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

Fajryani Simal†, Dahlia Mahulauw†, Marleny Leasa*, John Rafafy Batlolona

†Department of Primary Education, Faculty of Teacher Training and Education, Pattimura University, Ambon, Indonesia.
*Department of Physics Education, Faculty of Teacher Training and Education, Pattimura University, Ambon, Indonesia.

DOI: 10.29303/jppipa.v8i1.1172

Article Info
Received: November 26, 2021
Revised: January 10, 2022
Accepted: January 15, 2022
Published: January 31, 2022

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 0.05. 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 -0.119 or only <0, so the regression equation formed is Y = 94.480 -1.99X. 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

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
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 (Kruszewskas, 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 & Montinnesbaam, 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 student science learning outcomes during a pandemic are not related to other words, increased student science learning during the COVID-19 pandemic has no effect or has no correlation. In this case, self-awareness 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 | 0.000 | -0.02 | 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 correlation. In other words, increased student science learning outcomes during a pandemic are not related to students' self-awareness.
effect or no correlation. In other words, learning loss means that the learning loss variable on students’ the dependent variable (learning outcomes) is 0. It influence of determination (R2) of 0.005, which implies that the output results. It is obtained a coefficient of percentage of the influence or R correlation which is 0.018

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           | .020  | .887 |
|       | 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 |      |
|       | Self                        | 0.018                     | 0.126 | 0.020 |
|       | Awareness                   |                           | 0.142 | 0.887 |

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

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 | 0.005   | -0.015            | 4.54233  |

a. Predictors: (Constant), Learn_Loss

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   | 3.297  |      |
|       | 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 |      |
|       | 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.

\[ Y = a + bX \]

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) is 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 -0.119 or only <0, so the regression equation formed is Y = 94.480 -0.199X. 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.

References

Anugrahana, A. (2020). Hambatan, solusi dan harapan: pembelajaran daring selama masa pandemi covid-19 oleh guru sekolah dasar. Scholaria: Jurnal Pendidikan dan Kebudayaan, 10(3), 282–289. https://doi.org/10.24246/jjs.2020.v10.i3.p282-289

Azevedo, J. P., Hasan, A., Golemberg, D., Geven, K., & Iqbal, S. A. (2021). Simulating the potential impacts of covid-19 school closures on schooling and learning outcomes: a set of global estimates. World Bank Research Observer, 36(1), 1–40. https://doi.org/10.1093/wbro/likab003

Azhari, B., & Fajri, I. (2021). Distance learning during the COVID-19 pandemic: School closure in Indonesia. International Journal of Mathematical Education in Science and Technology. https://doi.org/10.1080/0020739X.2021.1875072

Batolona, J. R., & Souisa, H. F. (2020). Problem based learning: Students’ mental models on water conductivity concept. International Journal of
Evaluation and Research in Education, 9(2), 269–277. https://doi.org/10.11591/ijere.v9i2.20468

Birdsall, S. (2014). Measuring student teachers’ understandings and self-awareness of sustainability. Environmental Education Research, 20(6), 814–835. https://doi.org/10.1080/13504622.2013.833594

Bowers, L. M., & Schwarz, I. (2018). Preventing summer learning loss: results of a summer literacy program for students from Low-SES homes. Reading and Writing Quarterly, 34(2), 99–116. https://doi.org/10.1080/10573569.2017.1344943

Brooman, S., & Darwent, S. (2012). “Yes, as the articles suggest, I have considered dropping out”: self-awareness literature and the first-year student. Studies in Higher Education, 37(1), 19–31. https://doi.org/10.1080/03075079.2010.490580

Carden, J., Jones, R. J., & Passmore, J. (2021). Defining self-awareness in the context of adult development: a systematic literature review. Journal of Management Education, 1–38. https://doi.org/10.1177/1052562921990065

Cheryan, S., Ziegler, S. A., Plaut, V. C., & Meltzoff, A. N. (2014). Designing classrooms to maximize student achievement. Policy Insights from the Behavioral and Brain Sciences, 1(1), 4–12. https://doi.org/10.1007/s1232321458677

Conto, C. A., Akeer, S., & Dreesen, T. (2020). Covid-19: effects of school closures on foundational skills and promising practices for monitoring and mitigating learning loss. UNICEF - Innocenti Working Paper, WP 2020-13(October), 1–30. Retrieved from: https://www.unicef-irc.org/publications/pdf

CREDΟ [Center for Research on Education Outcomes] (2020). CREDΟ at Stanford University presents estimates of learning loss in the 2019–2020 school year. Palo Alto, CA: Stanford University. https://credostanford.edu/sites...loss.pdf

David, M. E., & Roberts, J. A. (2021). Smartphone use during the COVID-19 pandemic: Social versus physical distancing. International Journal of Environmental Research and Public Health, 18(3), 1–8. https://doi.org/10.3390/ijerph180303034

DeMink-Carthew, J., Netcoh, S., & Farber, K. (2020). Exploring the potential for students to develop self-awareness through personalized learning. Journal of Educational Research, 113(3), 165–176. https://doi.org/10.1080/00220671.2020.1764467

Dhawan, S. (2020). Online learning: a panacea in the time of covid-19 crisis. Journal of Educational Technology Systems, 49(1), 5–22. https://doi.org/10.1177/0047239520934018

El Mrabet, H., & Ait Moussa, A. (2021). IoT-school guidance: A holistic approach to vocational self-awareness & career path. Education and Information Technologies, 26(5), 5439–5456. https://doi.org/10.1007/s10639-021-10548-6

Elkhatat, A. M., & Al-Muhtaseb, S. A. (2021). Hybrid online-flipped learning pedagogy for teaching laboratory courses to mitigate the pandemic COVID-19 confinement and enable effective sustainable delivery: investigation of attaining course learning outcome. SN Social Sciences, 1(5), 1–16. https://doi.org/10.1007/s43545-021-00117-6

Fenanlampir, A., & Mutohir, T. C. (2021). Emotional intelligence and learning outcomes: Study in physical education. Journal Sport Area, 6(3), 304–314. https://doi.org/10.25299/sportarea.2021.vol6.3.6836

Gersons, B. P. R., Smid, G. E., Smit, A. S., Kazlauskas, E., & McFarlane, A. (2020). Can a ‘second disaster’ during and after the COVID-19 pandemic be mitigated? European Journal of Psychotraumatology, 1(1), 1–5. https://doi.org/10.1080/20008198.2020.1815283

Gul, S., Mahboob, U., Yasmin, R., Khan, R. A., Baseer, N., & Abrar, S. (2021). Know thyself: Development and validation of self-awareness of teaching skills (SATS) measuring instrument for medical teachers. Medical Teacher, 0(0), 1–7. https://doi.org/10.1080/0142159X.2021.1948518

Guo, Y. M., Klein, B. D., & Ro, Y. K. (2020). On the effects of student interest, self-efficacy, and perceptions of the instructor on flow, satisfaction, and learning outcomes. Studies in Higher Education, 45(7), 1413–1430. https://doi.org/10.1080/03075079.2019.1593348

Hakelind, C., Steinvall, A., & Deutschmann, M. (2020). The Power of aha! on stimulating and guiding students towards self-awareness and critical reflection while teaching about personality psychology and gender stereotypes. Psychology Learning and Teaching. https://doi.org/10.1177/1475725720979460

Han, S., & Kim, S. (2016). An integrative literature review on self-awareness education/training programs in the nursing area. Perspectives in Nursing Science, 13(2), 59. https://doi.org/10.16952/pns.2016.13.2.59

Hanushek, E. A., & Woessmann, L. (2020). The economic impacts of learning losses. Paris: OECD. Retrieved from: https://www.oecd.org/education/The-economic-impacts-of-learning-losses.pdf

Hooker, J., & Denker, K. (2014). The learning loss scale as an assessment tool: an empirical examination of convergent validity with performative measures. Communication Teacher, 28(2), 130–143. https://doi.org/10.1080/17404622.2013.865765

Kintu, M. J., Zhu, C., & Kagembe, E. (2017). Blended learning effectiveness: the correlation between...
student characteristics, design features and outcomes. *International Journal of Educational Technology in Higher Education*, 14(1). https://doi.org/10.1186/s41239-017-0043-4

Kraft, M. A., & Monti-nussbaum, M. (2017). Can Schools Enable Parents to Prevent Summer Learning Loss? A Text Messaging Field Experiment to Promote Literacy Skills Matthew A. Kraft. 674(1), 85–112. https://doi.org/10.1177/0002716217732009

Kruszewska, A., Nazaruk, S., & Szewczyk, K. (2020). Polish teachers of early education in the face of the covid-19 pandemic—the difficulties experienced and suggestions for the future. *Education* 3-13, 0(0), 1–12. https://doi.org/10.1080/03004279.2020.1849346

Kuhfeld, M. (2019). Surprising new evidence on summer learning loss. *Phi Delta Kappan*, 101(1), 25–29. https://doi.org/10.1177/0031721719871560

Kuhfeld, M., & Tarasawa, B. (2020). The Covid-19 slide: What summer learning loss can tell us about the potential impact of school closures on student academic achievement. Portland, OR: NWEA. https://www.nwea.org/content/uploads/2020/05/...pdf.

Leasa, M., Corebima, A. D., Ibralhim, & Suwono, H. (2017). Emotional intelligence among auditory, reading, and kinesthetic learning styles of elementary school students in Ambon-Indonesia. *International Electronic Journal of Elementary Education*, 10(1), 83–91. https://doi.org/10.26822/ijeje.2017131889

Lee, W. M., Park, H. S., Kim, S. N., Kim, J. C., & Lee, K. H. (2020). Effects of elementary school neighbourhood environment on children’s play activities: a case study of GaeMyong elementary school neighbourhood. *International Journal of Urban Sciences*, 24(1), 88–109. https://doi.org/10.1080/12265934.2019.1570862

Manning-Geist, B., Meyer, F., Chen, J., Pelletier, A., Kosman, K., Chen, X. (Phoenix), & Johnson, N. R. (2020). Pre-clinical stress management workshops increase medical students’ knowledge and self-awareness of coping with stress. *Medical Science Educator*, 30(1), 235–241. https://doi.org/10.1007/s40670-019-00881-4

Menard, J., & Wilson, A. M. (2013). Summer learning loss among elementary school children with reading disabilities. *Exceptionality Education International*, 23(1), 72–85. https://doi.org/10.5206/eee.v23i1.7705

Muhaimin, A., Hoogsteyns, M., Utarini, A., & Willems, D. L. (2020). Ethics education should make room for emotions: a qualitative study of medical ethics teaching in Indonesia and the Netherlands. *International Journal of Ethics Education*, 5(1), 7–21. https://doi.org/10.1007/s40889-019-00082-y

Powell, S. R., Lembre, E. S., Ketting-Geller, L. R., Petscher, Y., Hwang, J., Bos, S. E., Cox, T., Hirt, S., Mason, E. N., Pruitt-Britton, T., Thomas, E., & Hopkins, S. (2021). Data-based individualization in mathematics to support middle school teachers and their students with mathematics learning difficulty. *Studies in Educational Evaluation*, 69, 1–11. https://doi.org/10.1016/j.stueduc.2020.100897

Sabates, R., Carter, E., & Stern, J. M. B. (2021). Using educational transitions to estimate learning loss due to covid-19 school closures: the case of complementary basic education in ghana. *International Journal of Educational Development*, 82, 102377. https://doi.org/10.1016/j.ijedudev.2021.102377

Santibanez, L., & Guarino, C. (2020). The effects of absenteeism on cognitive and social-emotional outcomes: lessons for covid-19. EdWorkingPaper No. 20-261. Annenberg Institute for School Reform at Brown University, 20.

Shinwell, J., & Defeyter, M. A. (2017). Investigation of Summer Learning Loss in the UK—Implications for Holiday Club Provision. *Frontiers in Public Health*, 5, 1–7. https://doi.org/10.3389/fpubh.2017.00270

Skar, G. B. U., Graham, S., & Huebner, A. Learning loss during the covid-19 pandemic and the impact of emergency remote instruction on first grade students’ writing: a natural experiment. *Journal of Educational Psychology*, 1–14. https://doi.org/10.1037/edu0000701

Stambough, J. B., Curtin, B. M., Gililland, J. M., Guild, G. N., Kain, M. S., Karas, V., Keene, J. A., Plancher, K. D., & Moskal, J. T. (2020). The past, present, and future of orthopedic education: lessons learned from the COVID-19 Pandemic. *Journal of Arthroplasty*, 35(7), S60–S64. https://doi.org/10.1016/j.arth.2020.04.032

Syed Hassan, S. N., Robani, A., & Bokhari, M. (2015). Elements of self-awareness reflecting teachers’ emotional intelligence. *Asian Social Science*, 11(17), 109–115. https://doi.org/10.5539/ass.v11n17p109

Todd, A., & Romine, W. (2018). The learning loss effect in genetics: What ideas do students retain or lose after instruction? *CBE Life Sciences Education*, 17(4), 1–12. https://doi.org/10.1187/cbe.16-10-0310

Travis, R., Gann, E., Crooke, A. H. D., & Jenkins, S. M. (2019). Hip Hop, empowerment, and therapeutic
beat-making: Potential solutions for summer learning loss, depression, and anxiety in youth. *Journal of Human Behavior in the Social Environment*, 29(6), 744–765. [https://doi.org/10.1080/10911359.2019.1607646](https://doi.org/10.1080/10911359.2019.1607646)

Turner, K. L., Hughes, M., & Presland, K. (2020). Learning loss, a potential challenge for transition to undergraduate study following COVID19 School Disruption. *Journal of Chemical Education*, 97(9), 3346–3352. [https://doi.org/10.1021/acs.jchemed.0c00705](https://doi.org/10.1021/acs.jchemed.0c00705)

Tzafilkou, K., Perifanou, M., & Economides, A. A. (2021). Negative emotions, cognitive load, acceptance, and self-perceived learning outcome in emergency remote education during Covid-19. *Education and Information Technologies*, 0123456789. [https://doi.org/10.1007/s10639-021-10604-1](https://doi.org/10.1007/s10639-021-10604-1)

Wartono, Hartoyo, D., Nilasari, & Batlolona, J. R. (2019). Real-virtual monte carlo simulation on impulse-momentum and collisions. *Indonesian Journal of Electrical Engineering and Computer Science*, 13(1), 7–14. [https://doi.org/10.11591/ijeecs.v13.i1.pp7-14](https://doi.org/10.11591/ijeecs.v13.i1.pp7-14)

Yates, A., Starkey, L., Egerton, B., & Flueggen, F. (2021). High school students’ experience of online learning during Covid-19: the influence of technology and pedagogy. *Technology, Pedagogy and Education*, 30(1), 59–73. [https://doi.org/10.1080/1475939X.2020.1854337](https://doi.org/10.1080/1475939X.2020.1854337)

Zaromb, F., Adler, R. M., Bruce, K., Attali, Y., & Rock, J. (2014). Using no-stakes educational testing to mitigate summer learning loss: a pilot study. *ETS Research Report Series*, 2014(2), 1–17. [https://doi.org/10.1002/ets2.12021](https://doi.org/10.1002/ets2.12021)

Zarzycka, E., Krasodomska, J., Mazurczak-Mąka, A., & Turek-Radwan, M. (2021). Distance learning during the COVID-19 pandemic: students' communication and collaboration and the role of social media. *Cogent Arts and Humanities*, 8(1). [https://doi.org/10.1080/23311983.2021.1953228](https://doi.org/10.1080/23311983.2021.1953228)

Zhao, Y. (2021). Build back better: Avoid the learning loss trap. *Prospects*, 0123456789. [https://doi.org/10.1007/s11125-021-09544-y](https://doi.org/10.1007/s11125-021-09544-y)