

Holistic Online Learning, in a Post COVID-19 World

Kevin M. Jackson, Márta Konczosné Szombathelyi

Doctoral School of Regional and Business Administration Sciences, Szechenyi Istvan University, Egyetem tér 1, 9026 Győr, Hungary;
kevin.jackson@sze.hu, kszm@sze.hu

Abstract: In August of 2020, the United Nations reported that the COVID-19 pandemic had affected 1.6 billion learners, in more than 190 countries and on all continents [1]. The closing of schools and other learning spaces impacted an astonishing 94% of the world's student population. These sudden school closures, at all levels, had the immediate and unprecedented effect of triggering a mass migration to emergency remote teaching. While mass vaccinations have enabled educational institutions to reopen and students to return to classrooms in the Fall of 2021, the educational disruption caused by the COVID-19 pandemic is far from over. Higher education must now permanently transition from reductionist, emergency remote learning systems to permanent, holistic online learning platforms. In order to better understand this transition, an online survey was delivered to diverse groups of international students attending Corvinus University and ESSCA School of Management, at the beginning and end of the Spring 2021 semester. The analysis of this survey, strongly indicates that the home and social environments of University, had a significant impact on the student's learning aptitudes.

Keywords: higher education; COVID-19; emergency online learning; learning experience; sentiment analysis

1 Introduction

According to the UNESCO Institute of Statistics, there were 32.6 million students enrolled in higher education in 1970. In 2000, this number rose to 99.9 million students. Despite headwinds such as a declining youth population and lower fertility rates, the UIS estimates that the enrollment in high education could potentially be 377.4 million students (2030), 471.4 million by 2035, and 594.1 million by 2040 [2]. Even if one halves each of these forecasts, these numbers and growth rates are staggering.

The growth of online learning before the COVID-19 pandemic, can be characterized by four phases: 1990s (Internet propelled distance education), 2000-2007 (increasing use of Learning Management Systems – LMS), 2008-2012 (growth of

Massive Open Online Courses – MOOCs), and beyond where online enrollments in higher education outpaced traditional higher education enrollments [3]. Since the first phase back in 1990, international organizations, such as UNESCO, the World Bank, and the European Commission, have all argued that online education has the unique opportunity to cost effectively reach rural and disadvantaged areas of the world). Considering the tremendous growth of online that has occurred during the past few years, educators continuously face the significant challenge of ensuring that the quality of online education keeps pace with the quantity of users [4].

During these four phases, the effectiveness of traditional vs. online learning has been vigorously debated and conclusions vary. In the past decade, there have been a few notable randomized trials studying the effects of online instruction on student learning. One such study involved a large introductory microeconomics course at a major research university where students were randomly selected to watch either live lectures or the same lectures in a traditional educational setting [5]. The results indicate that live-only teaching was moderately more effective than online teaching, although this effectiveness was more significant for Hispanic students, male students, and lower achieving students. In another well-known randomized trial, students at six public universities were given either a hybrid “blended” format (one hour of face time instruction per week) or a traditional format (three hours of face-to-face instruction). The results of this study showed that the students learning in the hybrid mode had learning outcomes that were approximately the same as those who attended traditional classes and at a significantly reduced cost. One of the key conclusions of this study was that properly designed online learning programs have the potential to achieve at least equal outcomes as traditional learning [6]. Lastly, a randomized trial involving 1,519 students across four semesters revealed that the students who completed purely online course had learning outcomes that were inferior to those attending live classes [7]. In any case, it must be understood that delivering effective online learning is very complex and the result of careful planning and an evolving design fueled by significant feedback from teachers and students.

The COVID-19 pandemic forced a mass migration to emergency remote learning (ERT) where the primary objective of educators was to get all students online as quickly as possible [8-16]. This rapid transition lies in contrast to how many effective online platforms were previously built using careful design, planning, and significant student feedback [17]. While the shock of rapid online migration has somewhat diminished, the challenge of delivering online education that is comparable with live classroom teaching has not. We now live in a world where online teaching is no longer an option, but rather a necessity [18]. Educators must now understand and properly respond to the fact that dismantling of the physical and social environments of universities will have a permanent impact on the mental and physical well-being of their [19].

A higher education, comparative study was conducted during the COVID-19 pandemic regarding the online learning perceptions of 559 students from South

Africa, Wales, and Hungary [20]. As one might expect, the results of this study show that there were significant differences in how students experienced online learning. The underlying causes behind these differences were related to how well a particular country responded to the pandemic and the level of support and resources given to students. The home environments of these students, therefore, played a critical role in shaping online learning perceptions. In another international study conducted during the COVID-19 pandemic involving 1,047 participants, the results revealed that the psychosocial strain was significantly increased during periods of home confinement [21]. A larger study done in the U.S. involved 30,725 undergraduate students and 15,346 graduate students showed that the prevalence of major depressive disorders was two times higher in 2020 compared to 2019 and anxiety disorders were 1.5 times higher than in 2019 [22]. Finally, a sample of 30,383 students from 62 countries revealed that negative impact of the COVID-19 pandemic, particularly for the most vulnerable student groups [23].

As these research studies indicate, university students from all over the world have been harmed and damaged by the effects of the COVID-19 pandemic. This harm and damage grew as the shared facilities and face to face communities were dismantled [19]. Educators find themselves in the position to not only reflect on what has transpired since March of 2020, but to also use this experience to create online learning platforms that do far more than just “go online” [24]. Universities around the world can no longer deny the fact that online learning has already become a permanent part of education at all levels. Success in future, therefore, will lie in the recognition that holistic online learning must replace emergency remote teaching (ERT) practices [25].

This paper studies the critical importance of home and social environments on university students’ learning experiences during the COVID-19 pandemic and poses the following research questions:

- RQ₁:** What was the level of home and social disruption for university and graduate students during the Fall 2020 semester?
- RQ₂:** How did home and social disruption for university and graduate students progress during the Spring 2021 semester?
- RQ₃:** How did emergency remote learning impact the quality of education in the Spring 2021 semester?

The rest of the paper will be organized as follows: Section 2 introduces the materials and methods used, Section 3 presents and discusses the results, Section 4 justifies the results, Section 5 draws conclusions and summarizes the research as well as outlines possible future research options.

2 Materials and Methods

2.1 Demographics of Participants

A total of 212 students from Corvinus University (103 students) and the ESSCA School of Management (109 students) were surveyed at the beginning of the Spring 2021 semester (Figures 1, 2 and 3).

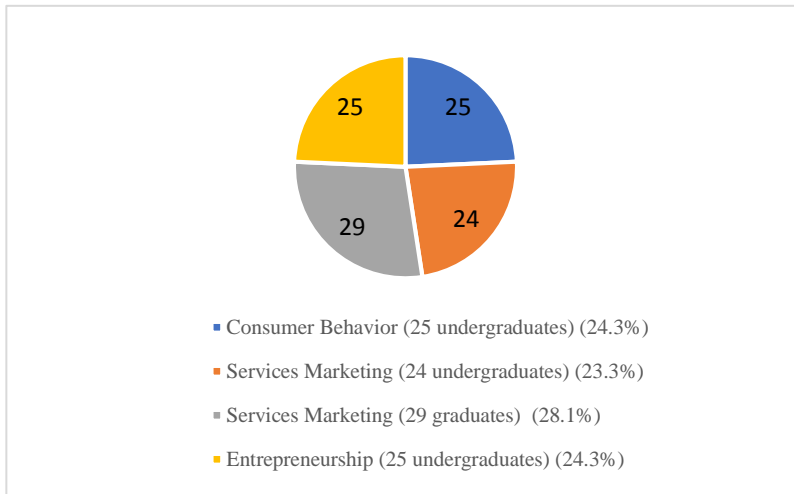


Figure 1

Students' majors surveyed at Corvinus University, N=103

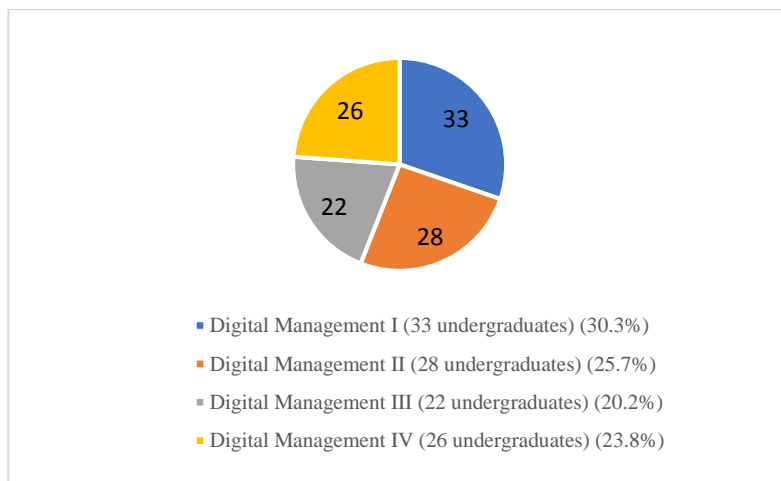


Figure 2

Students' majors surveyed at ESSCA School of Management, N=109



Figure 3

Students' Academic Disciplines (Corvinus University and the ESSCA School of Management), N=212

The survey given at the beginning of the Spring 2021 semester (BOS) measured the student remote learning sentiment from the Fall 2020 and Spring 2020 semesters. The end of the Spring 2021 semester survey (EOS) was primarily focused on the changes in student remote learning sentiment that occurred during this semester. All the following classes were taught entirely in English and online using Microsoft Teams.

There were 109 students who responded to the BOS survey that included 45 males (41.3%) and 64 females (58.7%). The average age was 21.5 years (standard deviation = 2.2) (Figure 4).

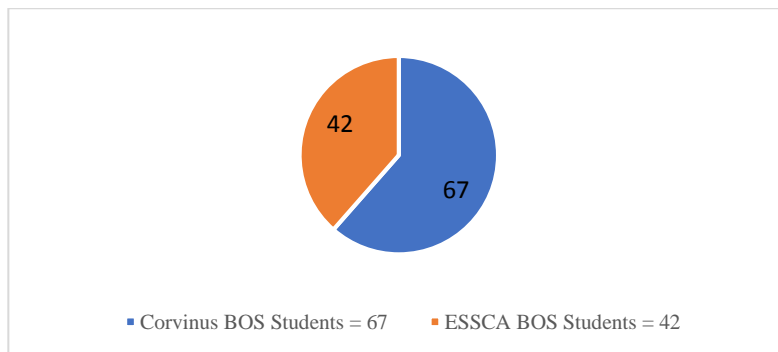


Figure 4

BOS Corvinus vs. ESSCA students, N=109

There were 129 students who participated in the EOS survey that included 53 males (41%) and 76 females (58.9%). The average age was 21.8 years of age (standard deviation = 2.2) (Figure 5).

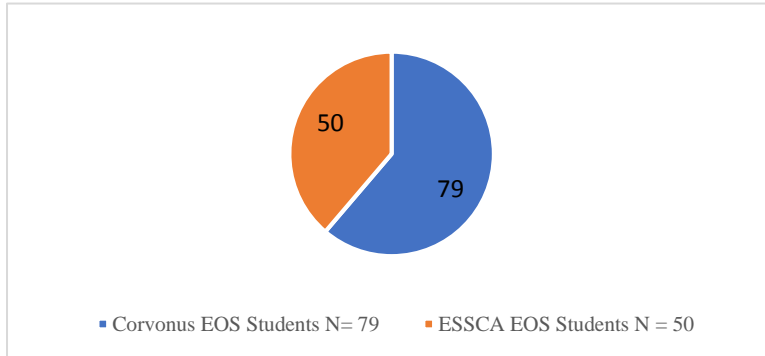


Figure 5

EOS Corvinus vs. ESSCA students, N=129

The sample size of the EOS Average Age is only 87 students, which only includes the students who took both the BOS and EOS surveys. The data, however, shows that there not a significant difference between the average age of the students in BOS vs. EOS.

The students participating in the BOS and EOS surveys were from 29 different countries. The highest concentrations of students came from the following countries: France (52), Germany (12), Hungary (6), Azerbaijan (5), Romania (4), China (3), Ireland (3) (Figure 6).

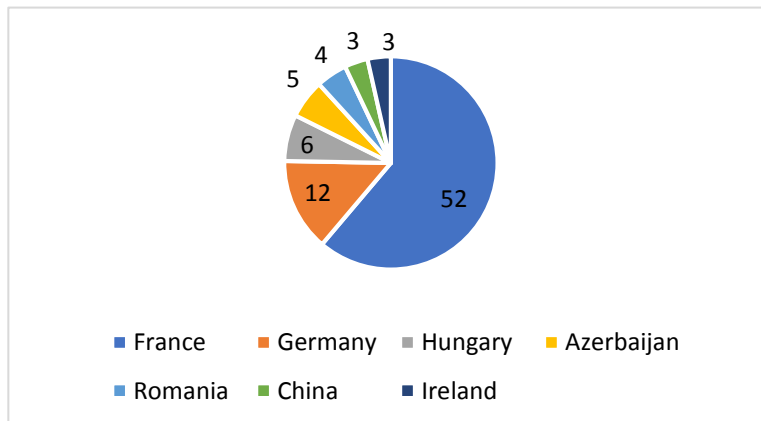


Figure 6

The highest concentrations of students came from the following seven countries, N=85

2.2 Internet and Technical Issues

When considering that a total of 83 students completed both the BOS and EOS surveys, we can conclude that there was a relatively low number of students who experienced poor Internet conditions throughout the Spring 2021 semester. Using a chi square test ($\chi^2 = 0.98607$ and $p = 0.3207$), the data shows that Internet problems were not a consistent problem for these students and that students who reported a problem in the beginning of the semester did not also report problem at the end of the semester. It can be concluded that poor Internet was a not big problem amongst this sample during the Spring 2021 semester and therefore, did not affect student remote learning sentiment.

Applying a Spearman's rank correlation between the student Internet BOS sentiment and student BOS remote learning sentiment (0.066 , $p = 0.501$, $n = 109$) again shows that Internet problems did not weigh heavily on students' sentiments toward remote learning. In a similar fashion, the Spearman's rank correlation between student Internet EOS sentiment and student EOS remote learning sentiment (-0.077 , $p = 0.389$, $n = 129$) yields a similar result.

2.3 Confirmation of Dimensions

As it was previously mentioned, due to the COVID-19 pandemic, all the students who participated in the BOS Spring 2021 survey had at least some experience with online learning during the Fall 2020 and Spring 2020 and semesters. While this drastic and sudden shift to online learning has clearly had significant impact on university education, it has also pushed educators to discover and embrace the benefits of using online tools. This purpose of this research is to shed light on how universities need to adapt to a world that has permanently changed in just two years. PCA analysis was used to recognize the patterns related to student sentiments from the Fall 2020 and Spring 2020 semesters and the ones that occurred during the Spring 2021 semester.

The initial parallel analysis revealed the following three dimensions that displayed significant loadings. Two of these dimensions ("Home Environment" and "Social Sentiment") were immediately recognizable and display a clear connection between BOS and EOS. The third dimension includes a mix of student responses that were not consistent from BOS to EOS and offered weaker and inconsistent data. For example, many loadings appeared in either BOS or EOS, but not both. In other circumstances, the values themselves were not significant enough to offer insight and had higher variances. After eliminating this dimension and using only two dimensions, the loadings became stronger and more significant. These two dimensions are labeled as "Home Environment" and "Social Sentiment" (Table 1).

3 Results

3.1 Home Environment Dimension BOS vs. EOS

When analyzing the home environment loadings from the BOS and EOS, the shift to remote learning clearly had a significant impact on the students participating in these surveys. A strong negative value (-0.687) was observed for the statement “I like working at my own pace” at the BOS, which indicates many students were missing the organization and structure provided by traditional teaching and found the task of organizing the pace of their learning to be difficult. While this loading in the EOS dropped to (-0.532), it can still be concluded that many students found organizing the pace of their own learning to be a challenge even after another semester of remote learning experience. A moderate, negative value of (-0.519) (was observed in the BOS regarding how much students like to set their own daily schedules. This value became even more negative (-0.579) at the EOS. Both values indicate that many students still value the organization and structure offered by live classrooms and physical school campuses and view organizing their own schedules negatively. When students were asked about their struggles in keeping up with a daily routine, we observed a moderate, positive loading (0.504) in the BOS, but a much stronger one (0.669) in the EOS. Overall, many students struggled with organizing their daily schedules and learning activities at the beginning and end of the Spring 2021 semester. These difficulties created a negative impact on the university students’ remote learning environments and are ones not adequately addressed by emergency remote teaching.

A strong, positive value of (0.782) was observed in the BOS regarding how easily students become distracted at home when compared to the classroom. This value dropped significantly in the EOS to (0.539). These values tell us that students were able to better adapt to remote learning during the Spring 2021 semester and find ways to reduce or become more tolerant of distractions while learning from home. This may also indicate a higher self-efficacy (an ability targeted in my Fall 2021 research). At the BOS, a moderate, negative value of (-0.630) was observed showing that students reject the idea that distractions at school are significant. At the EOS, we curiously do not see a loading in this dimension, although we do observe a moderate, positive value (0.688) for how students feel they are not learning as much remotely as in the classroom and a strong, negative value (-0.734) for the statement that students are learning more remotely than in the classroom.

A strong, positive value of (0.754) was observed in the BOS regarding how motivated students are to complete their assignments. At the EOS, this value dropped to (0.641). While these students’ abilities to motivate themselves may have improved marginally during the Spring 2021 semester, the end results still show that staying motivated while learning remotely was still an issue and one that must be recognized and addressed by educational institutions seeking to create holistic online learning platforms. The negative, moderate value of (-0.657) in the BOS

further reinforces that many students saw remote learning as inferior to traditional classrooms in terms of their education. At the EOS, this value strengthened to (-0.734) further underscoring that many students became wearier of remote learning and the quality of education that it delivered as the Spring 2021 semester progressed (Table 1).

Table 1
BOS vs. EOS Home Environment Sentiment (Applied rotation method is oblimin.)

Survey Questions	BOS Home Environment	EOS Home Environment
I like working at my own pace	-0.687	-0.532
I miss my friends		
I am more easily distracted at home than in the classroom	0.782	0.539
I like setting my own daily schedule for schoolwork	-0.519	-0.579
I miss my teachers		
I have difficulty staying motivated to complete my assignments	0.754	0.614
I miss participating in sports		
I feel I am learning more than I do in school	-0.657	-0.734
It is easier to focus without the distractions of school	-0.630	0
I feel that I'm not learning as much as I would in the classroom	0.543	0.688
I struggle to keep up with a daily routine	0.504	0.669
I miss the social environment at school		

3.2 Social Dimension

In the BOS, there was a moderately strong value of (0.560) for students who missed their friends. Not surprisingly, this value became much stronger (0.763) at the EOS as lockdown fatigue became greater and the time away from friends became more significant. This makes sense as the participants in these surveys are foreign exchange students predominantly living away from friends and family. It is also interesting that while a strong value for missing friends was observed, the analysis showed a low EOS value of (-0.467) for “I miss the social environment at school.” This most likely indicates that the survey participants separated their friends from the social environment of the school, which was heavily disrupted due to COVID-19.

A moderate, positive value of (0.535) is observed in the BOS regarding how much students miss contact with their teachers. At the EOS, this value strengthened to (0.641) indicating that student weariness with lockdowns and remote learning

became more acute over time and this result is consistent with data from the home environment dimension. At the BOS, there is a moderate, positive value of (0.451) regarding how much students miss participating in sports. This value became more significant (0.701) at the EOS as the length of the lockdown became greater and the weather became warmer. This upward trend indicates that lockdowns are detrimental to the lives of students and close off needed outlet areas. A strong, positive value of (0.703) is observed at the BOS, and value weakened to (0.466) at the EOS. One explanation for this weakening value is that students became more accustomed to remote learning and found new ways to socialize. Another explanation is that many students were able to go home before the end of the Spring 2021 semester and this lifted their spirits (Table 2).

Table 2
BOS vs. EOS Social Sentiment (Applied rotation method is oblimin.)

Survey Questions	BOS Social Sentiment	EOS Social Sentiment
I like working at my own pace		
I miss my friends	0.560	0.763
I am more easily distracted at home than in the classroom		
I like setting my own daily schedule for schoolwork		
I miss my teachers	0.535	0.641
I have difficulty staying motivated to complete my assignments		
I miss participating in sports	0.451	0.701
I feel I am learning more than I do in school		
It is easier to focus without the distractions of school		
I feel that I'm not learning as much as I would in the classroom		
I struggle to keep up with a daily routine		
I miss the social environment at school	0.703	0.466

3.2.1 Remote Learning Sentiment (Before) vs. Home Environment Sentiment (Before)

Sample size = 108

A p-value of <.001 and a Pearson correlation (r) of -0.483 indicates a strong negative correlation between how students felt about remote learning at the beginning of the semester and how they felt about their home environments at the beginning of the Spring 2021 semester. The students who experienced more problems with their home environment at the BOS were also the ones who were less satisfied with remote learning. The students who had less problems with their home environment were more satisfied with remote learning.

3.2.2 Remote Learning Sentiment (Before) vs. Home Environment Sentiment (After)

Sample size = 82

A p-value of $<.001$ and a Pearson correlation (r) of -0.509 indicates that strong negative correlation between how students felt about remote learning at the beginning of the semester and how they felt about their home environments at the EOS. The students who displayed a more positive remote sentiment were the ones who experienced less problems with their home environments at the EOS. The students who had a negative remote learning sentiment were the ones who experienced lots of problems with their home environments at the EOS.

3.2.3 Remote Learning Sentiment (After) vs. Home Environment Sentiment (After)

Sample size = 124

A p-value of $<.001$ and a Pearson correlation (r) of -0.322 indicates a moderate, negative correlation between how students felt about remote learning at the end of the Spring 2021 semester and how they felt about their home environments at the end of this semester. The correlation is weaker than in the previous examples, but nonetheless still indicates that a student with a low remote learning sentiment most likely also experienced problems in their home.

4 Discussion

RQ₁ What was the impact on the home and social environments for university and graduate students at the beginning and end of the Spring 2021 semester?

For the home environment at the BOS, there were strong, positive loadings for the negative impact of distractions at home and the difficulty of staying motivated to complete assignments. The students did not see the ability to work at their own pace as a positive more moderate loadings were observed for students who expressed difficulties with setting their own daily schedules and maintaining their daily routines. In the BOS, students who experienced problems with their home environments were also the ones who were less satisfied with remote learning. Similarly, the students who had less problems with their home environment viewed remote learning more favorably. Overall, students at the BOS rejected the statement that they were learning more remotely than they were in the classroom.

At the BOS, there were moderate loadings for missing friends, teachers, and participating in sports. A more significant positive loading was observed for missing the social environment at school. It was clear that students at the BOS did not feel the impact on their social environment and were nostalgic about the social scene from their home universities from the Fall 2020 semester.

RQ2: How did home and social disruption for university and graduate students progress during the Spring 2021 semester?

The loadings for daily routines and setting daily schedules were higher in the EOS suggesting that these continued to be problems for many students throughout the semester. The data also shows that the students who a negative remote learning sentiment in the BOS, were the ones who also experienced problems with their home environments in the EOS. A more moderate loading was also observed connecting those who have negative remote learning sentiment to those who have a poor home environment sentiment in the EOS. Strong loadings were also observed for students how did not feel they were learning as much as they otherwise would in the classroom.

For the social environment impact at the EOS, a much stronger loading was observed for missing friends, teachers, and participating in sports. These stronger loadings clearly reflect the fatigue students felt during the semester and the isolation caused by COVID-19 lockdowns. The loadings for missing the social environment at school was significantly lower and could be caused by students returning home for the summer.

RQ3: How did emergency remote learning impact the quality of education in the Spring 2021 semester?

Emergency remote teaching (ERT) was a necessary step made by educational institutions to keep education working during a global pandemic. The main goal was to get everyone online as quickly as possible where attention was focused on the platform being used and technical and Internet related issues. Microsoft Teams was used by all 212 students in this study, and it is a developed, multi-functional educational platform. Despite this capability, however, it did little or even nothing to alleviate the problems identified by this research. Home and social environments are key components to the learning experiences of university students and are ones not addressed by emergency remote teaching [26].

Schools are designed to create the optimal learning environments for students and some certainly achieve this better than others. During remote learning, the school's lose control of the physical environment and assume that the students will create adequate home environments for themselves. The home environment goes way beyond an adequate Internet connection or personal computer, and a bad one can significantly and negatively affect a student's learning experience. Bad home environment can include elements like distracting noises, poor heating and/o cooling, too many people living in one space, bad furniture, inadequate lighting, thin walls, and many other factors. If the home environment can affect student learning experiences during remote learning, then schools need to transcend beyond emergency remote teaching and ensure students at least know what a suitable home environment is.

Having a good home environment, however, is not enough to ensure that a student will learn effectively from home. As the loadings from the research indicate, students struggled to set their daily schedules, create effective routines, and organize their own studies. The loss of contact with the school creates various responsibilities that students are not used to undertaking. A student who is lacking in organizational skills can struggle with keeping up with online studies even though that student did well in a live classroom.

The social environment is another aspect that is critical to successful student learning experiences and not addressed by emergency remote learning. As it was previously mentioned, the prevalence of major depressive disorders was two times higher in 2020 compared to 2019 and anxiety disorders were 1.5 times higher than in 2019 [22]. Universities cannot also assume that the well-being of students is constant and healthy when there is so much evidence to the contrary.

Conclusions and Future Work

The rise of online learning is not a new phenomenon, but the rise of emergency remote teaching (ERT) is. The COVID-19 pandemic has permanently changed education at all levels, and it is time for educational institutions to transition to the “new normal.” Online education is no longer a consideration, but rather an imperative. While many are quick to point out, however, all the benefits of online learning, such as convenience and cost, it also has some serious side effects that must be addressed. Holistic online learning is a way to view students as more than icons on a dashboard and to understand that the loss or reduction of a school environment has consequences.

To better understand the factors contributing to the well-being of university students and how universities can implement holistic online learning, we are conducting a follow up survey at the beginning and end of the Fall 2021 semester, with a diverse group of International Students.

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Appendixes

Beginning of the Semester (BOS) and End of the Semester (EOS) Surveys

BOS Survey

- Q1 – “What is your name?”
- Q2 – “What is your age?”
- Q3 – “What is your home city and country?”
- Q4 – “What is your home university?”
- Q5 – “Which of the following best describes the focus of your academic studies?”
- Finance and Accounting
 - Communications
 - Business and Management
 - Engineering
 - Computer Science
 - Other
- Q6 – “How do you feel about remote learning?”
- Very Unhappy
 - Unhappy
 - Somewhat Happy
 - Somewhat Happy
 - Happy
 - Very Happy

Q7 – “What are the top three things you like about online learning?” (Free Answer)

Q8 – “What are the biggest challenges of online learning?” (Free Answer)

Q9 – “After spending a lot of time learning online, please answer how strongly you agree or disagree with the following?”

- B_MS01 “I like working at my own pace.”
- B_MS02 “I am getting more sleep.”
- B_MS03 “I miss my friends.”
- B_MS04 “I am more easily distracted at home than in the classroom.”
- B_MS05 “I like setting my own daily schedule for schoolwork”
- B_MS06 “I miss my teachers.”
- B_MS07 “I have difficulty staying motivated to complete my assignments.”
- B_MS08 “I am less stressed about my schoolwork.”
- B_MS09 “I miss participating in sports.”
- B_MS010 “I feel I am learning more than I do in school.”
- B_MS011 “It is easier to focus without the distractions of school.”
- B_MS012 “It's hard to keep school and home separate - I can't escape!”
- B_MS013 “I sometimes have difficulty understanding online assignments.”
- B_MS014 “It's nice to have a break from the stress of the school environment.”
- B_MS015 “I miss participating in extracurricular activities.”
- B_MS016 “I feel that I'm not learning as much as I would in the classroom.”
- B_MS017 “I struggle to keep up with a daily routine.”
- B_MS018 “Teachers are assigning too much homework for now.”

Q10 – “Do you have a reliable internet connection at home to take part in remote learning and complete your assignments without interference or delay?” (Y/N)

Q11 – “Do you have access to a computer that is adequate for your needs, allowing you to take part in remote learning and complete your school assignments?” (Y/N)

Q12 – “In your home university, which of the following learning attributes apply to your previous online experience?”

- Live online lectures
- Pre-recorded online lectures
- Online group activities and presentations
- Interactive online learning games
- Personalized and individual feedback with professors
- Online multiple-choice testing
- Individual essay testing
- Other

Q13 – “What learning method is the one you have experienced the most during your university experience thus far?”

- Traditional Online Learning – Classroom centric
- Only online learning

- Hybrid learning: a combination of traditional and online
 - Other
- Q14 – “What learning method do you feel is the most effective for your education?”
- Traditional Online Learning – Classroom centric
 - Only online learning
 - Hybrid learning: a combination of traditional and online
 - Other
- Q15 – “Please tell us how you would improve university education experience in the future.” (Free Answer)

EOS Survey

- Q1 – “What is your name?”
- Q2 – “What is your home university?”
- Q3 – “Do you have a reliable internet connection at home to take part in remote learning and complete your assignments without interference or delay?” (Y/N)
- Q4 – “Do you have access to a computer that is adequate for your needs, allowing you to take part in remote learning and complete your school assignments?” (Y/N)
- Q5 – “After spending a lot of time learning online, please answer how strongly you agree or disagree with the following?”
- E_MS01 “I like working at my own pace.”
 - E_MS02 “I am getting more sleep.”
 - E_MS03 “I miss my friends.”
 - E_MS04 “I am more easily distracted at home than in the classroom.”
 - E_MS05 “I like setting my own daily schedule for schoolwork.”
 - E_MS06 “I miss my teachers.”
 - E_MS07 “I have difficulty staying motivated to complete my assignments.”
 - E_MS08 “I am less stressed about my schoolwork.”
 - E_MS09 “I miss participating in sports.”
 - E_MS010 “I feel I am learning more than I do in school.”
 - E_MS011 “It is easier to focus without the distractions of school.”
 - E_MS012 “It's hard to keep school and home separate - I can't escape!”
 - E_MS013 “I sometimes have difficulty understanding online assignments.”
 - E_MS014 “It's nice to have a break from the stress of the school environment.”
 - E_MS015 “I miss participating in extracurricular activities.”
 - E_MS016 “I feel that I'm not learning as much as I would in the classroom.”
 - E_MS017 “I struggle to keep up with a daily routine.”
 - E_MS018 “I miss the social environment at school.”
- Q6 – “Reflecting back on this course, what are the top three things you like about your online learning experience?” (Free Answer)
- Q7 – “Reflecting back on this course, what were the biggest challenges of your online learning experience?” (Free Answer)

Q8 – “Reflecting back on this course, did the usage of Voice Over lectures, managed on your time, help you to better understand course materials when using distance learning?”

- Not at all
- A little bit
- Does not add or detract
- Adds some value
- Adds a lot of value

Q9 – “Reflecting back on this course, did the usage of the virtual group activities (sharing resources, ideas) enhance distance learning?”

- No value
- Little value
- Does not add or detract
- Adds some value
- Adds a lot of value

Q10 – “Reflecting back on this course, did the usage of Kahoot games enhance your distance learning experience?”

- No value added
- Adds little value
- Does not add or detract
- Adds some value
- Adds a lot of value

Q11 – “Reflecting back on this course, did the usage of invited judges for final presentations add value to your online learning experience?”

- Not at all
- Somewhat
- Neutral
- Adds value
- Adds a lot of value
- No judge was used

Q12 – “Based on your experience in this class, how are you currently feeling about remote learning?”

A score of 1 is “not at all satisfied” and a score of 10 is “completely satisfied.” Drag the bar from left to right to find your score.

Q13 – “What learning method do you feel is the most effective for your education?”

- Traditional Online Learning – Classroom centric
- Only online learning
- Hybrid learning: a combination of traditional and online
- Other

Q14 – “Why did you select this learning method? Please describe the top three reasons for your selection.” (Free Answer)

Q15 – “Now that you have done entire semesters both in class and online, please select all of the statements below that you agree with.”

- Traditional in-class learning is outdated

- Traditional in-class learning is important for developing social skills
- Traditional in-class learning is long and boring
- Traditional in-class learning can never be replaced by online learning
- Traditional in-class learning is effective, but class times need to be shorter
- Traditional in-class learning really depends on the subject
- Traditional in-class learning really depends on the instructor
- Traditional in-class learning is more motivational
- Traditional in-class learning better facilitates collaboration
- Traditional in-class learning involves too much travel time

Q16 – “We are grateful to receive your honest input. Please provide any additional suggestions regarding how university education should be improved.” (Free Answer)