



The Physical and Mental Health of Learners Doing Online Learning During the Pandemic

Jewel Doreen Lemana*

For affiliations and correspondence, see the last page.

Abstract

During this pandemic, all activities that can cause mass crowds has been halted intending to prevent the spread of corona virus disease. For this reason, most learning institutions has opted for online learning just to keep the education of students still continuous, yet with little to no consideration as to how this setting will affect their health. Most studies have been focused on the mental health alone of the learners and discarding other aspect such as physical health. This quantitative study aims to determine the physical and mental health of students doing online learning at Western Mindanao State University utilizing the Short Form Health Survey. It also looked whether there is a significant difference between the physical and mental health of the respondents when grouped according to their age, gender, civil status, and year level. According to results, students are found to have low percentage of their overall physical and mental health. In addition, when respondents were grouped according to gender, civil status, and age, no significant difference found between these demographics and respondents' physical and mental health. Finally, the result presented that the physical and mental health of respondents and their year level showed significant difference.

Keywords: Mental Health, Online Learning, Physical Health, Covid-19 Pandemic, SF-36 Questionnaire

Introduction

As of September 19, 2021, the coronavirus disease 2019 (COVID-19) pandemic has deeply affected 221 countries and territories across the globe (Worldometer's COVID 19 data) and has challenged not only social, economic, and psychological aspects of life but also educational institutions especially tertiary schools (Rotas & Cahapay, 2020). The World Health Organization recommended restricting activities that cause mass crowds as a means to prevent the spread of the said virus (Pragholapati, 2020). Implementing the closure of schools and universities as a preventive measure has led to consider the use of technology as an alternative to keep learning institutions functional in the country (Duraku & Hoxha, 2020). In the Philippines, it greatly affected the mode of learning (Dagwasi & Opiniano, 2020), wherein it required educational institutions to adopt alternative educational delivery methods and incorporate these into their respective classes (EDUCAUSE Horizon Report, 2021), thus shifting classes from traditional or face-to-face to flexible learning became effective. While the principal aim of education is perhaps to resume things to their normal pace, institutions should be aware of how these changes will affect students, particularly their overall health (Dagwasi & Opiniano, 2020), considering the fact that most higher institutions have opted for online learning, for the simple reason that it is easily

accessible and can reach even secluded places (Dhawan, 2020).

Online learning is also known as "e-learning", is the use of various electronic technologies and media (Tamm, 2020), either synchronous or asynchronous to impart education (Dhull & Sakshi, 2019). One of the consequences of the transition of education from traditional to online is its impact on the health of students, particularly mental and physical health. According to the American Optometric Association, people who work on computers and cellphones for long periods have reported eye discomfort and vision problems. Students can have around 7 hours of classes every day to attend, as well as digital assessments and projects to work on, and have no choice but to be on a computer or cellphone longer than recommended. However, there are no guidelines set by the American Academy of Pediatrics (AAP) and the World Health Organization (WHO) for the recommended screen time for learners aged over 13 years. The AAP has simply advised that "limits are important". Moreover, prolonged sitting in front of the screen is equivalent to a sedentary lifestyle and has been linked to various health concerns such as high blood pressure, obesity, diabetes, cardiovascular diseases, osteoporosis, colon cancer, anxiety, and depression (World Health Organization, 2002). Lawrence et al. (2021) stated that for most students, it is the school that provides the with social interaction, physical activity, and entertainment. In addition, according to (Minutillo et

al., 2020), online learning has led learners to experience negative emotions such as frustration and confusion, which resulted in stress and anxiety, which affect the interaction of the learner within the virtual classroom, thus may hinder student success. Furthermore, those who use technology immoderately affect their academic performance more than any other factor (Park & Hyun, 2014; Atl et al., 2019). Basch (2010) supported and accepted that healthy children learn better than those suffering from any health-related diseases.

Technology is indeed essential in the lives of students, and because of this, the education sector in this country still remains even at difficult times. Education should not be hampered, yet should be seriously addressed to address the impact of online learning on health of learners, both physically and mentally. Therefore, it is very important to discuss and analyze health concerns about online learning with students and their parents. In addition, we know that online learning is equal to physical inactivity, so the impact on the health of students taking online classes needs to be examined. Up to the present moment, there are no studies specifically addressing the impact of online learning on the physical and mental health of students taking their entire classes at Western Mindanao State University online. This study aims to determine the physical and mental health of students doing online learning.

Research Questions

The study sought to answer the following questions:

1. What is the overall physical and mental health of the respondents?
2. Is there a significant difference between the physical and mental health of the respondents when grouped according to their characteristics:
 - 2.1 age;
 - 2.2 gender;
 - 2.3 civil status; and
 - 2.4 year level?

Literature Review

Online Learning

Various terms have been linked to “online learning” including blended learning, computer-mediated learning, e-learning, distance education, distance learning, m-learning, open learning and web-based learning (Berg & Simonson, 2021; Cook, 2011; Cojocariu et al., 2014; Kai, 2019), are any learning

experiences delivered via technological devices that are connected to the internet under synchronous or asynchronous setting (Dhawan, 2020). Under these settings, students can still learn along with their teachers and classmates independently regardless of their geographic locations (Singh & Thurman, 2019). Synchronous setting happens in real time which means that an online learner can communicate with other learners and instructors at the same time in a same platform, on the other hand, asynchronous allows learners to learn at different times and at their own pace. Moreover, Mason (1998) suggested that there are two classifications of online learning courses called “partially online” and “fully online learning course”. Partially online course is the combination of printed resource materials and some features of online learning meanwhile, fully online course is the teaching and learning process held most of the time over the internet.

Different authors made mentioned about the origin of online learning as to when, where, and how online learning was first used for conducting classes. According to Singh and Thurman (2019), online learning was originally initiated in 1995, when a web-based system was formed and primarily used as the Learning Management System (LMS) and thereafter known as Blackboard. However, Sakar (2020) discussed that online learning was accounted to be first used around 1960 at the University of Illinois, USA. Although the internet at that time do not exists yet, students started learning through the use of a computer terminal: an electromechanical hardware device used for inputting, retrieving and displaying data from a computer, that was connected to form a network. Furthermore, according to Thompson (2021) online learning was first dispersedly used in 1982 to provide corporate executives a distance learning using a computer referencing at the Western Behavioral Sciences Institute.

Online learning has its own advantages and challenges. Adedoyin and Soykan (2020), discussed that due to high dependency of online learning on technology and the internet, teacher and students with poor internet connections are hindered to attend their online classes. Moreover, Dhawan (2020) added other difficulties linked to online learning and these includes issues on installation, log in problems, downloading errors, and problems with the audio and video. An inappropriate use of technology with no detailed plans of its implementation in a learning process will result in various issues such as poor communication, feeling of isolation, lack of motivation and funds, poor quality of education and accessibility to remote areas (Dhull &



Sakshi, 2017). On the other hand, the advantages of online learning provide learners with opportunities (Adedoyin & Soykan, 2020), allow students to learn at their own pace (Amer, 2007; Dhull & Sakshi, 2017), it is interactive (Leszczynski et al., 2018; Wagner et al., 2008), and flexible (Smedley, 2010). Dhull and Sakshi (2017) added that online learning is accessible in most countries, it enables personalized learning, develops mental skills, inexpensive, promotes research, makes the learner computer literate, provides equal opportunity to all regardless of their status, cultural background, religion, disability and geographic locations.

Physical and Mental Health

The concept of health refers to complete state of wellness such as physical and emotional well-being (Felman, 2020; Upadhya, 2017). Physical health relates to anything that concerns the body and its overall condition (Kurtus, 2021; Lancet, 2009; Nishat, 2021), on the other hand a mental health refers to how someone handle stress, connect with other people, and can make healthy decisions which includes emotional, psychological, an social well-being of that someone (Centers for Disease Control and Prevention, 2021; Felman, 2020; Wanjohi, 2012; WHO, 2021). Various authors stated that there is a significant relationship between physical and mental health. Accordingly, poor mental health is a significant factor that increases the risk of developing physical health problems, on the same manner, having chronic physical conditions both directly and indirectly affects a person's mental health (Canadian Mental Health Association, 2021; hillside, 2019; Mental Health Foundation, 2021; WebMD, 2021).

A good physical health can work along with mental health to better one's overall quality of life. A person who has good physical health means that its body functions and processes at its best (Felman, 2020) and a good mental health is the attributes of a sound body health (Wanjohi, 2012). A person with positive physical health shows certain characteristics such as maintaining normal weight, blood pressure, and blood glucose level. Also, that person displays healthy skin and hair, have good eye health, low resting heart rate, normal respiration and a healthy body (Upadhya, 2017). In addition, balanced diet, regular exercise and good amount of rest contributes to good health. According to Braden et al. (2021), sleeping and eating well, being physically active, having good hygiene, getting enough relaxation are the aspects of physical health. Meanwhile, Rosenbaum and Newby (2020) stated that a positive mental health is a combination of

feeling good and functioning well. The same author mentioned about its key components which are having positive emotions, positive outlook on life, emotional stability, feeling of attainment, tenaciousness, confidence, and dynamism. Felman (2021) added that a good mental health is not only classified by the absence of depression, anxiety, or other psychological disorder but relies on the ability of a person to balance and enjoy life, recover against tough times, adapt to difficulties, feel safe and secure, and reached their maximum potential.

Online Learning and Health

Ever since, the word online learning has been associated with numerous terms and evolved along with rapidly changing technologies. This made authors to consistently follow the dynamic interpretations of the concept of online learning to better our knowledge of it (Singh & Thurman, 2019).

During this pandemic time, online learning has become the key to keep learning institutions functional around the globe. It has taken the support of information and communication technology and enable people to learn even at different time zones and geographic locations. In current discussions of online learning, one of the consequences of the transition of education from traditional to online is its impact on the health of students, particularly mental and physical health. At the present time, the effects of online learning on the health of learners has been the center of various researches determining the academic performance of those pursuing online learning. Mangis (2016) concluded that online learning has a strong correlation to functional health. This means that online learning equivalent to a sedentary lifestyle is associated with various health concerns such as high blood pressure, obesity, diabetes, cardiovascular diseases, osteoporosis, colon cancer, anxiety and depression (World Health Organization, 2002). According to Wiles (2020), online classes has led students to experience challenges that are related to increased screen time such as headaches, fatigue and feelings of isolation due to restricted physical socialization. Addition is the study of Kaya (2020), it was found that the online education was positively correlated with eye fatigue. Other examples are studies of Irawan et al. (2020); Harjule et al. (2021); Lawrence et al. (2021); Minutillo, (2020); Son et al. (2020); Yaghi, (2021), showed that online classes, specifically, an increase of screen time among school children resulted in stress and several anxiety issues, mood changes and mental health concerns such as depression. These studies do not summarize all



researches investigating the impact of online learning on the health of learners but provided that online learning presents numerous risks on the physical and mental health of the learners.

In this study, the concept of the effects of online learning is limited to 2 aspects of health – physical and mental health. This present study aims to determine the physical and mental health of students doing online learning. It is very important to discuss and analyze health concerns with students and their parents as it interfere with learning and affects their academic performance, most especially undergraduate students wherein they cannot complete their degrees without having good health. In addition, it is known that online learning is equal to physical inactivity, so the impact on the health of students taking online classes needs to be examined.

Methodology

Research Design

This is a quantitative study that made use of a survey questionnaire to gather relevant data. The data was gathered in a span of a short time which suggests that it is a cross-sectional study. In addition, it is descriptive research that aimed to determine the physical and mental health of students doing online learning that utilize simple statistics such as standard deviation and mean to characterize the physical and mental health of students when grouped according to age, gender, civil status, and year level.

Respondents

The research sample of the study constituted a total of 511 undergraduate students attending online classes. In terms of gender, the majority are females (377 or 73.8%) and the age range is 18-27 with mean score equals 20.13 (SD-1.74). With respect to respondents' civil status, majority are single with 98.6%. Most of the respondents are first year garnering 29.7% followed by second year students with 28.2%, next are third year students with 27.6%, and lastly fourth year students with 14.5%.

Research Tool

The instrument utilized for this study was the Short Form Health Survey 1.0 (SF-36). It is a questionnaire of 36 items and has eight variables which include general health, physical functioning, role limitations due to physical health, role limitations due to

emotional problems, energy/fatigue, emotional well-being, social functioning, and pain. All of these are what categorize physical and mental health behaviors (McHorney et al., 1993; Ware et al., 1993). For the SF-36 questionnaire, items 1, 2, 33, 34, 35, and 36 pertain to general health. Items 3, 4, 5, 6, 7, 8, 9, 10, 11, and 12 is for physical functioning; items 13, 14, 15, and 16 belong to role limitations due to physical health; items 17, 18, and 19 deal with role limitations due to emotional problems; items 23, 27, 29, and 31 focus on energy/fatigue; items 24, 25, 26, 28, and 30 capture emotional well-being; items 20 and 32 cover social functioning; and items 21 and 22 refers to pain. In addition, the scores from the SF-36 questionnaire that addresses each of the eight factors are added together and then averaged. The result is then calculated as a percentage and the scoring guidelines for the SF-36, refer to Table 1.0.

Table 1.0
Scoring Guide

Question Number	Original Response	Recorded Value
1, 2, 20, 21, 34, 36	1	100
	2	75
	3	50
	4	25
	5	0
3, 4, 5, 6, 7, 8, 9, 10, 11, 12	1	0
	2	50
	3	100
13, 14, 15, 16, 17, 18, 19	1	0
	2	100
21, 23, 26, 27, 30	1	100
	2	80
	3	60
	4	40
	5	20
	6	0
24, 25, 28, 29, 31	1	0
	2	20
	3	40
	4	60
	5	80
	6	100
32, 33, 35	1	0
	2	25
	3	50
	4	75
	5	100

Figure 1. 1



Reliability of the Instrument

Out of the 106 respondents who completed the survey for the pilot test, the majority are females composing 76.4% of the total sampling population. The youngest of the respondents is aged between 18 and 22, while the oldest is aged between 23 and 25 with a mean age score of 1.06 and a standard deviation of .270. For the civil status of the respondents, the majority are single with 98.1% and most of the respondents are third-year students garnering 60.4%, followed by second-year students with 21.7%, next are first-year students with 10.4%, and lastly fourth-year students with 7.5%. Note that the responses for age are coded instead of stating in figure: 1 for 18-22, 2 for 23-25, 3 for 26-30, and 4 for 30+.

To determine the reliability of the instrument, Cronbach’s alpha’s test was used and yielded the result of reliability alpha equal to 0.847. The following reliability was yielded for the different subscales: General health equals to .667 with 6 items, physical functioning equals to .889 with 10 items, role limitations due to physical health equals to .742 with 4 items, role limitations due to emotional problems equals to .683 with 3 items, energy/fatigue equals to .280 with 4 items, emotional well-being equals to .672 with 5 items, social functioning equals to .751 with 2 items, and pain equals to .232 with 2 items.

Result

Short Form Health Survey (SF-36) Questionnaire

Presented in Table 2.0 is the overall physical and mental health of respondents. Included in the Table are the subscales of Short Form Health Survey (SF-36), number of respondents who scored below fifty, mean (M) that was calculated as a percentage reflecting the physical and mental health and the higher the score, the better the health state, standard deviation (SD). Since a score of 100 represents highest level of functioning possible, the percentage of 48.69 (SD-14.56) out of a maximum possible score of 100 shows that respondents experience overall poor health that is possible derive from their online classes. Among the different factors on the scale, factors such as general health, physical functioning, pain, and energy/fatigue obtained the highest percentages with 56.93% (SD-18.40), 57.04% (SD- 25.73), 50. 68% (SD- 19.60) and 59. 60% (SD- 22.06), respectively. The factors that obtained the lowest percentages were role limitations due to physical health with 36.84% suggests that respondents are experiencing poor social life that was

influenced by their physical health. Role limitations due to emotional problem with 37.70% implies that respondents are having poor social life that was influenced by emotional problems. Also, emotional well-being with 43.59% indicates that respondents are emotionally unstable. In addition, the social functioning with 47.15% insinuates that respondents have poor social life due to their physical and mental states. Furthermore, factors such as role limitations due to physical health, role limitations due to emotional problems, emotional well-being and social functioning shows more than half of the respondents are at risk of physical and mental health problems. Moreover, in general health there are 158 students think that they have poor physical and mental health, 203 students in physical functioning is experiencing that they do not function well physically. Factors such as emotional well-being, 291 students felt body pain in day to day basis and social functioning showed 169 students who have poor social life due to their physical and mental states.

Table 2
Short Form Health Survey (SF-36) 1.0 Questionnaire Score

Physical and Mental Health Factors	Mean Percentage	f	SD
General Health	56.9309	158	18.40237
Physical Functioning	57.0450	203	25.73576
Role Limitations due to Physical Health	36.8395	292	34.75039
Role Limitations due to Emotional Problem	37.7038	331	36.99541
Pain	50.6810	161	19.60740
Energy/Fatigue	59.6037	290	22.05990
Emotional Well-being	43.5910	291	14.74526
Social Functioning	47.1546	169	15.72826
Overall	48.6937	302	14.55702

Figure 2. 2

Factors that has the highest percentages means that none of the respondents’ experience physical and mental health concerns among those matters. In this study, the low score of respondents from scales of role limitations due to emotional problems, emotional well-being and social functioning contribute to mental health component suggests that these students are at risk of depression (Lins et al., 2015). Moreover, the overall percentage of the respondents physical and mental health presented low percentage of 48. 69 and were below 50.0%, taken as a mean reference value from each subscale which suggests that online learning has negative impact towards the physical and mental health of learners most especially during the pandemic. This supports the findings of Balram (2020); Barrot et al. (2021); Lins et al. (2015); Mangis (2016); Oducado



et al. (2020); and Ro et al. (2021) that online learning during the pandemic brought negative impact both on physical and mental health of learners.

Gender Differences on the Physical and Mental Health of Respondents

Result (p value = .080) in Table 3.0 shows that there is no significant difference between males and females' physical and mental health. The foregoing finding contradicts that of Paro et al. (2010); Prowse et al. (2021) and Rotas & Cahapay (2020) who found that there is significant difference between gender and physical and mental health of respondents. Meanwhile, the result conforms with that Cao et al. (2020); Jiang et al. 2021); Mangis (2016); Yaghi (2021).

Table 3.0
Result of Independent Samples T-test for Gender Difference on Physical and Mental Health

Variables		Mean	SD	Sig. (2-tailed)
Dependent	Independent			
Overall	Male	50.6256	14.97769	.080
	Female	48.0070	14.36220	

Figure 3. 3

In the past, it has been the belief that the health of males is different than that of females, however, the result of this study shows that it is not true. Although, the present data indicate that online learning has been more difficult on female students. Male students tended to have a higher score than females which suggests that male have better health than their counterpart and this finding mirrors previous studies under general population (Domantay, 2014; Laguardia et al., 2013; Lins et al., 2015; and Prowse et al., 2021). In addition, males were more likely to engage in risky health behaviors while females were more prone to suffer from poor health (Kim et al., 2021). Thus, relationship between physical and mental health in males is similar from that in females.

Civil Status Differences on the Physical and Mental Health of Respondents

The obtained p-value (0.356) in Table 3.1 indicates that there is no significant difference in the physical and mental health between single and married.

Table 3.1
Result of Independent Samples T-test for Civil Status Difference on Physical and Mental Health

Variables		Mean	SD	Sig. (2-tailed)
Dependent	Independent			
Overall	Single	48.6117	14.53918	.356
	Married	54.5982	15.79527	

Figure 4. 4

The results in Table 2.1 implies that both single and married students in this study had similar physical and mental health state. Since, no studies so far have investigated the possible relationship between learner's physical and mental health and civil status, the foregoing result can serve as a basis in determining if there is a significant difference on learner's physical and mental health when they are grouped according to civil status and if married students were more likely to suffer from poor health under online learning than that of single students.

Difference on participants' physical and mental health when grouped according to age

The study also sought to determine if undergraduate students age from 18 to 27 differ in terms of their physical and mental health. Result (p value = 0.718) of the One-way ANOVA in Table 4.0 shows that there is no significant difference on the physical and mental health when participants are grouped according to their age. The results in Table 2.2 contradicts with the finding of Laguardia et al. (2013), who found out that there is significant difference and the scores of two components (physical and mental health) of the SF 36 questionnaire are higher among younger age groups and declines as age increases. Concurrently, the data conform the findings of Latas et al. (2014).

Table 4.0
Result of One-way ANOVA for Difference in Physical and Mental Health when grouped according to age

	Mean Square	Sig.	Interpretation
Between Groups	146.972	.718	Accept the Null Hypothesis
Within Groups	213.073		

Figure 5. 5

Difference on participants' physical and mental health when grouped according to year level

Unlike respondents' age, results of one-way ANOVA in Table 4.1 show significant difference (p value = .028) on the physical and mental health of students when students are grouped according to year level. This is to some extent contradicts the findings of

Domantay (2014), who found that there were no significant differences in the physical and mental health components of SF 36 questionnaire, apart from the social functioning factor where fourth year students had lower scores compared to other three year levels. In addition, there are studies conducted that there is no clear trend observed and that year levels 2, 3 and 4 had lower scores for physical and mental health dimensions compared to first year students with largest difference among third year students, in the relationship between learner's physical and mental health and year level similar to the findings of Paro et al. (2010) and Lins et al. (2015). Meanwhile, the result conforms with that of Lins et al., (2015). The foregoing result can serve as a basis in determining if there is no significant difference on learner's physical and mental health when they are grouped according to year level and if students that are almost to graduate suffered health-related problems the most than students who just entered college life. The data shows that regardless of year level, undergraduate students may experience different physical and mental health state. It can be inferred that the physical and mental health of respondents vary as they enter another year.

Table 4.1

Result of One-way ANOVA for Difference in Physical and Mental Health when grouped according to year level

	Mean Square	Sig.	Interpretation
Between Groups	642.223	.028	Reject the Null Hypothesis
Within Groups	209.361		

Figure 6. 6

Null Hypothesis of this study is, there are no significant differences on the physical and mental health of undergraduate students who are taking an online class and the alpha level was set to $p \leq 0.05$.

Discussion

The purpose of this study was to investigate the physical and mental health of learners doing online learning. A survey having four demographic questions and the Short Form Health Survey (SF-36) was sent randomly to Western Mindanao State University students, school year 2021-2022. A total of 511

undergraduate students completed the survey. There were no significant differences between the physical and mental health of students according to age, gender and civil status in either Independent Samples T-Test or one-way ANOVA, however, there is significant changes between the physical and mental health of respondents when grouped according to year level using a One-way ANOVA. The result of this study are as follows:

- The overall physical and mental health of learners presented low percentage of 48.69 (SD- and were below 50.0%.
- When data is grouped by gender, civil status, and age no significant difference between these demographics and respondents' physical and mental health were found with a p-value of .080, .356, and .718, respectively.
- According to year level of students, the result presented that there is a significant difference in the physical and mental health of respondents having a p value of .028.

Conclusion

Even though these results are similar to the past research of Mangis (2016), it is possible that the physical and mental health issues found in this study are the results of online classes. Meanwhile, even though this study did not examine another outcome, it is also possible that online learning enables students to be more physically active and mentally stable because students will be having enough time to do more something productive and spend it with their loved ones while inside their homes.

Other factors that can contribute to the negative effect of online learning on the physical and mental health of students are finances, technical problems, learner motivation, and instructors' experience with online learning (Mangis, 2016). Frustrations with students' new learning environment may bring a negative impact (Moore et al., 2011; Lim et al., 2007). Before, the academic year starts, students should have the opportunity to voice out their perspectives about the course content and teaching strategies that will be used to minimize health-related concerns as much as possible such as too much screen time, anxiety, and depression. The health and education of students must be treated with utmost concern since healthy students learn best and therefore can easily achieve learning goals and objectives at the same time, students with poor health are most likely to manifest school problems and academic failure, most especially to undergraduate students wherein health is human



capital.

Research suggests instructors should add breaks between classes. For instance, since every class spent an hour and thirty minutes, allowing students to have at least twenty minutes off-screen will reduce eye strain and enough time to at least move around. The results of having breaks, for instance, twenty minutes, from sitting for an hour in every class, will reduce the number of time spent in prolonged uninterrupted sitting class (Evans et al., 2012). Another research suggests that the teaching strategies used may affect both learning outcomes and student satisfaction (Lim, Morris, & Kupritz, 2007). Encouraging online instructors to have breaks for physical activity in any class that lasts for more than an hour is also important (Evans et al., 2012).

References

(n.d.). Retrieved from American Optometric Association: <https://www.aoa.org/healthy-eyes/eyes-and-vision-conditions/computer-vision-syndrome?sso=y>

Atl, S., Gunuc, S., Kuss, D., & Baran, G. (2019). Impact of parents' technology use on 18- to 24- month old infants' adaptive behaviors. *Adaptive Behavior*, 27(3), 197-219. doi:10.1177/1059712319845340

Balam, A. (2020, April 20). How online learning can affect student health. Retrieved from <https://www.jhunewsletter.com/article/2020/04/how-online-learning-can-affect-student-health>

Barrot, J., Llenares, I., & del Rosario, L. (2021). Students' online learning challenges during the pandemic and how they cope with them: The case of the Philippines. *Education and Information Technologies*, 26, 7321-7338. doi:10.1007/s10639-021-10589-x

Berg, G., & Simonson, M. (2021). Distance Learning. Retrieved from *Distance Learning*: <https://www.britannica.com/topic/distance-learning>

Braden, H., Koshuta, J., & Chapel, L. (2021, October 23). Study.com. Retrieved from What is Physical Health?: <https://study.com/learn/lesson/what-is-physical-health.html>

Cocquyt, C., Zhu, C., Diep, A., Greef, M., & Vanwing, T. (2019). Towards Blended Learning Designs Fostering Adults' Social Capital: What Do Empirical Findings Reveal? In *Ubiquitous Inclusive Learning in a Digital Era* (pp. 55-80). Brussel, Belgium: IGI Global. doi:10.4018/978-1-5225-6292-4.ch003

Connection Between Mental and Physical Health. (2021). Retrieved from Canadian Mental Health Association: <https://ontario.cmha.ca/documents/connection-between-mental-and-physical-health/>

Cook, R. (2011). Lessons Learned From Semiotics: Social and Cultural Landmarks for Transformative Elearning. In *Transformative Online Education and Liberation* (pp. 352-369). USA: IGI Global. doi:10.4018/978-1-60960-046-4.ch019

Dagwasi, C. & Opiniano, G. (2020). No Filipino learners left

behind: Anticipating health risks and remedies of online learning. Elsevier. doi:doi.org/10.1016/j.puhip.2020.100062

data, w. c. (2021, september 19).

Dhawan, S. (2020). Online Learning: A Panacea in the Time of COVID-19 Crisis. *Journal of Educational Technology Systems*, 49(1), 5-22. doi:doi.org/10.1177/0047239520934018

Dhull, I., & Sakshi, MS. (2017). Online Learning. *International Education & Research Journal*, 3(8), 32-33. Retrieved from https://www.researchgate.net/publication/332833360_Online_Learning

Duraku, Z. & Hoxha, L. (2020). The impact of Covid-19 on education and on the well-being of teachers, parents, and students: Challenges related to remote (online) learning and opportunities for advancing the quality of education.

EDUCAUSE . (2021). Retrieved from <https://library.educause.edu/topics/teaching-and-learning/online-learning>

Evans, R., Fawole, H., Sheriff, S., Dall, P., Grant, P., & Ryan, C. (2012). Point-of-choice prompts to reduce sitting time at work. *American Journal of Preventive Medicine*, 43(3), 293-297. Retrieved from <https://doi.org/10.1016/j.amepre.2012.05.010>

Felman, A. (2020, April 19). What is good health? Retrieved from *Medical News Today*: <https://www.medicalnewstoday.com/articles/150999#types>

Felman, A. (2020, April 13). What is mental health? Retrieved from *Medical News Today*: <https://www.medicalnewstoday.com/articles/154543>

Harjule, P., Rahman, A., & Agarwal, B. (2021). A cross-sectional study of anxiety, stress, perception and mental health towards online learning of school children in India during COVID-19. *Journal of Interdisciplinary Mathematics*, 24(2), 411-424. Retrieved from <https://doi.org/10.1080/09720502.2021.1889780>

How Does Mental Health Affect Physical Health. (2021, March 29). Retrieved from *WebMD*: <https://www.webmd.com/mental-health/how-does-mental-health-affect-physical-health>

Irawan, A., Dwisona, & Lestari, M. (2020). Psychological Impacts of Students on Online Learning During the Pandemic COVID-19. *Jurnal Bimbingan dan Konseling*, 7(1), 53-60. Retrieved from <https://doi.org/10.24042/kons.v7i1.6389>

Jiang, W., Luo, J., & Guan, H. (2021). Gender Differences in the Relationship of Physical Activity and Subjective Happiness Among Chinese University Students. *Frontiers in Psychology*, 12, 1-6. doi:10.3389/fpsyg.2021.800515

Kai, M. (2019). A New Approach for Language Learning and Changing the Teacher's Role in Online Education. In *Faculty Roles and Changing Expectations in the New Age* (pp. 1-17). Guam: IGI Global. doi:10.4018/978-1-5225-7438-5.ch001

Kaya, H. (2020). Investigation of the effect of online education on eye health in Covid-19. *International Journal of Assessment Tools in Education*, 7(3), 488-496. Retrieved from <https://doi.org/10.21449/ijate.788078>

Kim, H., Park, K., & Park, S. (2021). Gender Differences in Lifestyle and Mental Health among Senior High School Students in South Korea. *International Journal of Environmental Research and Public Health*, 1-13. doi:10.3390/ijerph182010746



- Kurtus, R. (2021). What is Physical Health. Retrieved from School for champions: www.school-for-champions.com/health/what_is_health.htm
- Laguardia, J., Campos, M., Travassos, C., Najar, A., Anjos, L., & Vasconcelos, M. (2013). Brazilian normative data for the Short Form 36 questionnaire, version 2. *Brazilian Journal of Epidemiology*, 16(4), 889-897. Retrieved from <https://doi.org/10.1590/S1415-790X2013000400009>
- Latas, M., Stojkovic, T., Ralic, T., Ralic, T., M. Jovanovic, S., Spiric, Z., & Milovanovic, S. (2014). Medical students' health-related quality of life - A comparative study. *Vojnosanitetski Pregled*, 71(8), 751-756. doi:10.2298/VSP1408751L
- Lawrence, S., Garcia, J., Stewart, S., & Rodriguez, C. (2021). The mental and behavioral health impact of COVID-19 stay at home orders on social work students. *The International Journal*, 1-15. doi:10.1080/02615479.2021.1883582
- Lim, D., Morris, M., & Kupritz, V. (2007). Online vs. blended learning: differences in instructional outcomes and learning satisfaction. *Journal of Asynchronous Learning Network*, 10(4), 27-42. Retrieved from <https://files.eric.ed.gov/fulltext/EJ842695.pdf>
- Lins, L., Carvalho, F., & Damasceno, H. (2015). Health-related quality of life of students from a private medical school in Brazil. *International Journal of Medical Education*, 6, 149-154. doi:10.5116/ijme.563a.5dec
- Mangis, J. (2016). Online learning and the effects on functional health: a pilot study. EWU Masters Thesis Collection, 1-37. Retrieved from <http://dc.ewu.edu/theses/386>
- Mental Health: strengthening our response. (2018, March 30). Retrieved from World Health Organization: <https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>
- Minutillo, S., Cleary, M., & Visentin, D. (2020). The Mental Health of Online Learners within the Educational Sector. *Issues in Mental Health Nursing*, 1-3. doi:10.1080/01612840.2020.1776552
- Moore, J. L., Dickson-Deane, C., & Galyen, K. (2011). E-learning, online learning, and distance learning environments: are they the same? *Internet and Higher Education*, 129-135.
- Moore, J., Dickson-Deane, C., & Galyen, K. (2011). E-learning, online learning, and distance learning environments: are they the same? *The Internet and Higher Education*, 14(2), 129-135. Retrieved from <https://doi.org/10.1016/j.iheduc.2010.10.001>
- Nishat, N. (2021). What Does Physical Health Mean? Retrieved from The World Book: <https://theworldbook.org/physical-health/>
- Oducado, R., Parreno-Lachica, G., & Rabacal, J. (2021). Personal resilience and its influence on COVID-19 stress, anxiety and fear among graduate students in the Philippines. *International Journal of Educational Research and Innovation*, 15, 431-443. doi:10.46661/ijeri.5484
- Organization, W. H. (2002, April 4). Retrieved from Physical inactivity a leading cause of disease and disability, warns WHO: <https://www.who.int/news/item/04-04-2002-physical-inactivity-a-leading-cause-of-disease-and-disability-warns-who#:~:text=Sedentary%20lifestyles%20increase%20all%20causes,lipid%20disorders%2C%20depression%20and%20anxiety.>
- Paro, H., Morales, N., Silva, C., Rezende, C., Pinto, R., Morales, R., Mendonca, T., & Prado, M. (2010). Health-related quality of life of medical students. *Medical Education*, 44, 227-235. Retrieved from <https://doi.org/10.1111/j.1365-2923.2009.03587.x>
- Physical Activity, Fitness, and Physical Education: Effects on Academic Performance. (2013, October 4). Washington, DC, United States: National Academies Press. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK201501>
- Physical health and mental health. (2021, July 9). Retrieved from Mental Health Foundation: <https://www.mentalhealth.org.uk/a-t-z/p/physical-health-and-mental-health>
- Pragholapati, A. (2020). COVID-19 IMPACT ON STUDENTS.
- Prowse, R., Sherratt, F., Abizaid, A., Gabrys, R., Hellemans, K., Patterson, Z., & McQuaid, R. (2021). Coping With the COVID-19 Pandemic: Examining Gender Differences in Stress and Mental Health Among University Students. *Frontiers in Psychiatry*, 12, 1-11. doi:10.3389/fpsy.2021.650759
- Ro, A., Rodriguez, V., & Enriquez, L. (2021). Physical and mental health impacts of the COVID-19 pandemic among college students who are undocumented or have undocumented parents. *BMC Public Health*, 1-10. doi:10.1186/s12889-021-11606-x
- Rosenbaum, S. & Newby, J. (2020, May 27). What are the characteristics of strong mental health. Retrieved from UNSW Sydney: <https://newsroom.unsw.edu.au/news/health/what-are-characteristics-strong-mental-health>
- Rotas, E. & Cahapay, M. (2020). Difficulties in Remote Learning: Voices of Philippine University Students in the Wake of COVID-19 Crisis. *Asian Journal of Distance Learning*, 15(2), 147-158. doi:doi.org/10.5281/zenodo.4299835
- Singh, V., & Thurman, A. (2019). How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988-2018). *American Journal of Distance Education*, 33(4), 289-306. doi:10.1080/08923647.2019.1663082
- Son, C., Hegde, S., Smith, A., Wang, C., & Sasangohar, F. (2020). Effects of COVID-19 on College Students' Mental Health in the United States: Interview Survey Study. *Journal of Medical Internet Research*, 22(9). doi:10.2196/21279
- Tamm, S. (2020, December 21). What is E-learning? Retrieved from <https://e-student.org/what-is-e-learning/>
- The Link Between Physical and Mental Health. (2019, March 7). Retrieved from Hillside: <https://hside.org/link-between-physical-and-mental-health/>
- U.S. Department of Education, O. o. (2010). Evaluation of Evidence-Based Practices in Online Learning: A Meta-Analysis and Review of Online Learning Studies. Washington. Retrieved from www.ed.gov/about/offices/list/oepd/ppss/reports.html
- Upadhaya, R. (2017, August 19). Characteristics of a physically healthy person. Retrieved from India Study Channel: <https://www.indiastudychannel.com/resources/172286-Characteristics-of-a-physically-healthy-person.aspx>
- Wanjohi, A. (2012, December 13). Characteristics of Good Health. Retrieved from Kenpro: <http://www.kenpro.org/characteristics-of-good-health/>
- What is mental health? (2021, June 28). Retrieved from Centers for Disease Control and Prevention: <https://www.cdc.gov/mentalhealth/learn/index.htm>



Wiles, G. (2020, July 30). Students share impact of online classes on their mental health. Retrieved from https://statenews.com/article/2020/07/students-share-impact-of-online-classes-on-their-mental-health?ct=content_open&cv=cbox_featured

Yaghi, A. (2021). Impact of online education on anxiety and stress among undergraduate public affairs students: A longitudinal study during the COVID-19 pandemic. *Journal of Public Affairs Education*, 1-18. doi:10.1080/15236803.2021.1954469

Yang, K. & Kang, Y. (2020). What Can College Teachers Learn From Students' Experimental Narratives in Hybrid Courses? A Text Mining Method of Longitudinal Data. In *Theoretical and Practical*

Approaches to Innovation in Higher Education (pp. 91-112). El Paso, Texas: IGI Global. doi:10.4018/978-1-7998-1662-1.ch006

Affiliations and Corresponding Informations

Corresponding: Jewel Doreen Lemana
Email: gt201900156@wmsu.edu.ph
Phone:



Jewel Doreen Lemana:
Western Mindanao State University
