Tzafilkou, et al., 2021). Learning is an activity of a person to try and change knowledge (Wartono, et al., 2019), (Batlolona & Souisa, 2020). Elementary school students in South Korea focuses on developing knowledge in games. There are 98 activities to get to know the surrounding environment because teachers believe that children are still in the nuances of playing. If this play activity is not given, it will negatively impact childhood obesity and the emergence of chronic diseases such as asthma and atopy. In addition, a decrease in physical activity also affects the social development and character formation of children (Lee, et al., 2020). The nuances of playing activities carried out at school for children have temporarily disappeared. It can be seen with the world being shocked by the COVID-19 attack. As a result, almost all countries in the world have taken policies to temporarily close schools with learning activities from home using several platforms for online learning (Stambough, et al., 2020), (Elkhatat & Al -Muhtaseb, 2021). However, Students who have no electronic media such as android phones or computers to study will have difficulty getting lessons (Dhawan, 2020), (David & Roberts, 2021). Even with the teacher's creativity in finding or creating learning models and media, it is not helpful for students who do not have learning tools. This situation causes learning loss for students (Turner, et al., 2020).

The Center for Research on Educational Outcomes (CREDO 2020) of Stanford University issued a press release stating that students will lose a lot in the form of 57 to 183 days of learning in reading and from 136 to

*Email: marlenyleasa3@gmail.com

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232 days of learning mathematics during the COVID-19 pandemic. Other organizations, such as the NWEA (Kuhfeld and Tarasawa, 2020) and the Annenberg Institute at Brown University (Santibanez & Guarino, 2020), have also published reports on learning losses. The Organization for Economic Co-operation and Development (OECD) publishes a projected economic loss due to learning losses of $14 trillion over the next 80 years (Hanushek & Woessmann, 2020). The results of other studies also report that learning loss due to COVID-19 impacts decreasing student attendance in class and decreasing students entering specific fields at the University (Zaromb, et al., 2014). In addition, low-income students are more likely to lose learning when compared to high-income students (Travis, et al., 2019). This exciting situation has caught the attention of policymakers and educators. Government, schools, and teachers are all concerned about students losing their studies due to the COVID-19 pandemic (Zhao, 2021).

Self-awareness is essential for students to move forward in facing existing difficulties (DeMink-Carthew et al., 2020; Gul, et al., 2021). A student's self-awareness will affect students' science learning outcomes (Brooman & Darwent, 2012). Self-awareness of mitigating learning loss is a very important action during the COVID-19 pandemic, because it is not only detrimental in specific terms but also in general terms (Skar, et al., 2021). Students' self-awareness for mitigating learning loss is awareness of the importance of education, awareness of the task as the nation's successor, awareness of the size of the knowledge that has been achieved, awareness of what changes have been achieved during the learning process, and being aware that they are hope in the family, society, and country. Awarenesses that become the primary reference that is not only aware but also requires development actions for the learning process and education in character.

Learning loss is a term used for events when children lose their time and enthusiasm for learning. People in the United States understand that learning loss is a phenomenon that occurs in children from the lower middle economic class who cannot use and access internet devices for learning (Shinwell & Defeyter, 2017). Loss of knowledge and skills and a decline in academic progress. It results in a long gap or discontinuity in a student's education (Todd & Romine, 2018). Meanwhile, in Indonesia, people understand that learning loss is a period in which students experience decreased learning abilities, disturbed emotional and psychological development, are vulnerable to dropping out of school, and have the potential to find it difficult to get a decent job in the future due to lack of competence. Learning loss is also a condition where students experience a loss of learning experience and loss of learning opportunity to increase knowledge due to the COVID-19 pandemic (Azevedo, et al., 2021).

Learning loss occurs because children have difficulty in learning. It causes boredom in learning. This feeling occurs because the learning method used by the teacher is not liked by the students (Menard & Wilson, 2013). Distance learning can be a straightforward reason students experience learning loss because they find it challenging to learn, so they lose motivation to learn (Kruszewska, et al., 2020; Zarzycka, et al., 2021). Students' learning difficulties stem from factors such as intelligence, talent, interests, motivation, physical conditions and circumstances, environment, family economy, school, and surrounding community (Powell, et al., 2021).

The COVID-19 pandemic in Indonesia has had a very negative impact on education. The first is the psychological problem of children accustomed to learning face to face with their teachers. All elements of education in social life are exposed to illness due to COVID-19 (Azhari & Fajri, 2021). The implementation of learning takes place online, in remote and isolated villages where there are school-age children who become completely confused because the infrastructure in providing information and technology is minimal (Yates, et al., 2021).

Learning loss affects students' lives in the future because education is the way to a brighter life in the future, especially for low-income families (Kuhfeld, 2019). For this reason, it is necessary to take action to prevent learning loss. Mitigation is the initial stage of non-physical natural disaster management to reduce and minimize the impacts caused by the COVID-19 pandemic (Gersons, et al., 2020). Mitigation activities can increase public awareness to comply with the rules that have been set for living together. Mitigation of learning loss is an action to overcome or reduce the incidence of learning loss in children.

Students' learning loss can be measured by their learning outcomes (Kraft & Monti-Nussbaum, 2017). Lack of self-awareness of students is one of the factors for low learning outcomes (Birdsall, 2014). The results of previous studies have shown that students who have high self-awareness can learn quickly, remember longer, respond positively to challenges, are more accepting of others, and have a great sense of responsibility for their actions (El Mrabet & Ait Moussa, 2021). Students' science learning outcomes can be improved by awareness of students' self-esteem (Manning-Geist, et al., 2020).

The results achieved significantly affect self-awareness in the form of not focusing on the given task, not paying attention to the material, being active in the learning process, and not relearning the material taught. It is an accurate picture of the occurrence of student science learning loss (Hakelind, et al., 2020).

The correlation between self-awareness and learning outcomes is that the higher the value of self-awareness, the higher the value of students' science learning outcomes (Guo, et al., 2020). Students who have difficulty in processing learning materials will certainly affect students' science learning outcomes. For this reason, it is necessary to take preventive or mitigating actions against learning loss events. In this case, learning loss mitigation actions are highly trusted to overcome the loss of children's learning period during the COVID-19 pandemic.

Research on learning loss has been carried out since 2014 (Hooker & Denker, 2014; Kraft & Monti-nussbaum, 2017; Bowers & Schwarz, 2018; Conto et al., 2020). In addition, the results of learning loss research during the COVID-19 pandemic have also been investigated, among others, on the potential challenges of transition for undergraduate studies after school disruption due to COVID-19 (Turner, et al., 2020), School Closures in Ghana due to the COVID-19 pandemic. 19 (Sabates, et al., 2021), and simulation of the potential impact of COVID-19-related school closures on school and learning outcomes (Azevedo, et al., 2021). From the findings that have been presented, no research has studied the self-awareness of learning loss on students' science learning outcomes. Therefore, this research explored and examined students' awareness of learning loss with students' science learning outcomes along with student mitigation actions against learning loss. Therefore, this study aimed to analyze the correlation between self-awareness, mitigation of learning loss, and student science learning outcomes during the COVID-19 pandemic.

Method

This research is survey research conducted to obtain data on self-awareness of teachers and students and mitigation of learning loss during learning during the Covid-19 pandemic at the elementary school level in science learning. In addition, for data collection, correlational studies were also conducted to reveal the correlation and contribution of teacher and student self-awareness to mitigating learning loss for elementary school students. The samples used in this study were 102 fifth grade students consisting of elementary school 78 Ambon (23 people), elementary school Inpres 19 Ambon (24 people), elementary school 5 Ambon (19 students), elementary school 6 Ambon (20 people), and elementary school 12 Ambon (16 people). The hypothesis in this study is H1 = there is an influence or correlation between self-awareness and learning outcomes during the Covid-19 pandemic. H2 = there is an influence or correlation between learning loss and student learning outcomes during the Covid-19 pandemic.

The research procedure consisted of pre-research, namely the preparation of research instruments consisting of surveys and determination of research locations, obtaining research permits, testing research instruments, analyzing the results of instrument trials and interpretations. Then, it was continued by the data collection in the field, namely visiting the research location and collecting data on filling out the questionnaire, the instruments provided and data management, namely inputting research data, data analysis, conclusions, data verification, and preparation of research reports. Data collection techniques were carried out through filling out self-awareness questionnaires for students and teachers, learning loss mitigation questionnaires by students, and interviews. The data obtained were analyzed using inferential statistics, primarily linear regression.

Result and Discussion

The results of the regression analysis between self-awareness and student science learning outcomes can be shown in Table 1.

Table 1. Regression analysis between self-awareness and cognitive learning outcomes

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.020[a]	.000	-.020	4.55339

a. Predictors: (Constant), Self-Awareness

Table 1 shows the number of the correlation value or R correlation, which is 0.020 and explains the percentage of the influence of the independent variable on the dependent variable called the coefficient of determination. It is the result of squaring R. From the output above, the coefficient of determination (R2) is 0.000, which implies that the effect of the independent variable (self-awareness) on the dependent variable (learning outcomes) is 0%. It means that the variable self-awareness of students' science learning outcomes during a pandemic has no effect or has no correlaton. In other words, increased student science learning outcomes during a pandemic are not related to students' self-awareness.

Table 2. The ANOVA result of self-awareness and cognitive learning outcomes

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.420	1	.420	.020	.887[a]
	Residual	1015.933	49	20.733		
	Total	1016.353	50			

a. Predictors: (Constant), Self-Awareness
b. Dependent Variable: Learning_Outcomes

The output results of Table 2 showed the calculated F = 0.020 with a significance level or probability of 0.887 more than 0.05. Then, the awareness regression model cannot be used or only slightly used to predict learning outcome variables.

Table 3. The Correlation coefficient of self-awareness and cognitive learning outcomes

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	83.287	9.170		9.083	0.000
	Self Awareness	0.018	0.126	0.020	0.142	0.887

a. Dependent Variable: Learning_Outcomes

Table 3 of the coefficients illustrates that the positive constant value of 83.287 shows the positive influence of the independent variable (self-awareness). Meanwhile, the regression coefficient of learning outcomes of 0.018 implies that self-awareness does not affect the increase in learning outcomes because it only affects 0.018 or only 0.02%. Therefore, the equation 1.

$$Y = a + bX \text{ or } 83.287 + 0.018X \ldots\ldots\ldots\ldots (1)$$

Table 4. The results of the regression analysis between learning loss and cognitive learning outcomes

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.073[a]	0.005	-0.015	4.54233

a. Predictors: (Constant), Learn_Loss

Table 4 shows the number of the correlation value or R correlation which is -0.073. It is explained as the percentage of the influence of the independent variable on the dependent variable. It is called the coefficient of determination which is the result of squaring R. In the output results. It is obtained a coefficient of determination (R2) of 0.005, which implies that the influence of the independent variable (learning loss) on the dependent variable (learning outcomes) is 0. It means that the learning loss variable on students' science learning outcomes during the pandemic has no effect or no correlation. In other words, learning loss is the same or has little or no correlation or no effect on increasing student learning outcomes during the pandemic.

Table 5. The ANOVA result of learning loss and cognitive learning outcomes

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.347	1	5.347	0.259	0.613[a]
	Residual	1011.006	49	20.633		
	Total	1016.353	50			

a. Predictors: (Constant), Learn_Loss
b. Dependent Variable: Learning_Outcomes

In table 5 output, it can be seen that F count = 0.259 with a significance level or probability of 0.613, more than 0.05. Therefore, the learning loss regression model cannot be used or only slightly used to predict learning outcome variables.

Table 6. The value of the regression coefficient between learning loss and cognitive learning outcomes

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	94.480	19.442		4.859	0.000
	Learn Loss	-0.119	0.233	-0.073	-0.509	0.613

a. Dependent Variable: Learning_Outcomes

Table 6. of the coefficients illustrates that the positive constant value of 94.480 shows the positive influence of the independent variable (learning loss). Meanwhile, the regression coefficient of learning outcomes is -.119, which means that learning loss does not affect the increase in learning outcomes because it only affects -.199 or only <0%. Therefore, the equation 2.

$$Y = a + bX \text{ or } 94.480 + -.199 \ldots\ldots\ldots\ldots (2)$$

Table 7. Average learning loss correction and cognitive learning outcomes

Model	N	Min.	Max.	Mean	Std. Deviation
Self Awareness	51	64.00	84.00	72.7843	5.12372
Learning Loss	51	70.00	86.00	83.4706	2.75937
Learning Outcome	51	72.00	93.00	84.5882	4.50855
Valid N (listwise)	51				

Table 7 data shows that the research hypothesis is rejected. It means that there is no correlation between self-awareness and learning loss on student learning outcomes during the Covid-19 pandemic. Although the level of self-awareness in students is very low in the research results, the lowest score of student learning outcomes is 72% and the highest 90%, with the average

value of learning outcomes higher than the level of student awareness.

Rejection of the hypothesis on the correlation of learning loss to student learning outcomes is equal to the percentage in Table 4 of the output obtained by the coefficient of determination (R2) of 0.005. It implies that the influence of the independent variable (learning loss) on the dependent variable (learning outcomes) is 0%. It means that the variable learning loss does not affect students' science learning outcomes during the pandemic.

The results of previous studies said that students' lack of self-awareness is one factor for low learning outcomes (Syed Hassan, et al., 2015; Fenanlampir & Mutohir, 2021). Students with high and low awareness still have good learning outcomes (Han & Kim, 2016). The correlation between self-awareness and leadership and career in leadership development and education management shows that the higher the value of self-awareness, the higher the career development and leadership (Carden et al., 2021).

Student learning outcomes are influenced by two aspects, namely, student abilities and the environment (Cheryan, et al., 2014; Kintu, et al., 2017). The results showed that during the COVID-19 pandemic, the determination of student learning outcomes was more influenced by the environment in the form of schools, including teacher-student correlations, student-student correlations, and study methods and homework. In the study of Leasa et al. (2017), it is reported that emotional intelligence, which also contains the dimension of self-awareness, has a 4% contribution to student learning outcomes in normal learning conditions.

During the COVID-19 pandemic, work-from-home policies can affect student education and competence. It can cause symptoms of learning loss in students. The findings of Table 7 explain that during the pandemic, learning loss is higher than student learning outcomes. This situation shows that students studying during the COVID-19 pandemic have indeed experienced learning loss events. For this reason, it is necessary to take learning mitigation actions to save education. However, in the results, although learning loss is very high, it does not affect student learning outcomes. It can be seen in Table 4, which indicates that other factors greatly influence students' science learning outcomes.

Muhaimin, et al., (2020) describe education problems in Indonesia that everyone wants something better related to mentality and morality. Possible significant factors that influence the insignificant correlation between self-awareness, mitigating learning loss on students' science learning outcomes are philosophical, theoretical and practical (realities in the field). In this study, it was shown that during the COVID-19 pandemic, students' low levels of awareness and high levels of learning loss did not affect student learning outcomes. Learning outcomes are one of the bases for determining students' future, so giving low grades during the COVID-19 pandemic is not a good solution. However, we know that online learning is challenging for students (Anugrahana, 2020). School tolerance and solidarity towards students' future is very high because education is a benchmark for the success of a nation. Even though student learning outcomes are low, many factors can be considered to achieve relatively good results. For example, there are efforts to follow online learning well.

Conclusion

Based on the findings, it can be seen that the correlation value or R correlation between self-awareness and learning outcomes is 0.020, and the coefficient of determination (R2) is 0.000. Meanwhile, the regression between learning loss and learning outcomes is R, which is -0.073, and the coefficient of determination (R2) is0.005. The self-awareness regression coefficient on the correlation between self-awareness and learning outcomes is 0.018 or only 0.02%, so the equation becomes Y = 83,287 + 0.018X. In the correlation between self-awareness and learning outcomes, the regression coefficient of learning loss is -.119 or only <0, so the regression equation formed is Y = 94.480 -.199X. Therefore, there is no correlation between self-awareness and learning loss mitigation on student learning outcomes during the COVID-19 pandemic. There may be other factors that are very influential. Therefore, future research can find solutions in providing other useful variables in reducing student learning loss

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