



College Student Transition to Synchronous Virtual Classes during the COVID-19 Pandemic in Northeastern United States

Laurie Murphy ^{1*}, Nina B. Eduljee ¹, Karen Croteau ¹

¹ Saint Joseph's College of Maine, Standish, ME, USA

*Corresponding Author: lmurphy@sjcme.edu

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ABSTRACT

This study examined undergraduate college students' perceptions, general preferences, emotional responses, and comment themes with the transition to a virtual learning classroom during the COVID-19 pandemic from a college in the northeast United States. A total of 148 students (44 males, 104 females) completed an 18-item transition to virtual classes survey. Students indicated that their professors utilized the Learning Management System effectively with virtual coursework, and that their professors adapted and communicated changes in course content during the transition, while indicating their preferences that professors communicate changes in course syllabi or schedule in a timely manner, and that both course syllabi and grades be available on the Learning Management System. Students expressed negative emotions like uncertainty, anxiety, and nervousness when transitioning to virtual classes. Four open-ended questions generated six comment themes with students indicating the need for constant communication, the use of the learning management system, leveraging technology, instructor support, flexibility and characteristics, classroom engagement, and course management.

Keywords: undergraduate college students, virtual classes, learning management system, emotional responses, COVID-19, pandemic

INTRODUCTION

Higher education institutions across the United States experienced school closures and a disruption to their 2020 spring courses due to the pandemic caused by COVID-19 (Efuribe, Barre-Hemingway, Vaghefi, & Suleiman, 2020; Sahu, 2020; Viner et al., 2020). The volume of COVID-19 cases began to escalate across the U.S in the February to mid-March 2020 timeframe (Centers for Disease Control, 2020; Schuchat, 2020). The quickly evolving presentation of information shared by the Centers for Disease Control regarding the community spread of COVID-19 occurred shortly after some undergraduate institutions returned from spring break or prior to spring break.

According to an Entangled Solutions' study (as of April 2020) over 4,200 higher education institutions and 25.7 million students across the United States were impacted by the pandemic (Rhea, 2020). The rapidly changing nature of the pandemic has required fast decision making and reactive responses from academic administrators. Ultimately, one institution after another elected to move to virtual instruction sending students homebound (Hechinger & Lorin, 2020). In the state of Maine, all 38 public and private institutions with over 72,000 students worked swiftly to remote modes of teaching and learning for their students with the primary goal of keeping students safe (Sustaining Higher Education and Sustaining Maine, 2020). This shift to a different instruction modality happened quickly and abruptly, with little advance notice that would allow faculty to prepare for learning how to perform remote, online teaching.

International Perspective

The pandemic has had a financial impact on educational institutions world-wide. In the United States, it is estimated to cost the higher education sector around \$30 billion in revenue, an estimated £790 million in the UK and \$3-4 billion in Australia (Burki, 2020). In order to combat the spread of the virus, colleges and universities in both developed economies (e.g., Germany, Italy, and Republic of Ireland), as well as developing economies (e.g., China, Egypt, and Hong Kong) reported campus closures in their face-to-face modalities and a move to online virtual teaching modality (Crawford et al., 2020). Sahu (2020) indicates that the shift from face-to-face teaching to online classes posed challenges for institutions of higher education, like faculty who are not technology savvy, IT concerns, infrastructure issues, and access to technology. Replacing face-to-face teaching with online virtual teaching may impact experiences for students as well as student engagement in the classroom (Lee, 2020).

Virtual Learning

Traditional on-campus students who are accustomed to a live face-to-face classroom experience and student-teacher interactions need instructor support and guidance when shifting to an online learning environment. Artino (2010) posited that professors should first consider bolstering students' beliefs that they could succeed in an online environment. High performance in an online educational setting requires that students increase their self-learning skills with the intentional and directed assistance of faculty members or institutional resources (Bao, 2020). These efforts may result in higher student confidence and happiness with online learning (Artino, 2010). According to the Quality Matters (2020) emergency remote instruction checklist, regardless of the type of class (asynchronous virtual, blended virtual), the top priority is:

“Explain how the remote class will be structured, if students need to log on for synchronous sessions (and how), where they can find assignment information, and how they should submit assignments” (p. 1).

In Smart and Cappel's (2006) study on undergraduate college students' feelings about online learning, 85% of students reported that they had never taken an online course. The researchers concluded that professors should carefully consider how online instruction is incorporated into courses where students have not yet experienced online learning. Thus, the need to carefully craft online instruction requires faculty education on how to effectively deliver the promised educational experience to students (Ralph, n.d.).

There are many components to consider when delivering a quality learning experience in a virtual environment. In a study of 280 business students (Astani, Ready, & Duplaga, 2010), the majority of participants felt the quality of online learning compared to the classroom was as good, and that the rigor was equal to that offered by the in-classroom experience. Armstrong (2011) found that asynchronous communication was highlighted as a student concern that included detailed instructions on graded assignments, assessments, and simply how or where to find course materials. He found that:

“When communication was perceived lacking, participants lower their approach to learning electing for more strategic or surface learning” (p. 224).

The use of a learning management system (LMS) and leveraging various technologies may improve the learning experience for the student. When using traditional face-to-face instruction, faculty members use an LMS to share material with their students via the internet (Mtebe, 2015).

Mohammed, Kumar, Saleh, and Shuaibu (2017) indicate that a “Learning Management System (LMS) is an application program (system) developed to manage online courses, share learning materials, and permits collaboration between students and students or between students and teachers” (p. 218).

Using an LMS allows professors to provide students with resources, share content, assign work projects, communicate changes in courses, allow collaborations in the course, monitor student goals, facilitate discussions among students, and post grades. Some of the common LMS's used in educational institutions include Blackboard, Moodle, Brightspace, Canvas, and Schoology (Chaw & Tang, 2018; Lim, 2020; Mansfield, 2019).

Ninety-nine percent of higher education institutions in the United States report that they use a learning management system (Dahlstrom, Brooks, & Bichsel, 2014). In their study of 550 theology students, Yalman, Başaran, and Gönen (2016) found that 54% of students preferred face-to-face instruction partnered with the use of a learning management system. The integration of these systems into the course design must be appropriate, with the instructor demonstrating a level of competency in their usage in the online environment (Huss & Eastep, 2013).

Providing information and documents regarding the structure and organization of a course is one of the key benefits of an LMS. Often discussion boards are also utilized to increase student comprehension and for instructor feedback (Bao, 2020). A study conducted on 600 students in a Principles of Accounting class examining perceptions of e-learning at the University of Limerick in Ireland found that the majority of questions asked on the discussion board related to the organization of the course rather than course content (Concannon, Flynn, & Campbell, 2005). The authors also concluded “that using techniques to encourage students to locate and use online resources are more relevant than general computer training” (p. 507).

In addition to deciding on how to best deliver virtual instruction to their students, institutions of higher education had to also deal with the anxiety, fear, and apprehension about campus closures, loss of resources, housing and jobs, access to personal relationships formed with professors and friends, and academic uncertainty experience with the onset of the COVID-19 pandemic (Dennon, 2020). These disruptions have caused increased stress and college students have experienced a variety of negative emotions upon learning about the pandemic and its impact on their lives overall (Sahu, 2020; Zhai & Du, 2020). In an Active Minds (2020) survey of 2,086 undergraduate college students, 80% indicated that their mental health has been impacted by the COVID-19 pandemic, with 38% stating that they had trouble focusing on their studies, and 91% of students feeling stress or anxiety. In an informal survey conducted by a college affordability advocacy group, which was completed by 521 students from 129 colleges, 75% of students indicated experiencing greater levels of stress, depression, and anxiety due to outbreak (John, 2020). Hara and Kling (2000) indicated that there were two main areas creating college student anxiety in the virtual learning environment: technology and poor communication.

THE PRESENT STUDY

Given the body of literature and the impact on educational institutions, this paper examined student perceptions about the transition to virtual classes as a result of the COVID-19 pandemic as well as the emotional reactions experienced during the transition to virtual classes. Classes were held in a real-time virtual environment using a synchronous learning mode, where students were able to interact with other students as well as their professors in their class. Faculty were encouraged to use the LMS to post their lectures, course information, assignments, and grades.

RESEARCH QUESTIONS

Four research questions were investigated in the present study.

- 1) How would students evaluate the use of the LMS used by their professors in their virtual courses?
- 2) How would students evaluate course delivery, content, and structure in their virtual courses?
- 3) What feelings did students experience when transitioning to virtual classes?
- 4) What are student opinions on what professors should keep doing, start doing, stop doing and do differently to improve the delivery in their virtual classes?

METHODOLOGY

Study Sample

Data was obtained from 156 participants, however, data from 8 participants were excluded due to incomplete surveys. The final number included 148 undergraduate students from a liberal arts college in Maine, USA. The students ranged in age from 18 to 58 (mean age = 20.76, SD = 4.55). The sample was obtained using a voluntary sample, a type of non-probability sampling.

Background information for all students is presented in **Table 1**.

Table 1. Student background characteristics

	Number (%) (n=148)
Gender	
Male	44 (29.7)
Female	104 (70.3)
Mean age (SD)	
Male	20.32 (1.17)
Female	20.94 (5.37)
Age Range	18-58 years
Class level	
Freshmen	35 (23.6)
Sophomore	36 (24.3)
Junior	42 (28.4)
Senior	33 (22.3)
5 th Year	2 (1.4)
Grade Point Average (GPA)	
Mean (SD) for males	3.20 (.52)
Mean (SD) for females	3.35 (.40)
Academic Major	
Business	29 (19.6)
Social Sciences	21 (14.2)
Nursing	41 (22.7)
Education	10 (6.8)
Exercise Science	18 (12.2)
Other	29 (19.9)
Number of courses enrolled in	
One	1 (0.7)
Two	1 (0.7)
Three	13 (8.8)
Four	96 (64.9)
Five	37 (25.0)
In how many courses did the Professor meet with you on Google Hangouts, Zoom, or virtual classroom?	
One	10 (6.8)
Two	34 (23.0)
Three	59 (39.9)
Four	40 (27.0)
Five	5 (3.4)

INSTRUMENTS

Demographic Questionnaire

Students were asked to respond to questions about their age, gender, grade point average (GPA), class status, academic major, number of classes they were enrolled in, and in how many classes their professors that met with them using Google Hangouts, Zoom, or Brightspace Virtual Classroom since the transition to virtual classes.

Learning Management System

Students were asked to think about number of courses they were taking and to check in which of the courses their professor(s) used the LMS and how it was used in each course (e.g., course # 1 refers to their first course, course # 2 to the second course). The LMS used at the college is Brightspace and the questions were focused on whether the LMS helped students transition to virtual classes effectively, whether the course syllabi, schedule, grades, rubrics, and course content were available online, and whether the news section on the LMS was used to communicate information about the class. Some examples of items included: "My professor utilized the LMS in a manner that helped me transition to virtual coursework", "Course grades were available on the LMS", and "Course content (PowerPoints, outlines, readings) were provided to me on the LMS."

Course Delivery, Content and Structure

For this part of the survey, students were asked to think about the number of courses they were taking and respond to questions about the delivery, content, and structure of their courses (e.g., course # 1 refers to their first course, course # 2 refers to their second course). They were asked to check in each of their courses whether their professor(s) had communicated changes in course content, assignment deadlines, changes in graded elements, how the course would proceed for the remainder of the semester, whether professors were flexible with deadlines, whether they increased or decreased the course work, whether they facilitated active participation online, how they used technology, and if they transitioned effectively to a virtual classroom environment. Some examples of items included: "Upon transition, my professor communicated changes in course content", "My professor adapted or was more flexible with deadlines due to the transition", and "My professor used technology effectively."

Level of Agreement

Students were asked to indicate their level of agreement on a 5-point "Likert Type scale" (1 = strongly disagree, 5 = strongly agree) to statements about their preferences regarding their classes in a virtual environment. Examples of items include: "I prefer that course syllabus and schedule are available on the Learning Management System", "I prefer virtual class sessions are held during a normally scheduled class time", and "I prefer that my attendance during a virtual session is noted and recognized." Higher scores indicate greater level of agreement and lower scores indicate lower level of agreement with the statements.

Student Emotions

Students were presented with 12 emotions (positive, negative, and neutral) using multi check boxes, where they were asked to select any feelings or emotions that applied upon transitioning to a virtual classroom. Some examples of emotions included: happy, anxious, nervous, sad, neutral, excited, and apprehensive.

Comment Themes

For this section of the survey, open-ended questions were presented that allowed participants to share their viewpoint and feelings about virtual classes. Accordingly, four open-ended questions were constructed to elicit responses regarding their experiences with virtual classes. These items include:

1. Given your experience in the virtual classroom in Spring 2020, what should professors keep doing?
2. Given your experience in the virtual classroom in Spring 2020, what should professors start doing?
3. Given your experience in the virtual classroom in Spring 2020, what should professors stop doing?
4. What else could professors do to improve the delivery of their courses in a virtual classroom setting (Google Hangouts, Zoom, or Brightspace Virtual Classroom)?

PROCEDURE

The current study was approved by the Institutional Review Board (IRB) at the College. Following approval, an email with a link to SurveyMonkey® was sent out to all participants at the college requesting their participation in the study. Participants responded to this online survey which consisted of 18 questions that were designed to assess their perceptions about the transition to online classes during the COVID-19 pandemic. Four of the questions in the survey were open-ended and participants were encouraged to share their thoughts and opinions on what professors should keep doing, start doing, stop doing and what they could do differently to improve the delivery of their courses in an online setting. Before starting the survey, participants signed an informed consent online, which indicated that all responses would be confidential and complete anonymity would be maintained in the study. The email invitation to participate in the study was deployed to the students at the end of the semester and the survey remained open for one week.

RESULTS

Data was analyzed using IBM SPSS Statistics for Windows, Version 25 (IBM Corp., 2017). The study used a mixed methodology approach, where descriptive statistics as well as qualitative content analysis of open-ended questions were conducted.

Learning Management System

Table 2 indicates the number and percentage of students who indicated the use of the LMS in each of their classes. The data indicates that for their first course, 121 (81.8%) students indicated that their professor utilized the LMS in an effective manner to help them transition to virtual coursework, 120 (81.1%) indicated that course syllabi was available on the LMS, and 117 (79.1%) indicated that course content which included PowerPoint, outlines, and readings were provided on the LMS. The general perception was that professors utilized the LMS effectively to help students transition to virtual coursework. Most professors posted their course syllabi, schedule, grades, rubrics, and content on the LMS that were available to students, which allowed their students make the transition to virtual classes seamless.

Table 2. Number (percentage) of students who indicated use of the LMS in their virtual courses

Statement	Course # 1	Course # 2	Course # 3	Course # 4	Course # 5
My professor utilized the LMS in a manner that helped my transition to virtual coursework.	121 (81.8)	109 (73.6)	101 (68.2)	60 (40.5)	16 (10.8)
Course syllabi was available on the LMS.	120 (81.1)	120 (81.1)	107 (72.3)	70 (47.3)	22 (14.9)
Course schedule was available on the LMS.	109 (73.6)	102 (68.9)	91 (61.5)	56 (37.8)	18 (12.2)
Course grades were available on the LMS.	117 (79.1)	94 (63.5)	74 (50.0)	45 (30.4)	11 (7.4)
The LMS news section was used to communicate with me.	77 (52.0)	68 (45.9)	53 (35.8)	30 (20.3)	12 (8.1)
Course rubrics were available to me on the LMS.	104 (70.3)	90 (60.8)	72 (48.6)	51 (34.5)	11 (7.4)
Course content (PowerPoints, outlines, readings) were provided to me on the LMS.	117 (79.1)	114 (77.0)	95 (64.2)	52 (35.1)	18 (12.2)

Course Delivery, Content, and Structure

Participants were asked about course delivery, content, and structure in their virtual classes during the semester by course (**Table 3**). The data indicated that across all their courses, while their professors adapted and communicated changes in course content as well as assignment deadlines, there were also changes in the graded elements of the course as a result of the transition. Across all courses, professors provided details on how assignments would be graded, and while some professors had decreased the workload as a result of the transition, other professors increased the workload in their classes. While 76 (51.4%) of students indicated that their professor facilitated active student participation in their virtual class sessions for course # 1, students indicated fewer professors did the same with their other courses.

Table 3. Number (percentage) of students indicating course delivery, content, and structure in their virtual courses

Statements	Course # 1	Course # 2	Course # 3	Course # 4	Course # 5
Upon transition, my professor communicated changes in course content.	100 (67.6)	99 (66.9)	91 (61.5)	73 (49.3)	18 (12.2)
Upon transition, my professor communicated changes in assignment deadlines.	102 (68.9)	96 (64.9)	86 (58.1)	63 (42.6)	21 (14.2)
My professor communicated with me via email.	106 (71.6)	98 (66.2)	95 (64.2)	82 (55.4)	26 (17.6)
Upon transition, my professor communicated changes in graded elements.	88 (59.5)	79 (53.4)	70 (47.3)	54 (36.5)	18 (12.2)
At the onset, my professor communicated how the course would proceed for the remainder of the semester.	112 (75.7)	108 (73.0)	101 (68.2)	83 (56.1)	24 (16.2)
My professor adapted or was more flexible with deadlines due to the transition.	92 (62.2)	79 (53.4)	76 (51.4)	58 (39.2)	17 (11.5)
My professor changed the graded assignments/elements of the course as a result of the transition.	69 (46.6)	59 (39.9)	44 (29.7)	36 (24.3)	12 (8.1)
My professor held virtual class meetings (google hangouts, virtual classroom) at the normally scheduled time.	100 (67.6)	94 (63.5)	73 (49.3)	45 (30.4)	14 (9.5)
My professor decreased the workload (assignments, homework, graded elements) after the transition.	34 (23.0)	21 (14.2)	20 (13.5)	14 (9.5)	5 (3.4)
My professor increased the workload (assignments, homework, graded elements).	48 (32.4)	39 (26.4)	38 (25.7)	20 (13.5)	6 (4.1)
My professor provided details on expectations for graded assignments.	97 (65.5)	94 (63.5)	79 (53.4)	59 (39.9)	18 (12.2)
Professor facilitated active student participation during the virtual class sessions.	76 (51.4)	72 (48.6)	50 (33.8)	31 (20.9)	10 (6.8)
My professor used technology effectively.	98 (66.2)	91 (61.5)	81 (54.7)	54 (36.5)	20 (13.5)
My professor transitioned to the virtual classroom environment effectively.	97 (65.5)	91 (61.5)	71 (48.0)	48 (32.5)	17 (11.5)

Level of Agreement with Classes in a Virtual Environment

Mean and standard deviations were computed to determine level of agreement with preferences regarding classes held in a virtual environment (**Table 4**). Students indicated their highest level of agreement with the statements: I prefer that course grades are available on the LMS (mean = 4.86, SD = .57); I prefer that changes in course content and assignments are communicated to me in a timely manner (mean = 4.86, SD = .55); and I prefer that course grades are available on the LMS (mean = 4.85, SD = .54); Students indicated lower level of agreement with the following statements: I prefer graded elements/assignments are not changed during the semester (mean = 3.35, SD = 1.05); I prefer that the professor facilitates active student participation during the virtual class sessions (mean = 3.47, SD = .99); and I prefer that my attendance during a virtual class session is noted and recognized (mean = 3.70, SD = 1.27).

Table 4. Level of agreement with preferences for classes held in a virtual environment

Survey Statements	Means (SD)
I prefer that the course syllabus and schedule are available on the LMS.	4.85 (.54)
I prefer that course grades are available on the LMS.	4.86 (.57)
I prefer that email is used to communicate with me regarding the course.	4.62 (.73)
I prefer that course rubrics or assignment details are available to me on the LMS.	4.79 (.62)
I prefer that course content (PowerPoints, outlines, readings, other course materials) are provided to me on the LMS.	4.80 (.60)
I prefer that changes in course content and assignments are communicated to me in a timely manner.	4.86 (.55)
I prefer graded elements/assignments are not changed during the semester.	3.35 (1.05)
I prefer virtual class sessions are held during a normally scheduled class time.	3.72 (1.20)
I prefer virtual class sessions are held using Google hangouts, virtual classroom or other virtual meeting technology.	3.98 (1.12)
I prefer that the Professor facilitates active student participation during the virtual class sessions.	3.47 (.99)
I prefer that my attendance during a virtual class session is noted and recognized.	3.70 (1.27)
I prefer that lectures be recorded so that I can view them at my leisure.	4.21 (1.11)

1 = Strongly Disagree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly Agree

Differences in Feelings and Emotions with the Transition to Virtual Classes

Participants were asked to indicate their feelings about the transition to the virtual classes. The results in **Table 5** indicate that 88 (59.5%) participants expressed uncertainty, 75 (50.7%) expressed anxiety, and 61 (41.2%) expressed nervousness about the transition to virtual classes. Only 7 (4.7%) of the students indicated they were happy and 5 (3.4%) were excited about the transition to virtual classes.

Table 5. Number (percentage) of students who expressed a particular emotion on transitioning to virtual classes

Emotion	Number (%)
Nervous	61 (41.2)
Anxious	75 (50.7)
Sadness	55 (37.2)
Angry	41 (27.7)
Uncertain	88 (59.5)
Comfortable	20 (13.5)
Fearful	36 (24.3)
Neutral	24 (16.2)
Apprehensive	36 (24.3)
Disgusted	9 (6.1)
Happy	7 (4.7)
Excited	5 (3.4)

* Data indicates multiple student responses to this question

Comment Themes

Table 6 indicates comment themes for the four open-ended questions by number of students' responses for that theme. Six themes emerged from student comments:

Theme 1: Constant communication ("Communicating with their students and try to be understanding", "Weekly updates and provide a better laid out course syllabus", and "If there are updates post them everywhere so people who miss the lectures are still aware of everything going on").

Theme 2: Use of the Learning Management System ("Professors should keep updating brightspace with course resources and information, it's helpful to be able to reference powerpoints, lectures, and articles when studying or outlining the textbook chapter", "Keep adding presentations to brightspace and posting grades onto brightspace", and "Every professors should post notes, or lessons on bright space so it is easier to keep up with what is going on").

Theme 3: Leveraging technology ("Professors should keep utilizing virtual learning spaces such as google hangouts or zoom, keep mandatory attendance, and update students daily on any changes", "Continue to have video element, whether prerecorded or as a class" and "use an app like onenote (windows, its already on everyone's computer) to screen record, that way students can actually read what is being presented. they could also send out a weekly update that set out what the assignments were").

Theme 4: Instructor support, flexibility, and characteristics ("Keep being adaptable and understanding of new stressors and barriers students are having to overcome", "Being flexible", and "Keep the in person relationships that they have developed continuing throughout the semester").

Theme 5: Classroom engagement ("Allowing time to engage students in the lectures. Or having games like Kahoots, to give them a sense of motivation to pay attention", "They could offer anonymous surveys every 2 weeks on how class is going", and "Letting everyone have a chance to speak. Maybe some discussions/socratic").

Theme 6: Course management ("Be more accommodating with deadlines. Being online is not an easy task to do", "They should Stop only adding the homework assignments on Brightspace and leaving the class out to dry" and "Stop underestimating the amount of work we are getting from other classes. This transition is extremely difficult for everyone to keep track of").

Table 6. Comment themes for the four open-ended questions regarding experiences to virtual classroom

Given your experience in the virtual classroom in the Spring of 2020...

What should professors keep doing?	Number of students who mentioned this theme *
Use of Learning Management System	41
Course management	39
Classroom engagement	39
Constant communication	38
Instructor support, flexibility, and characteristics	30
Leveraging technology	27
What should professors keep doing	Number of students who mentioned this theme *
Use of the Learning Management System	48
Classroom engagement	39
Course management	36
Constant communication	30
Leveraging technology	23
Instructor support, flexibility, and characteristics	21
What should professors stop doing?	Number of students who mentioned this theme *
Course management	52 **
What could professors do to improve the delivery of their courses in a virtual classroom?	Number of students who mentioned this theme *
Classroom engagement	35
Leveraging technology	33
Course management	24
Use of the Learning Management System	23
Constant communication	17

* This includes the number of students who indicated responses in the comment theme. Some student responses fit more than one theme in an open-ended question.

** The most common themes included Course management (which included changing course requirements, increasing assignments, punishing students with attendance, giving extra homework, increasing course work, group projects, busy work, extra assignments and quizzes, making the course harder, lecturing too fast, and being strict with deadlines).

DISCUSSION

The onset of the COVID-19 epidemic in the spring of 2020 presented unique and unprecedented challenges to higher education institutions in the U.S., with all campus-based institutions making a quick transition from face-to-face to virtual instruction. This study examined college students' perceptions regarding what they actually experienced in this transition and what their general preferences would be in a virtual classroom setting, as well as their emotional responses to this transition to virtual learning. The findings from this study indicate that there were varied responses to the actual transition and fairly consistent student preferences and emotions.

Participants indicated that in general, their professors used the LMS to help them transition from face-to-face classes to all virtual classes effectively. Students had access to their course syllabi, schedule, rubrics, and grades that allowed for a seamless transition to virtual classes.

Professors also adapted and communicated changes in course content, assignment deadlines, how the course would proceed for the rest of the semester, expectations for graded elements, communicated via email with their students, and used technology effectively to help students transition to virtual classes. Virtual teaching requires diligent faculty support. This includes timely feedback, virtual tutoring, or frequent email communication (Bao, 2020). One strategy for alleviating student anxiety is establishment and communication of norms for the virtual classroom and increasing student comfort and understanding of how to use a virtual learning platform (Weiler, 2012).

Reynolds and Friedel's (2018) study on communication of grades to students indicates that doing so often and early has a positive effect on student retention. In the present study, participants indicated greatest level of agreement with the statements "I prefer that course grades are available on the LMS" and "I prefer that changes in course content and assignments are communicated with me in a timely manner." They indicated their lowest level of agreement with the statement "I prefer graded elements/assignments are not changed during the semester." Previous research indicates that it is possible to avoid student dissatisfaction with mid-semester changes in the course syllabus by including a disclaimer that the course schedule may be modified and that the syllabus is subject to change could possibly avoid student angst (Rumore, 2016). While this finding refers to the courses pre COVID-19, the nature of a pandemic creates a greater need for professors to pivot and make swift modifications; therefore it is even more important to include such a statement in a course syllabus.

In the present study, the swift and unanticipated transition to virtual classes made over 50% of students feel uncertain and anxious. These negative emotions are common, with 81% of college students indicating that they experienced greater stress due to disruptions from the pandemic, while almost 44% worried about their ability to either enroll or stay in college. The educational and employment disruptions, lack of access to mental health services on college campuses, and quarantine measures may have an impact on students' mental health (Johnson, 2020; Ralph, n.d.). Thus, the need for acknowledging and addressing student emotions is exemplified in the response to the open-ended question by a female student (nursing major) who states:

“My English professor was amazing. She was understanding of the emotional toll the students are undergoing. She worked hard to keep the students’ mental health her number one priority. She extended deadlines and removed the final project. She was flexible and understanding. She kept in contact with us via email, which is fine with me.”

Therefore, it is imperative that higher education institutions focus on student well-being and resilience, as well as improving support, access, and resources to medical services, including the addition of telemedicine mental health as a result of the pandemic (Brown & Kafka, 2020; Johnson, 2020; Sahu, 2020; Toquero, 2020; Zhai & Du, 2020).

Several comment themes emerged from the open-ended questions. These themes mirror participant emotions and allow for authentic assessment of how professors met the challenge of transitioning to virtual classes. Ongoing, forward thinking efforts towards increasing faculty preparedness and abilities in multiple teaching modalities will benefit students and the educational institution (Toquero, 2020). The new skills learned by faculty as a result of the unexpected transition to virtual learning will pay dividends post-pandemic and the application of this learning in the live and virtual classroom is endless (Basilaia & Kvavadze, 2020).

LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The results of this empirical study give rise to several issues for future research. Given the smaller sample size, it is recommended that the study be conducted with a larger sample of students to determine their perceptions about the transition to online classes during the COVID-19 pandemic.

A second area of research is needed to further explore and understand the impact (educational, financial) of the transition for colleges and universities and especially educators. Future research should include an evaluation of the utilization of an LMS, including information that is provided to students via the LMS, evaluation of choices related to conveying content and structure of the course, communication mechanisms, diverse technology used to conduct virtual classroom sessions, and assessments utilized in the virtual classroom setting.

Another area of interest should examine student attitudes and emotions at the beginning of the transition to virtual classrooms and at the end of the transition to determine what changes need to be made in future classes in the event of colleges and universities still using remote learning in the future or with another pandemic.

Since the present study was conducted at the end of the semester, no standardized instruments were available to determine student perceptions when transitioning to virtual classroom during the pandemic. For future studies, a standardized instrument should be used to assess student readiness and responses when transitioning to virtual classrooms.

While the present study did not examine whether learning outcomes had been met during the spring semester with the transition to online classes, educators should consider how to assess and evaluate learning outcomes (Lee, 2020) so as to meet the needs of their students.

Lastly, faculty readiness to respond to a pandemic learning environment, as well as the volume of support and training provided to faculty by the educational institution would be valuable to examine (Lim, 2020) thereby allowing faculty to evaluate their courses and make necessary changes to meet the needs of their students.

CONCLUSION

The present study examined college students’ perceptions regarding the transition to virtual classes during the COVID-19 pandemic. This study provides valuable information for researchers and educators in assisting and helping them identify strategies that can be used in virtual classes to ensure student success in their classes.

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