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## **The Impact of COVID-19 on Student Perceptions of Education and Engagement**

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### **Abstract**

*The purpose of this study is to investigate student perceptions regarding the impact the COVID-19 pandemic and emergency remote learning had on their education and classroom engagement. The study also seeks to understand how the COVID-19 pandemic impacted students' decisions when scheduling their courses during the pandemic. The study surveys over 400 students and uses both descriptive and inferential statistics to examine the change in student engagement. Based on the survey results, student interaction with instructors, peers, and course material had a statistically significant decrease in engagement during emergency remote learning. Surprisingly, the pandemic did not impact the number of hours existing students took. In addition, their preferences to different class modalities have changed, as students prefer to take courses with more online components even after the pandemic.*

**Key words:** *Student engagement; emergency remote learning; COVID-19; online learning, distance learning.*

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## Introduction

Two thousand and twenty was an unprecedented year as a pandemic crippled the world. The novel coronavirus (COVID-19), an infectious disease known for its ease of transmission and severe illness, spread across the globe (Centers for Disease Control, 2021a). While the COVID-19 virus can infect anyone, people with underlying medical conditions and the elderly are at high risk for severe symptoms, including death. In 2019, the province of Wuhan, China first reported an illness that would eventually be known as COVID-19 (Centers for Disease Control, 2021a). Over the next few months, this virus crossed international borders and spread across the globe. On March 11, 2020, the WHO officially declared COVID-19 a pandemic (World Health Organization, 2021). The Centers of Disease Control (CDC) has reported over 31 million cases and over 500 thousand deaths in the United States (Centers for Disease Control, 2021b).

In the United States (U.S.), the response to the pandemic shutdown affected many areas of life, including businesses, employment, and education. Due to the pandemic, 56% of businesses in the United States suffered a decrease in demand and 52% of businesses had to tell their employees not to come to work (Bureau of Labor Statistics, 2021a). In April 2020, the unemployment rate jumped to the highest point to 14.8% and remained high for several months (Bureau of Labor Statistics, 2021a). Although the pandemic hurt businesses and fueled unemployment, it also had a negative impact on university students.

In the middle of the Spring 2020 semester, many universities shifted from their scheduled course modalities to emergency remote learning. Some students had never taken online courses, while other students lacked the infrastructure to take online classes like access to a home computer, webcam, or internet access. Many students had the additional stress of having children or caring for younger siblings at home. Due to all of these stressors and distractions, it seems reasonable to believe that COVID-19 has negatively impacted student engagement. Currently, there is limited data regarding the impact the COVID-19 pandemic has had on business students. This survey will gather those perspectives and provide feedback for faculty in order to address student concerns and improve student engagement.

## Literature Review

Newmann, Wehlage & Lamborn (1992) define student engagement as “the student’s psychological investment in and effort directed toward learning, understanding, or mastering the knowledge, skills or crafts that academic work is intended to promote.” Many researchers have found that student engagement is positively related to learning and performance (Carini, Kuh, and Klein, 2006). Student engagement is found to improve GPA, (Hughes & Pace, 2003; Becker et al., 2009; Zhoc et al., 2019), the university experience (Zhoc et al., 2019), personal development (Kuh, 2003), and classroom motivation (Martin & Bolliger, 2018). Student engagement is even more important for online courses. Banna et al. (2015) found that student engagement or the lack thereof plays an essential role for online students particularly regarding feelings of isolation, student dropout, retention, and graduation rate. While many online students may feel isolated from classmates, interaction and sense of community is linked to student engagement (Lear et al., 2010). To understand engagement, learner interaction must also be evaluated, as it is critical in developing engagement (Anderson, 2003).

According to Moore’s (1989) interaction framework, various types of interaction are used to develop student engagement. Interaction requires student involvement and therefore can lead to enhanced engagement (Martin & Bolliger, 2018). Based on the close relationship between the terms, many scholars use the terms engagement and

interaction interchangeably (Martin & Bolliger, 2018). Moore's interaction framework divides student engagement into three different components for effective remote learning: (1) learner-to-learner interaction, (2) learner-to-instructor interaction, and (3) learner-to-content interaction (Moore, 1989). For the purposes of this study, the terms engagement and interaction will be used interchangeably. Martin and Bolliger (2018) use Moore's three-part classification of interaction to show why engagement matters. Of the three categories, students found the most important one was learner-to instructor interaction. This was followed by learner-to-content, and lastly learner-to-learner interaction.

Learner-to-instructor interaction is the student's interaction with the subject matter expert, the instructor. Interaction with instructor can enhance the student's motivation. The type of interaction can take many forms such as instructor video lectures or instructor feedback to students through discussion boards or video conferencing (Moore, 1989). Students value instructor's timely and comprehensive feedback as an important component for student learning (King, 2014). Instructors should interact with students and develop multiple ways to encourage students to engage in online courses (Dixson, 2010). Learner-to-content interaction is the foundation of the educational process for the student to learn the course material. An example of this type of interaction would be reading the textbook (Moore, 1989). The final category of Moore's (1989) model is learner-to-learner interaction, which is student interaction with peers with or without the instructor. Banna et al. (2015) also found the effective use of technology is a useful tool in promoting student-to-student interaction. Some of the recommendations to encourage interaction include videoconferencing and other interactive technology for synchronous class and discussion boards for asynchronous class. Shea et al. (2001) points out courses need at least two components for an effective online course: consistent course design, instructor's consistent interaction with students, and consistent interaction with other students through discussions. Students who conveyed greater course satisfaction were those who reported higher quality of interaction with their instructor and other peers. Students not only appreciate the interaction but feel like they learned more.

The COVID-19 pandemic has forced students all over the world to change their normal learning modalities to emergency remote learning. Studies have found students in disaster situations may have post-traumatic stress disorder (PTSD) and other psychological disorders (Richardson et al. 2015). Early during the COVID-19 pandemic, research done on Chemistry students found the switch to online learning was stressful (Petillion & McNeil, 2020). Many learners found themselves distracted, less interested, and less engaged in their courses. Students were not only dealing with course stressors, but also life stressors such as unemployment and financial hardship. Many students were having a hard time shifting to remote learning because of the disruption in their structured daily routine (Jeffery & Bauer, 2020). From the university's perspective, significant disaster type events can affect the organization's ability to provide traditional services due to loss of access to classrooms, libraries, and computer labs (Richardson et al. 2015).

## **Survey Methodology**

The study data was gathered using a Qualtrics survey of 40 questions. Business students enrolled in upper-level or graduate business courses were the population of this study. The survey first captured demographic information and information about the learning environment during the COVID-19 pandemic. The survey also included questions about student schedules, course loads, and engagement. Following Moore's (1989) guidance, student perceptions regarding their interaction with the instructors, other students, and the course material were included. These questions help to gain insight into how the COVID-19 pandemic and emergency remote learning have impacted students' classroom experience.

Both descriptive and inferential statistics were used to analyze the survey results. A t-test was performed to determine significant differences between students' perceptions and preferences before, during and after the pandemic. Before reviewing the results, it is vital to understand the limitations associated with this study. The survey was distributed to students enrolled in upper-level undergraduate and graduate business courses at a university in a diverse, metropolitan area of the United States. Due to the university's location, the students have a wide demographic distribution. This university is a Hispanic-serving institution with a considerable number of non-traditional students (i.e. older, working adults, parents). As such, the sample may be biased towards this demographic. Students were also offered extra credit for taking the survey. Students took approximately 15-25 minutes to complete the survey and provided information in the open-ended questions, supporting the assertion that students gave an honest effort to answer the questions. It is also important to note that the university went into a full online emergency remote learning model during March 2020. Emergency remote learning continued through Spring 2021. During the Fall 2020 semester, about 85% of the courses offered were fully online. A few classes were in-person during the semester with reduced enrollment numbers, but those classes transitioned back to remote after Thanksgiving. During the Spring 2021 semester, classes started entirely online and the courses with in-person components transitioned to campus by mid-March.

The survey results were collected during Fall 2020 and Spring 2021 semesters. Four hundred and nine business students completed the survey. Of the students sampled, 61% are female, and 39% are male. Most of the students surveyed are upperclassman, 25% classified as juniors, 50% seniors, and 22% graduate students. About 51% of the students are Accounting majors, 24% are Finance majors, 14% are MBA students, 5% are International Business majors, and the remaining are other business-related majors. Only 8% of the students are between the ages of 18-21. However, about half of the students are between the ages of 22-29. Over half of the students surveyed are Hispanic, followed by White, African American, and Asian students.

## **Research Questions**

1. How has course engagement changed since the COVID-19 pandemic?
  - a. How did COVID-19 pandemic impact students' perception on their interaction with their instructor?
  - b. How did COVID-19 pandemic impact students' perception on their interaction with their classmates?
  - c. How did COVID-19 pandemic impact students' perception on their interaction with course content?
2. How did the changes due to the COVID-19 pandemic impact student's decision when scheduling their courses?
  - a. How did the COVID-19 pandemic impact the student enrollment decision regarding course hours?
  - b. How did the COVID-19 pandemic impact student course format preferences?

## **Results**

### **Research Question 1: How has course engagement changed since the COVID - 19 pandemic?**

The course survey was used to gauge how engagement has changed in specific course modalities since the pandemic. Surprisingly, the course method that suffered the most for engagement was in-person courses, with about 44% of students reporting that engagement has become somewhat or much worse according to Table 1. This change

could be caused by difficulty hearing with masks and social distancing. However, many students felt that engagement remained the same since COVID-19 pandemic.

**Table 1:**

*How has course engagement changed since the COVID-19 pandemic?*

Question	Much worse	Somewhat worse	About the same	Somewhat better	Much better
Online (Asynchronous)	14.32%	20.83%	43.49%	11.20%	10.16%
Online (Synchronous)	12.72%	25.45%	34.10%	18.07%	9.67%
In- Person	27.86%	16.41%	45.82%	4.64%	5.26%
Hybrid	15.71%	19.94%	50.76%	11.18%	2.42%

**Research Question 1a: How did the COVID-19 pandemic impact students' perception on their interaction with their instructor?**

Table 2 shows the summary statistics of student reported satisfaction with instructor interaction in different course modalities before and during the COVID-19 pandemic. This question was formatted using a Likert Scale with extremely satisfied scored at 5 points and extremely dissatisfied scored at 1. As indicated by the means, in each instance, instructor interaction was ranked higher before the pandemic. In each course format, the difference between the means is statistically significant in the 1% level. The difference in means is more remarkable for in-person courses, indicating a shift in perceived student to instructor engagement. Ranking satisfaction levels based on course format before the pandemic, the modality with the highest satisfaction of student-instructor interaction is in-person, followed by hybrid, synchronous online, and lastly, asynchronous online. During the pandemic, the satisfaction with student-instructor interaction levels dropped. The rankings changed with synchronous online ranked first, followed by asynchronous online, hybrid, and in-person.

**Table 2:**

*Prior to/During the COVID pandemic, how satisfied were you with your instructor interaction in the following class formats?*

Field	Mean	Std Deviation	Variance	Count	Difference	Test Statistic	P- Value
Online Asynchronous (Prior)	3.51	0.96	0.93	385	0.28	3.6697	.00026
Online Asynchronous (During)	3.23	1.19	1.42	383			
Online Synchronous (Prior)	3.5	0.94	0.88	376	0.3	3.8339	.000137
Online Synchronous (During)	3.2	1.18	1.4	395			
In-Person (Prior)	3.99	1	1.01	378	1.07	13.7332	3.55 E -38
In-Person (During)	2.92	1.08	1.17	344			
Hybrid (Prior)	3.81	0.98	0.97	377	0.84	10.9522	6.9E-26
Hybrid (During)	2.97	1.07	1.15	349			

**Research Question 1b: How did COVID-19 pandemic impact students' perception on their interaction with their classmates?**

Table 3 shows the summary statistics of student reported satisfaction regarding student interaction in different course modalities before and during the pandemic. In each instance, the mean score of interaction decreased during the pandemic, and those differences are statistically significant at the 1% level. The highest score and lowest scores for interaction were found for in-person courses before and during the pandemic. An interesting thing to note is that the mean scores are lower for peer-to-peer interaction than with instructor-to-student interaction. Before the pandemic, the highest satisfaction is in-person, followed by hybrid, asynchronous online and lastly, synchronous online. During the pandemic, the rankings led with asynchronous online ranking first, followed by synchronous online, hybrid, and in-person.

**Table 3:**

*Prior to/During the COVID pandemic, how satisfied were you with your interaction with classmates in the following class formats?*

Field	Mean	Std Deviation	Variance	Count	Difference	Test Statistic	P- Value
Online Asynchronous (Prior)	3.6	1.01	1.01	385	0.24	2.9297	.0035
Online Asynchronous (During)	3.36	1.24	1.53	387			
Online Synchronous (Prior)	3.74	0.9	0.82	372	0.28	3.6258	.0003
Online Synchronous (During)	3.46	1.19	1.42	390			
In-Person (Prior)	4.1	0.96	0.92	380	1.07	13.7283	5.51E-38
In-Person (During)	3.03	1.11	1.23	339			
Hybrid (Prior)	3.97	0.94	0.88	376	0.88	11.4442	7.47E-28
Hybrid (During)	3.09	1.1	1.22	345			

**Research Question 1c: How did COVID-19 pandemic impact students' perception on their interaction with course content?**

Table 4 shows the summary statistic of students' reported satisfaction with student-to-course content in different course formats before and during COVID-19 pandemic. Similar trends emerge. Students engaged more with the course material in the in-person formats before the pandemic. However, their satisfaction levels dropped during the pandemic. Before the pandemic, the format with the highest satisfaction is in-person, hybrid, synchronous online, and asynchronous online. During the pandemic, the satisfaction levels dropped, and the ranking changed to synchronous online, asynchronous online, hybrid, and in-person.

**Table 4:**

*Prior to/During the COVID pandemic, how satisfied were you with your interaction with the course content (textbook, course videos, lectures, etc.) in the following class formats?*

Field	Mean	Std Deviation	Variance	Count	Difference	Test Statistic	P- Value
Online Asynchronous (Prior)	3.71	0.96	0.92	386	0.33	4.1574	3.61E-05
Online Asynchronous (During)	3.38	1.21	1.48	381			
Online Synchronous (Prior)	3.73	0.89	0.8	371	0.29	3.8879	.0001
Online Synchronous (During)	3.44	1.18	1.4	392			
In-Person (Prior)	4.01	0.98	0.96	371	0.97	12.1885	4.95E-31
In-Person (During)	3.04	1.11	1.23	338			
Hybrid (Prior)	3.86	0.96	0.92	372	0.78	10.0612	2.65E-22
Hybrid (During)	3.08	1.09	1.18	343			

**Research Question 2: How did the changes due to the COVID-19 pandemic impact student's decision when scheduling their courses?**

The university community, including faculty, staff, and administrators, have encountered tremendous challenges due to the pandemic. Administrators had to increase the amount of online course offerings to manage local, state, and national health and safety guidelines. Researchers wanted to understand how the pandemic impacted student enrolled hours and course format preferences after this period of emergency remote learning. This research question focuses on gaining information to assist with course planning in the future.

**Research Question 2a: How did the COVID-19 pandemic impact the student enrollment decision regarding course hours?**

Due to the COVID-19 pandemic and different distractions facing students, the researchers wondered if there would be a decrease in course enrollment throughout the Fall 2020 and Spring 2021 semesters. As noted in Tables 5 and 6, this was not the case. When comparing the average hours students enrolled from Fall 2019, prior to remote emergency learning, to Fall 2020, there is a statistically significant increase at the 1% level. The remaining fall and spring semesters evaluated all had higher enrollment than Fall 2019, although not all were statistically significant. Although engagement was impacted by the emergency remote learning caused by the pandemic, students reported that they enrolled in more hours. There are several possible reasons for this. As the population included those in upper-level courses, students might not have wanted to delay graduation. Alternatively, students may have been laid off or unable to work and decided to take more classes instead. Also, the flexibility of more

online classes may have been more appealing to students. The university also offered students additional support, such as financial accommodations and discounted supplies, like laptops. Although the pandemic did not appear to impact enrollment hours negatively, the researchers also wanted to understand how the pandemic impacted student course format preferences. It is also important to note, the survey only included students that were enrolled at the university during the pandemic.

**Table 5:**

*How many hours did you in enrolled in school during the following semesters?*

Field	Minimum	Maximum	Mean	Std. Deviation	Variance
Spring 2021 (Planned or enrolled)	0	21	9.72	4.2	17.63
Fall 2020	0	21	10.39	3.95	15.62
Spring 2020	0	21	10.03	3.76	14.13
Fall 2019	0	20	9.58	3.82	14.58

**Table 6:**

*Analysis of student enrollment from Fall 2019 to Fall 2020.*

	Fall 2020	Fall 2019
Mean	10.38903	9.580175
Variance	15.65828	14.6244
Observations	401	343
Hypothesized Mean Difference	0	
df	731	
t Stat	2.83008	
P(T<=t) two-tail	0.004781	
t Critical two-tail	1.963215	

**Research Question 2b: How did COVID-19 pandemic impact student course format preferences?**

As part of this study, students ranked their preferences of course format before, during, and after COVID-19 from one to four, with one being the most preferred. As shown in Tables 7 and 8, before the COVID-19 pandemic, students ranked in-person as their preferred format. Almost 60% of students surveyed ranked this format as their first choice. The mean for hybrid came in second place. Sixteen percent ranked this format as their number one choice, 48% ranked it as their second choice. Asynchronous online and synchronous online had lower rankings.

As expected, during the COVID-19 pandemic, students preferred online courses as opposed to in-person or hybrid formats. During emergency remote learning, the number one preference was synchronous online courses with a mean of 1.91, which reflects about 41% of student's first preference. This ranking is closely followed by asynchronous online, where 40% of students picked this as their number one course format preference.



**Table 7:**  
*Student course format preference summary statistics*

	<b>Field</b>	<b>Mean</b>	<b>Std Deviation</b>	<b>Variance</b>
<b>Before Covid-19</b>	<b>Online Asynchronous</b>	2.89	1.15	1.33
	<b>Online Synchronous</b>	2.94	0.81	0.66
	<b>In-Person</b>	1.82	1.16	1.34
	<b>Hybrid</b>	2.35	0.92	0.85
<b>During Covid-19</b>	<b>Online Asynchronous</b>	2.01	1.05	1.11
	<b>Online Synchronous</b>	1.91	0.96	0.92
	<b>In-Person</b>	3.28	1.06	1.13
	<b>Hybrid</b>	2.79	0.75	0.56
<b>After Covid-19</b>	<b>Online Asynchronous</b>	2.64	1.19	1.43
	<b>Online Synchronous</b>	2.48	1.02	1.05
	<b>In-Person</b>	2.36	1.28	1.64
	<b>Hybrid</b>	2.53	0.92	0.84

The researchers were also interested in student's preferred course format after the COVID-19 pandemic for planning purposes. Would the experience during the pandemic impact student decisions when scheduling their future courses? The answer is yes. The data shows that the course modality preferences are much closer together, more evenly distributed. In-person learning reverted to the most preferred format, but only 40% of students selected it as their top choice. Interestingly, fewer students chose in-person as their preferred format. In terms of means, second place went to online synchronous courses, followed by hybrid, and asynchronous online. As Table 8 shows, 26% of students' chose asynchronous online as their top preference, while by 23% students selected synchronous online as their top course format preference. Based on the data, students prefer a more balanced approach to class modality in the post-pandemic environment.

**Table 8:**  
*Student course format preference*

	Rank	1	2	3	4
<b>Before Covid-19</b>	<b>Online Asynchronous</b>	19.9%	12.76%	25.77%	41.58%
	<b>Online Synchronous</b>	4.34%	23.21%	46.94%	25.51%
	<b>In-Person</b>	59.95%	15.56%	6.89%	17.6%
	<b>Hybrid</b>	15.82%	48.47%	20.41%	15.31%
<b>During Covid-19</b>	<b>Online Asynchronous</b>	40.05%	33.69%	11.41%	14.85%
	<b>Online Synchronous</b>	41.38%	35.28%	14.06%	9.28%
	<b>In-Person</b>	13.26%	6.63%	18.57%	61.54%
	<b>Hybrid</b>	5.31%	24.4%	55.97%	14.32%
<b>After Covid-19</b>	<b>Online Asynchronous</b>	25.53%	19.41%	20.74%	34.31%
	<b>Online Synchronous</b>	21.54%	27.66%	32.45%	18.35%
	<b>In-Person</b>	39.63%	15.96%	13.56%	30.85%
	<b>Hybrid</b>	13.3%	36.97%	33.24%	16.49%

While COVID-19 may not have shown a note-worthy impact regarding enrolled student hours, it did impact the course format. This preference change is not only isolated to during the pandemic but afterward as well. Though in-person is still the preferred method, many students prefer a more balanced approach between online and in-person courses. As a result, universities should consider offering more course modalities post-pandemic.

### **Concluding Remarks**

The purpose of this study was to investigate student perceptions regarding engagement during the COVID-19 pandemic. Based on the survey results, all forms of course engagement had a statistically significant decrease in engagement during emergency remote learning. In-person courses underwent the most notable decline in perceived engagement across all three components: learner-to-instructor, learner-to-course material, and learner-to-learner interaction. For students enrolled during this challenging time, the pandemic did not appear to hinder course enrollment. However, the pandemic appears to have impacted student preferences regarding course modality. Before the pandemic, a majority of students opted for traditional in-person courses. During the pandemic, there was heavy enrollment in remote formats due to health and safety guideline. Looking beyond the pandemic, students appear to prefer more class

options with online components. This information can be used to assist business school administrators in scheduling upper-level and graduate business courses in the future.

## Summary

The model provides a means for future application when dealing with the assessment of appropriate teaching methods to meet the needs of students on an individual basis. That is in much the same way as emergency triage is applied to circumstances of individual patients in the field the educational triage is about diagnosing the needs and requirements for individual students as they grapple with the educational aspects of achieving learning outcomes. In much the same way as the emergency triage is about saving lives the educational triage is about saving students from attrition.

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