

Transition and Migration to Online Learning Environment

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[Abstract] Due to the unforeseen pandemic, many educational institutions were forced to migrate from traditional teaching/learning methods to an online environment in a short period. This article measures the possible impacts on student learning via a three-stage evaluation process. The first stage surveyed faculty perspective on the success of the online part of the Spring semester and the second part focused on student perception of that same transition. The third stage compared results from selected traditional courses with comparable online counterparts. Overall, while many faculty were not familiar with the online teaching format, they were satisfied with the process and learning outcomes. Students also showed satisfaction with the online transition overall.

[Keywords] traditional teaching, hybrid delivery, online learning environment, learning management systems

Introduction

While many colleges and universities are offering some of their courses in either hybrid or fully online formats for many varieties of disciplines, the traditional (face-to-face) course deliveries are still popular and demanded by a good portion of faculty and students. Online course offerings are one of the most effective and efficient methods of delivering of contents and skills globally. There are many common senses advantages to the online course approach, such as flavor of degree programs and classes offered, flexible study times, balancing between the job and classwork, among others (Richardson & North, 2013). Consequently, the traditional formats are strongly staying alive along with the online formats of deliveries. As the current pandemic urged educational institutions to make a sudden transition and migration from traditional classroom settings to all online delivery enlivenment, many considerations and issues needed to be quickly sorted out. It must be clearly stated that the course learning objectives remain the same regardless of the delivery mode employed. The main purpose of this research article is to investigate the possible impacts on student learning.

Concise Literature Review

Since the pandemic suddenly emerged during the majority of active educational period this year, there are extremely limited published articles addressing the issues and challenges of transitioning from traditional to hybrid or online delivery formats. However, there are several concepts that are common to all the teaching/learning delivery formats; introduction of those assist in comprehension of this urged transition. Thus, those are briefly introduced in the following section.

Delivery-Method

Generally, course delivery format is defined by the level of technology integration and quantity of synchronous interaction between teachers and learners (Oranburg, 2020). Basically, there are three broad delivery formats. (i) Traditional: Teaching/learning is accomplished in a physical educational environment;

(ii) Hybrid (Blended): Learning occurs by combining traditional and online formats; and (iii) Online: Teachers and students meet either synchronously or asynchronously online (e.g., via a Learning Management System).

Presence

By sudden transition and migration from traditional classroom to online delivery environment, the concept of “*Presence*” is becoming more essential (Salmons, 2020; North & North, 2019a; North & North, 2019b; North & North, 2016). Many models have been developed by many researchers in the last couple of decades (Garrison, 2017). Presence in context of teaching/learning simply refers to three kinds of presence: Teaching, Cognitive, and Social (Daspit, Mims, & Zavattaro, 2015). Furthermore, it must be emphasized that *Presence* in online environment is established differently than in traditional classroom.

Engagement

All the tools and techniques that make topics interactive and engaging also work for hybrid and online formats, such as discussions, active participation, group/partner assignments and research projects, etc. These tools and more are available on many learning management systems that can be used to maintain student interaction online. Furthermore, explore third-party tools and social media to increase gamification and enthusiasm. Lynsey Duncan (2018) posted an article on Brightspace Community reporting, “Tools such as Wikis, Quizlet, Sporcle, Powtoon, Google Docs and the rest of its suite, and social media are quick to set up and can provide infinite possibilities for integrating engagement into your content pages.”

Resources

Teaching materials (a generic term used to describe the resources) that are used to deliver content and instruction are resources that support students learning and increase students success. Availability of resources in online courses aids that proves of learning and allowing the students to explore the contents independently while providing repetition (The Importance of Learning Materials in Teaching, n.d.).

Support

As the traditional teaching method depends on support, according to Coomey & Stephenson (2001) and other researchers (Kampov-Polevoi, 2010; Carey, 2020) the need for support is the most frequently mentioned feature of online learning. Support includes periodic contact, online tutorial supervision, peer support, advice from experts, feedback on performance, support services and software tools. Almost all students report that effective processes for instructor, tutor, and peer feedbacks are the most important features of a successful online course.

Trust

Although commonly the trust in online courses appears to be improving, the online course offering is growing and is the most popular effective and efficient methods of delivery. Several technical approaches certainly improve and in some cases eliminate dishonestly in online activities; specially the quizzes and exams. For instance, proper use of lockdown browser software and webcam monitoring drastically improves the trust in online delivery (Richardson & North, 2013).

Methodology

Similar to many other colleges and universities, on March 12, 2020, Kennesaw State University made the decision to convert all face-to-face (traditional) courses to fully online courses due to the COVID-19 virus. Many of the faculty teaching face-to-face had no experience with teaching fully online prior to this unforeseen event. To gauge the possible impacts on student learning, a three-stage evaluation process was conducted in the Coles College of Business. The Coles College of Business has about 160 full-time faculty members and about 6,100 undergraduate students. The first stage was a survey of the Coles faculty regarding their opinion of how the rest of the spring semester played out for those courses that were converted. The second stage was to survey students who had gone through the conversion. And, the third

stage was to compare the results from selected face-to-face courses with comparable online courses.

Results of the Online Conversion for Business Classes

Demographics

Once spring semester was over and grades were turned in, a survey email was sent to all full-time faculty at Coles.¹ That resulted in 58 (36 percent) usable responses. The average time teaching for the respondents was 11.8 years (standard deviation of 6.2) with a maximum of 18 years and a minimum of one year.² There were 24 faculty (41 percent of respondents) who had never taught online before. Among the faculty who had taught online before, the average was 7.2 years (standard deviation of 4.4) with a minimum of one and a maximum of 12. This is not unexpected as Coles has a history of offering a lot of online courses. The correlation between years teaching and years teaching online was 0.155 ($p=0.245$) so length of time teaching was not a determinant of time teaching online; although, the time teaching online cannot not exceed the total time teaching. Even among the 34 professors with online teaching experience, the correlation was only marginally higher at 0.159 ($p=0.234$) and was not significant.

Of the faculty surveyed, 35 had designed at least one online course before. The average number of courses designed was 2.6 (standard deviation of 1.2) with a minimum of one and a maximum of four. Moreover, 42, had redesigned an existing online course. The average number redesigned was 2.4 (standard deviation of 1.4) with a minimum of one and a maximum of four. This was not significant with length of time teaching ($r=0.076$) and the correlation was insignificant ($p=0.572$). The correlation between number of online courses designed and number of online courses redesigned was higher ($p=0.520$) and significant ($p=0.000$). However, this correlation was this high because 13 faculty members had neither designed nor redesigned an online course. When those observations were dropped, the correlation dropped ($r=0.300$) but was still significant ($p=0.022$).

The breakdown of the respondents was as follows:

Respondent's Rank	#
Lecturer	8
Senior lecturer	5
Assistant professor	9
Associate professor	10
Professor	21
Other or not provided	5
Total	58

The educational breakdown was as follows:

Educational Breakdown	#
Doctoral degree	44
Master's degree	14
Total	58

¹ This research was approved by the KSU institutional review board.

² This is total teaching time, *not* time teaching at Kennesaw State University.

The age breakdown was as follows:

Age Breakdown	#
Under 30	1
30 to 40	6
41 to 50	18
51 to 60	13
61 to 70	16
Over 70	3
No response	1
Total	58

The gender breakdown was as follows:

Gender Breakdown	#
Male	36
Female	20
Other	1
No response	1
Total	58

Experience with D2L

D2L Brightspace (formerly Desire2Learn) is the learning management system (LMS) used by Kennesaw State University and all face-to-face courses are automatically given a D2L section even if the professor does not request it. Where asked prior to this semester, how comfortable were you teaching online using D2L; the results were as follows:

Teaching Online Comfort Level	#
Very uncomfortable	6
Uncomfortable	3
No experience	10
Comfortable	19
Very comfortable	19
No response	1
Total	58

Therefore, 65.5 percent were comfortable or very comfortable using D2L and only 17.2 percent had no experience with D2L. Based on informal conversations, this high level of comfort with so many professors having not taught online before is from professors posting grades and course material in D2L for face-to-face courses.

The faculty were experienced or very experienced with most of the D2L features:

	Discussion	Quizzes	Respondus ³	Posting Grades	Drop Box	Groups
Not aware of	2	1	5	1	3	9
Aware of but never used	16	7	20	3	5	14
Minor experience	7	2	6	1	5	7
Experienced	12	18	12	7	9	8
Very experienced	20	29	13	45	35	18
No response	1	1	2	1	1	2
Total	58	58	58	58	58	58

	Posting PowerPoint	Posting Videos	Video Chats	Intelligent Agents ⁴	Collaborate Ultra ⁵	
Not aware of		2	2	10	24	8
Aware of but never used		4	10	17	14	18
Minor experience		1	11	11	16	7
Experienced		7	8	10	2	17
Very experienced		43	26	9	1	7
No response		1	1	1	1	1
Total		58	58	58	58	58

D2L Feature Experience	#
Intelligent Agents	5.2%
Holding Video Chats	32.8%
Collaborate Ultra	41.4%
Respondus	43.1%
Groups	44.8%
Discussion	55.2%
Posting Videos	58.6%
Assignment Drop Box	75.9%
Quizzes	81.0%
Posting PowerPoint Slides	86.2%
Posting Grades in D2L	89.7%

The Conversion

The faculty in the survey converted a total of 97 courses from face-to-face to online. The average number converted by each professor was 1.7 (standard deviation of 1.0) with a minimum of zero⁶ and a

³ A "lock down" browser that can be required for quizzes and exams. It keeps the student from using any other program on the computer during the exam.

⁴ A way of automating the sending of emails to students based on one or more established criteria.

⁵ A video conferencing tool built into D2L that also allows you to share files and your screen.

⁶ A faculty member already teaching fully online would not need to convert any courses. There was only one of these in the survey.

maximum of four. An important consideration in converting a face-to-face course is if there is already an existing online version of the same course. Naturally, this can only happen when there are multiple sections of a course being taught. For the faculty in this survey, Of the 97 face-to-face courses being converted, only 22 did not have an online counterpart. The average faculty in the survey converted 0.9 courses (standard deviation of 1.0) with a minimum of zero and a maximum of four. For those courses without an online counterpart, the average number converted by a faculty member was 1.5 (standard deviation of 0.9) with a minimum of one and a maximum of four.

Next, we looked at the components of the face-to-face courses being converted.

	Quantitative	Discussion	Roll	
			Playing	Hands On
Average	42.0%	25.2%	8.4%	34.5%
Maximum	87.5%	87.5%	87.5%	87.5%
Minimum	0.0%	0.0%	0.0%	0.0%
Standard deviation	34.9%	27.5%	21.1%	30.6%

Perhaps due to the large number of face-to-face courses with online counterparts, the conversion of the face-to-face courses took less time than expected. The average per faculty member⁷ was 38.6 hours (standard deviation of 25.5) with a minimum of ten hours and a maximum of ninety hours.

Changes to Courses Due to Conversion

Next, we looked at what components of the face-to-face courses were changed when they were converted to online:

	Course		Topics Covered	Attendance Policy	Grading Policies
	Assignments	Lectures			
No change	12	17	29	27	26
Very few changes	19	11	17	9	20
Moderate changes	16	11	8	6	11
Quite a few changes	10	17	2	4	0
Eliminated	0	1	1	11	0
No response	1	1	1	1	1
Total	58	58	58	58	58

With regards to course assignments, the results were widely varied; although, it was encouraging to see that no assignments were completely eliminated. The results were similar for lectures. We know from casual conversations that many of the courses without face-to-face counterparts were converted to synchronous online delivery using either Microsoft Teams or Collaborate Ultra to deliver lectures at the regularly scheduled times. Unfortunately, we did not anticipate this so no additional survey questions regarding lectures were used.

Most of the faculty made relatively few changes to the topics being covered. In other words, there was not a push to “dumb down” the courses. Many of the faculty maintained their existing attendance policies only applying them to the virtual synchronous meetings. As with topics covered, only minimal changes were made to the grading policies.

⁷ The data is per faculty member, regardless of how many courses they converted.

	Grade Component Weights	Participation	Exams
No change	33	26	30
Very few changes	12	14	13
Moderate changes	11	10	7
Quite a few changes	1	3	7
Eliminated	0	4	0
No response	1	1	1
Total	58	58	58

As with grades, only minimal changes were made to the weights for the various components used to compute those grades. Likewise, only minimal changes were made to the participation requirements. Exams also saw minimal changes. This is due, in part, to some of the face-to-face classes already administering the exams online.

Overall Satisfaction

Overall, the faculty were satisfied with the process.

Overall Satisfaction	#
Very unsatisfied	1
Unsatisfied	3
Neutral	12
Satisfied	26
Very satisfied	15
No response	1
Total	58

Hence, 70.7 percent reported being either satisfied or very satisfied.

Student Learning

Overall, faculty were not impressed with the resulting student learning.

Student Learning Rated by Faculty	#
Much lower	2
Lower	16
About the same	34
Higher	3
Much higher	1
No response	2
Total	58

Fifty-two faculty (89.7 percent) reported that learning either stayed the same or decreased as a result of the conversion.

Grades

At first glance, it appeared that grades had improved:

Grades	#
Much lower	0
Lower	3
About the same	33
Higher	19
Much higher	2
No response	1
Total	58

Faculty reported that in 56.9 percent of the time, the grades were about the same. They also reported that 36.2 percent of the time the grades were higher. Given the other responses to this survey, this is more likely to be the result of the converted courses being easier than the result of student learning improving as a result of the conversion. This is especially borne out by the results below that 81.0 percent of the student engagements were lower or about the same. Additionally, the single biggest concern raised in the comment part of the survey was student cheating on the online exams. This is not surprising given that 31 of the 58 respondents (53.5 percent) had little to no experience with Respondus, the primary tool D2L offers to help reduce cheating.

Other Miscellaneous Results

	Student Engagement	Student Interactions	Time in Course
Much lower	9	9	4
Lower	21	25	15
About the same	17	19	30
Higher	8	3	5
Much higher	1	0	0
No response	2	2	4
Total	58	58	58

A major of faculty members felt that student engagement and student interactions in their courses were lower or much lower after the conversion. Surprisingly, faculty reported that student time spent in the course either declined or stayed the same. Given the format conversion, this would either be due to the courses becoming easier or high levels of prior student experience with online courses.

Student Satisfaction

No student evaluations were conducted by the University so faculty were asked to estimate student satisfaction. The results show that in 77.6 percent of the cases, it either stayed the same or declined.

Student Satisfaction	#
Much lower	2
Lower	12
About the same	31
Higher	9
Much higher	0
No response	4
Total	58

Student Survey

A survey of Coles College of Business students was sent out at the end of spring semester. Respondents were limited to students who had at least one face-to-face course converted to online during the semester due to COVID-19. A total of 70 students responded. Of those, 64 responses were usable. The survey asked the students for some basic demographic information. The breakdown by class was as follows:

Classification Breakdown	#
Freshman	8
Sophomore	4
Junior	16
Senior	37

The respondents are heavily weighted towards juniors and seniors because fairly few freshman and sophomore students take business administration courses. The gender breakdown was:

Gender Breakdown	#
Male	33
Female	28
Other or prefer not to answer	3

This is fairly representative of the student body in the Coles College of Business. With regards to age, the breakdown was as follows:

Age Breakdown	#
18-21	32
22-25	19
25-30	9
Over 30	4

The average age was about 22.7 with a standard deviation of about 3.9. Kennesaw State University and the Coles College of Business mainly cater to students directly from high school so this is fairly representative of the student body. With regards to the number of online courses taken, not counting the courses converted from face-to-face, the results are as follows:

Online Courses Taken	#
None	13
1-2	15
3-4	15
5-6	14
More than 6	7

This is an average of about 3.1 with a standard deviation of about 2.3. The Coles College of Business has always offered a large number of online courses so these results are not surprising. With regards to how many face-to-face courses these students had converted, the results are as follows:

Number of Face-to-Face Courses Had Converted	#
1	6
2	15
3	9
4	17
5 or more	17

This has an average of about 3.4 with a standard deviation of about 1.4.

Converted Courses

Each student was asked about the first three of their converted face-to-face courses. Since not all students had three courses converted, that gave us 172 data points. For each of the three courses surveyed, the students were asked five questions:

1. After the conversion to online, this course was easier, about the same, harder.
2. After the conversion to online, was your learning in this converted course lower, higher, about the same.
3. After the conversion to online, how much time did you spend with the course?
4. How satisfied are you with the conversion to online?
5. How prepared was your instructor to teach online relative to teaching in the classroom?

Was the Course Easier

The results for this question were:

Class	Easier	Same	Harder	Grand Total
Freshman	2	6	16	24
Sophomore	1	4	7	12
Junior	7	16	18	41
Senior	5	54	35	94
Grand Total	15	80	76	171

This converts to the following percentages:

Class	Easier	Same	Harder
Freshman	8.3%	25.0%	66.7%
Sophomore	8.3%	33.3%	58.3%
Junior	17.1%	39.0%	43.9%
Senior	5.3%	57.4%	37.2%

Freshmen and sophomores thought the courses got harder by a wide percentage while juniors had the highest percentage of responses that the courses got easier.

Gender	Easier	Same	Harder	Grand Total
Female	5	33	31	69
Male	9	47	37	93
Other or prefer not to answer	1		8	9
Grand Total	15	80	76	171

This converts to the following percentages:

Gender	Easier	Same	Harder
Female	7.25%	47.83%	44.93%
Male	9.68%	50.54%	39.78%
Other or prefer not to answer	11.11%	0.00%	88.89%

Therefore, there was not a lot of difference by gender.

Age	Easier	Same	Harder	Grand Total
18-21	8	38	43	89
22-25	4	25	23	52
25-30	2	14	6	22
Over 30	1	3	4	8
Grand Total	15	80	76	171

This converts to the following percentages:

Age	Easier	Same	Harder
18-21	9.0%	42.7%	48.3%
22-25	7.7%	48.1%	44.2%
25-30	9.1%	63.6%	27.3%
Over 30	12.5%	37.5%	50.0%

The 25-30 year old students were the least likely to say that the resulting course was harder. Interestingly, the over 30 students were most likely to find the converted courses harder but also most likely to find them easier.

Number of Online Courses Taken	Easier	Same	Harder	Grand Total
0	4	5	30	39
1-2	2	27	14	43
3-4	4	23	13	40
5-6	5	16	13	34
More than 6		9	6	15
Grand Total	15	80	76	171

This converts to the following percentages:

Number of Online Courses Taken	Easier	Same	Harder
0	10.3%	12.8%	76.9%
1-2	4.7%	62.8%	32.6%
3-4	10.0%	57.5%	32.5%
5-6	14.7%	47.1%	38.2%
More than 6	0.0%	60.0%	40.0%

Students who had never taken an online course before found the conversion to be much more difficult. Interestingly, having taken more than one prior online course did not appear to have much of an impact on the difficulty rating.

Learning after the Conversion

Class	Lower	Same	Higher	Grand Total
Freshman	15	9		24
Sophomore	7	5		12
Junior	16	18	7	41
Senior	44	43	7	94
Grand Total	82	75	14	171

This converts to the following percentages:

Class	Lower	Same	Higher
Freshman	62.5%	37.5%	
Sophomore	58.3%	41.7%	
Junior	39.0%	43.9%	17.1%
Senior	46.8%	45.7%	7.4%

Therefore, no freshmen or sophomores thought learning was higher in the converted courses and only juniors thought the learning was higher after the conversion.

Gender	Lower	Same	Higher	Grand Total
Female	38	25	6	69
Male	35	50	8	93
Other or prefer not to answer	9			9
Grand Total	82	75	14	171

This converts to the following percentages:

Gender	Lower	Higher	Same
Female	55.1%	8.7%	36.2%
Male	37.6%	8.6%	53.8%
Other or prefer not to answer	100.0%		

Males were more likely to say that learning was the same while females were more likely to say that learning was lower.

Age	Lower	Same	Higher	Grand Total
18-21	48	37	4	89
22-25	22	23	7	52
25-30	9	11	2	22
Over 30	3	4	1	8
Grand Total	82	75	14	171

This converts to the following percentages:

Age	Lower	Same	Higher
18-21	53.9%	41.6%	4.5%
22-25	42.3%	44.2%	13.5%
25-30	40.9%	50.0%	9.1%
Over 30	37.5%	50.0%	12.5%

Number of Online Courses Taken	Lower	Same	Higher	Grand Total
0	30	9		39
1-2	13	24	6	43
3-4	14	21	5	40
5-6	16	17	1	34
More than 6	9	4	2	15
Grand Total	82	75	14	171

This converts to the following percentages:

Number of Online Courses Taken	Lower	Higher	Same
0	76.9%		23.1%
1-2	30.2%	14.0%	55.8%
3-4	35.0%	12.5%	52.5%
5-6	47.1%	2.9%	50.0%
More than 6	60.0%	13.3%	26.7%

Students who had taken no prior online courses or more than six prior online courses were far more likely to say learning was lower than any other students were. The results for zero courses was not at all surprising since those students would have been learning how to take an online course while also trying to learn the material. However, the more than six had the second highest belief that learning was lower and this was very surprising. Perhaps, their large experience with online courses gave them specific expectations regarding online courses that these hastily converted courses just did not meet.

Effort in Course after Conversion from Face-to-Face to Online

Class	Much Less	Less	Same	More	Much More	Grand Total
Freshman	1	5	8	5	5	24
Sophomore	1		6	4	1	12
Junior	3	12	15	6	5	41
Senior	19	18	34	17	6	94
Grand Total	24	35	63	32	17	171

This converts to the following percentages:

Class	Much Less	Less	Same	More	Much More
Freshman	4.2%	20.8%	33.3%	20.8%	20.8%
Sophomore	8.3%		50.0%	33.3%	8.3%
Junior	7.3%	29.3%	36.6%	14.6%	12.2%
Senior	20.2%	19.1%	36.2%	18.1%	6.4%

Seen another way:

Class	Less or Much Less	More or Much More
Freshman	25.0%	41.7%
Sophomore	8.3%	41.7%
Junior	36.6%	26.8%
Senior	39.4%	24.5%

So, the majority of freshmen and sophomores put in more or much more effort while the majority of juniors and seniors put in less or much less effort.

Gender	Much Less	Less	Same	More	Much More	Grand Total
Female	11	16	26	14	2	69
Male	9	19	34	17	14	93
Other or prefer not to answer	4		3	1	1	9
Grand Total	24	35	63	32	17	171

This converts to the following percentages:

Gender	Much Less	Less	Same	More	Much More
Female	15.9%	23.2%	37.7%	20.3%	2.9%
Male	9.7%	20.4%	36.6%	18.3%	15.1%
Other or prefer not to answer	44.4%	0.0%	33.3%	11.1%	11.1%

Seen another way:

Gender	Less or Much Less	More or Much More
Female	39.1%	23.2%
Male	30.1%	33.3%
Other or prefer not to answer	44.4%	22.2%

So, females tended to put in less or much less effort while males tended to put in more or much more effort; although, the difference between the two was much less for males than for females.

Number of Online	Much Less	Less	Same	More	Much More	Grand Total
0	5	9	12	7	6	39
1-2	7	8	20	7	1	43
3-4	5	4	16	10	5	40
5-6	6	10	11	4	3	34
More than 6	1	4	4	4	2	15
Grand Total	24	35	63	32	17	171

This converts to the following percentages:

Number of Online Courses Taken	Much Less	Less	Same	More	Much More
0	12.8%	23.1%	30.8%	17.9%	15.4%
1-2	16.3%	18.6%	46.5%	16.3%	2.3%
3-4	12.5%	10.0%	40.0%	25.0%	12.5%
5-6	17.6%	29.4%	32.4%	11.8%	8.8%
More than 6	6.7%	26.7%	26.7%	26.7%	13.3%

Number of Courses Converted	Much Less	Less	Same	More	Much More	Grand Total
1		2	1	1	2	6
2	2	10	11	10	3	36
3	5	5	9	5	3	27
4	4	10	24	7	6	51
5 or more	13	8	18	9	3	51
Grand Total	24	35	63	32	17	171

This converts to the following percentages:

Number of Courses Converted	Much Less	Less	Same	More	Much More
1		33.3%	16.7%	16.7%	33.3%
2	5.6%	27.8%	30.6%	27.8%	8.3%
3	18.5%	18.5%	33.3%	18.5%	11.1%

4	7.8%	19.6%	47.1%	13.7%	11.8%
5 or more	25.5%	15.7%	35.3%	17.6%	5.9%

Seen another way:

Number of Courses Converted	Less or Much Less	More or Much More
1	33.3%	50.0%
2	33.3%	36.1%
3	37.0%	29.6%
4	27.5%	25.5%
5 or more	41.2%	23.5%

Generally speaking, the more courses a student had converted, the less likely they were to put in more or much more effort into those courses. Mostly, as the number of courses converted increased, the more likely they were to put in the same level of effort. This could be due to the effort of learning to deal with online courses was spread over more courses.

Satisfaction

We will now look at how satisfied the students were with the conversion from face-to-face to online. The students were dealing with the same COVID-19 concerns as the faculty so that most likely tempered their view of the resulting courses.

Class	Very unsatisfied	Unsatisfied	Indifferent	Satisfied	Very satisfied	Grand Total
Freshman	8	5	4	7		24
Sophomore	3	3	1	2	3	12
Junior	2	12	8	14	5	41
Senior	17	21	21	21	14	94
Grand Total	30	41	34	44	22	171

This converts to the following percentages:

Class	Very unsatisfied	Unsatisfied	Indifferent	Satisfied	Very satisfied
Freshman	33.3%	20.8%	16.7%	29.2%	
Sophomore	25.0%	25.0%	8.3%	16.7%	25.0%
Junior	4.9%	29.3%	19.5%	34.1%	12.2%
Senior	18.1%	22.3%	22.3%	22.3%	14.9%

Seen another way:

Class	Unsatisfied or Very Unsatisfied	Satisfied or Very Satisfied
Freshman	54.2%	29.2%
Sophomore	50.0%	41.7%
Junior	34.1%	46.3%
Senior	40.4%	37.2%

Therefore, freshmen and sophomores less satisfied than satisfied while juniors and seniors were mixed with juniors more satisfied and seniors somewhat less satisfied.

Gender	Very unsatisfied	Unsatisfied	Indifferent	Satisfied	Very satisfied	Grand Total
Female	12	15	16	11	15	69
Male	15	25	15	31	7	93
Other or prefer not to answer	3	1	3	2		9
Grand Total	30	41	34	44	22	171

This converts to the following percentages:

Gender	Very unsatisfied	Unsatisfied	Indifferent	Satisfied	Very satisfied
Female	17.4%	21.7%	23.2%	15.9%	21.7%
Male	16.1%	26.9%	16.1%	33.3%	7.5%
Other or prefer not to answer	33.3%	11.1%	33.3%	22.2%	

Seen another way:

Gender	Unsatisfied or very unsatisfied	Satisfied or very satisfied
Female	39.1%	37.7%
Male	43.0%	40.9%
Other or prefer not to answer	44.4%	22.2%

Or, see another way, both females and males were equally unsatisfied and satisfied with females having a higher indifference level.

Number of online courses taken	Very unsatisfied	Unsatisfied	Indifferent	Satisfied	Very satisfied	Grand Total
0	16	12	3	8		39
1-2	6	10	10	8	9	43
3-4	5	10	8	12	5	40
5-6	2	5	11	16		34
More than 6	1	4	2		8	15
Grand Total	30	41	34	44	22	171

This converts to the following percentages:

Number of online courses take	Very unsatisfied	Unsatisfied	Indifferent	Satisfied	Very satisfied
0	41.0%	30.8%	7.7%	20.5%	0.0%
1-2	14.0%	23.3%	23.3%	18.6%	20.9%
3-4	12.5%	25.0%	20.0%	30.0%	12.5%
5-6	5.9%	14.7%	32.4%	47.1%	0.0%
More than 6	6.7%	26.7%	13.3%	0.0%	53.3%

Seen another way:

Number of online courses take	Unsatisfied or very unsatisfied	Satisfied or very satisfied
0	71.8%	20.5%
1-2	37.2%	39.5%
3-4	37.5%	42.5%
5-6	20.6%	47.1%
More than 6	33.3%	53.3%

Therefore, generally speaking, the more courses the student has taken online in the past, the more satisfied they were with the conversion.

Number of courses converted	Very unsatisfied	Unsatisfied	Indifferent	Satisfied	Very satisfied	Grand Total
1		2	1	2	1	6
2	2	7	10	13	4	36
3	3	7	6	6	5	27
4	6	15	8	17	5	51
5 or more	19	10	9	6	7	51
Grand Total	30	41	34	44	22	171

This converts to the following percentages:

Number of courses converted	Very unsatisfied	Unsatisfied	Indifferent	Satisfied	Very satisfied
1		33.3%	16.7%	33.3%	16.7%
2	5.6%	19.4%	27.8%	36.1%	11.1%
3	11.1%	25.9%	22.2%	22.2%	18.5%
4	11.8%	29.4%	15.7%	33.3%	9.8%
5 or more	37.3%	19.6%	17.6%	11.8%	13.7%

Seen another way:

Number of courses converted	Unsatisfied or very unsatisfied	Satisfied or very satisfied
1	33.3%	50.0%
2	25.0%	47.2%
3	37.0%	40.7%
4	41.2%	43.1%
5 or more	56.9%	25.5%

Therefore, in general, students were more satisfied the fewer the number of courses they had converted from face-to-face to online. Most student are fully time students. This could either be because they were taking fewer courses than most students or because they had selected specific courses that they wanted to take face-to-face.

Student Opinion of How Prepared the Instructor was to Teach Online

Normally, KSU administers a course evaluation for every course at the end of the semester. However, these were all cancelled for spring semester so these could not be used to compare how professors performed during the conversion. Therefore, we asked students how well their professors seemed to be prepared for the conversion.

Class	Very unprepared	Unprepared	About the same	Prepared	Very prepared	Grand Total
Freshman	3	9	2	8	2	24
Sophomore		4	3	1	4	12
Junior	2	6	10	13	10	41
Senior	18	12	22	20	22	94
Grand Total	23	31	37	42	38	171

This converts to the following percentages:

Class	Very unprepared	Unprepared	About the same	Prepared	Very prepared
Freshman	12.5%	37.5%	8.3%	33.3%	8.3%
Sophomore		33.3%	25.0%	8.3%	33.3%
Junior	4.9%	14.6%	24.4%	31.7%	24.4%
Senior	19.1%	12.8%	23.4%	21.3%	23.4%

Seen another way:

Class	Unprepared or very unprepared	Prepared or very prepared
Freshman	50.0%	41.7%
Sophomore	33.3%	41.7%
Junior	19.5%	56.1%
Senior	31.9%	44.7%

In general, there was not a lot of variation in how students evaluated the preparedness of the professor based on class level; although, juniors were higher.

Gender	Very unprepared	Unprepared	About the same	Prepared	Very prepared	Grand Total
Female	10	9	13	17	20	69
Male	10	19	23	24	17	93
Other or prefer not to answer	3	3	1	1	1	9
Grand Total	23	31	37	42	38	171

This converts to the following percentages:

Gender	Very unprepared	Unprepared	About the same	Prepared	Very prepared
Female	14.5%	13.0%	18.8%	24.6%	29.0%
Male	10.8%	20.4%	24.7%	25.8%	18.3%
Other or prefer not to answer	33.3%	33.3%	11.1%	11.1%	11.1%

Seen another way:

Gender	Unprepared or very unprepared	Prepared or very prepared
Female	27.5%	53.6%
Male	31.2%	44.1%
Other or prefer not to answer	66.7%	22.2%

Therefore, in general, females ranked the professors more prepared than males.

Number of online courses taken	Very unprepared	Unprepared	About the same	Prepared	Very prepared	Grand Total
0	7	13	5	11	3	39
1-2	6	8	10	8	11	43
3-4	3	3	11	13	10	40
5-6	6	5	8	9	6	34
More than 6	1	2	3	1	8	15
Grand Total	23	31	37	42	38	171

This converts to the following percentages:

Number of online courses taken	Very unprepared	Unprepared	About the same	Prepared	Very prepared
0	17.9%	33.3%	12.8%	28.2%	7.7%
1-2	14.0%	18.6%	23.3%	18.6%	25.6%
3-4	7.5%	7.5%	27.5%	32.5%	25.0%
5-6	17.6%	14.7%	23.5%	26.5%	17.6%
More than 6	6.7%	13.3%	20.0%	6.7%	53.3%

Seen another way:

Number of online courses taken	Unprepared	Prepared
0	51.3%	35.9%
1-2	32.6%	44.2%
3-4	15.0%	57.5%
5-6	32.4%	44.1%
More than 6	20.0%	60.0%

Therefore, students who have taken 3-4 or more than six online course were the most satisfied.

Number of courses converted	Very unprepared	Unprepared	About the same	Prepared	Very prepared	Grand Total
1	1	1	1	1	2	6
2	3	6	10	10	7	36
3	2	2	8	6	9	27
4	1	14	10	17	9	51
5 or more	16	8	8	8	11	51
Grand Total	23	31	37	42	38	171

This converts to the following percentages:

Number of courses converted	Very unprepared	Unprepared	About the same	Prepared	Very prepared
1	16.7%	16.7%	16.7%	16.7%	33.3%
2	8.3%	16.7%	27.8%	27.8%	19.4%
3	7.4%	7.4%	29.6%	22.2%	33.3%
4	2.0%	27.5%	19.6%	33.3%	17.6%
5 or more	31.4%	15.7%	15.7%	15.7%	21.6%

Seen another way:

Number of courses converted	Unprepared	Prepared
1	33.3%	50.0%
2	25.0%	47.2%
3	14.8%	55.6%
4	29.4%	51.0%
5 or more	47.1%	37.3%

Student Performance

To test how well students performed after the conversion, we compared two courses with a very specific criterion, those were there was a face-to-face and online version being taught by the same professor. That way, the professor was already versed in teaching the course online and any differences between the

two sections could be attributed to student performance. In the Management, Entrepreneurship and Hospitality School within the Coles College of Business, only two courses fit this criterion, one section of a junior level operations management course and one section of a senior level project management course. Both were evaluated.

Operations Management

In the operations management course, eight assignments were completed after the conversion. They were:

- Two homework problem sets using the McGraw-Hill learning management platform Connect.
- Three chapter quizzes in Connect.
- Two practice exams in the college's learning management platform D2L Brightspace.
- One chapter exam covering three chapters. This was in D2L.

Our hypothesis is that students in the originally online course would do better than those in the converted face-to-face course and that proved to be correct. On all eight assignments, the originally online students scored higher. However, only five of the eight differences were significant. Those results are summarized below:

	Ch 11 Quiz	Ch 12 HW	Ch 12 Quiz	Ch 13 Quiz	Ch 13 HW	Practice Exam 3 Concepts	Practice Exam 3 Problems	Exam 3
Face-to-Face								
<i>N</i>	18	16	19	20	16	20	19	19
<i>Average</i>	96.4	88.5	94.5	95.8	89.1	86.1	40.9	67.9
<i>St. Dev.</i>	5.1	12.6	6.0	6.7	9.3	11.9	22.9	9.7
Online								
<i>N</i>	29	27	30	30	30	29	30	31
<i>Average</i>	98.4	91.6	98.3	98.5	92.2	92.3	52.7	68.6
<i>St. Dev.</i>	3.0	10.2	3.3	3.6	6.8	5.6	19.6	10.3
<i>t-value</i>	-1.746	-0.896	-2.911	-1.845	-1.275	-2.482	-2.351	-0.216
<i>p-value</i>	0.044	0.188	0.003	0.036	0.104	0.008	0.012	0.415
<i>Significant</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>Yes</i>	<i>No</i>

Project Management

With project management, the test was performed on six chapter quizzes, all given in D2L Brightspace. The hypothesis was the same, namely that the originally online students would perform better than the face-to-face converted students. However, that proved not to be the case. On two of the quizzes, the average scores were the same and on one other one, the face-to-face students performed slightly better. Only one of the differences was statistically significant. Those results are summarized below.

	Quiz 11	Quiz 12	Quiz 13	Quiz 14	Quiz 15	Quiz 16
Face-to-Face						
<i>n</i>	11	12	12	12	12	12
<i>Average</i>	17.6	18.6	17.5	17.0	17.8	16.0
<i>St. Dev.</i>	1.1	1.6	1.4	2.0	2.1	1.9
Online						
<i>n</i>	60	59	57	56	55	57
<i>Average</i>	17.6	18.6	18.1	16.9	18.0	17.2
<i>St. Dev.</i>	2.0	1.2	1.3	2.6	1.6	2.4
<i>t-value</i>	0.060	0.061	-1.446	0.067	-0.277	-1.677
<i>p-value</i>	0.476	0.476	0.076	0.473	0.292	0.040
Significant	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>No</i>	<i>Yes</i>

Concise Conclusion and Recommendation

The Coles College of Business was able to transition to fully online courses in a way that both faculty and students found acceptable while maintaining student learning. This was due in large part to much of the faculty and many of the students having already had online experience. For this reason, colleges and faculty are advised to offer at least some online comments going forward to maintain the core of experience just in case COVID-19 should flair up again or some other event forces them to go online again.

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