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Challenges and instructor strategies for transitioning to online learning during and after the COVID-19 pandemic: a review of literature

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The COVID-19 pandemic triggered an unprecedented shift to online learning, significantly impacting the higher education landscape. This paper examines the challenges faced by faculty and students during the rapid transition to online instruction and explores best practices for delivering effective online courses. The increased adoption of online learning created stress for faculty and resulted in academic setbacks for students. Although challenges are present strategies exist to help faculty create rich online learning environments. One important element is engagement, which looks at both student engagement with the material and with their classmates and faculty. In addition to working on student engagement the faculty were now in a position that required a new type of expertise to manage online interactions, which can be much different from their experiences in traditional classrooms. Insufficient time for proper course adaptation and limited knowledge of online teaching methods added to these challenges. Effective online delivery requires careful planning, utilization of advanced instructional technologies, and creating an immersive and interactive learning environment. Faculty must also adapt their teaching strategies to accommodate the unique challenges of online instruction. This review highlights the significance of a quality learning management system (LMS) as the backbone of online courses. An effective LMS facilitates course management, content delivery, and student interaction. Future considerations include providing comprehensive faculty support and training, promoting effective communication and collaboration among students, and incorporating interactive elements into online lessons. The following will provide lessons learned from the COVID-19 pandemic which will help faculty to improve their instructional competence and social presence in the online classroom.

KEYWORDS

COVID-19, online teaching, student engagement, course development, online learning

Introduction

The COVID-19 pandemic accelerated the shift to online learning in a way that no one could have predicted with nearly 44% of all US undergraduate students being enrolled in an online class by Fall of 2020 ([National Center for Educational Statistics, 2023](#)). Before the pandemic, 15.4% of all students pursuing a degree at a university or college were enrolled in distance education courses ([Ginder et al., 2018](#); [Kozimor, 2020](#)); the pandemic and resulting pivot to online learning resulted in that percentage more than doubling. This hasty transition

created stress for faculty and caused students to suffer academically (Chou and Chou, 2021; Islam et al., 2023). This changed the academic landscape as faculty and their students were not allowed onto their campuses and into their traditional classrooms (Moore et al., 2021). This unexpected change allowed little time for proper transition of in-class material to online learning with many faculty making few changes to their content as they scrambled to get online (Moore et al., 2021). Faculty reported a lack of institutional infrastructure and a lack of knowledge on the technical aspects of teaching online (Caliskan et al., 2020; El-Soussi, 2022; Salarvand et al., 2023) as well as elevated work demands and a prevailing state of fatigue (Tang et al., 2023). Some lost their professional identity as they had to adjust their beliefs related to online teaching and change their practices to adapt to this new learning environment (El-Soussi, 2022).

This rapid transition had students concerned about how the course would be delivered and this uncertainty created additional stress (Dennen et al., 2022; Tang et al., 2023). This was understandable as many were not experts in online course content creation and delivery (Bailey and Lee, 2020; Moore et al., 2021). In addition to the technical aspects of moving to an online environment, there are concerns with instructor and student engagement as universities were faced with trying to create an online environment which mimicked the same type of community that is fostered on their physical campuses (Tang et al., 2023). Part of the culture of an in-person program is that there are important social aspects that take place in and around the classroom setting. These might be conversations before or after class or seeing a classmate around campus. The transition to online learning eliminated this important aspect that helps students to feel a sense of belonging (Salarvand et al., 2023; Tang et al., 2023).

The transition to distance education has created a scenario where universities must have a greater focus toward online learning (Dziubaniuk et al., 2023; Imran et al., 2023). The following review of literature will investigate how to engage with students, manage the online interactions, how to best deliver online education, as well as the importance of the learning management system and the challenges experienced as schools quickly transitioned to an online learning environment during the initial phases of the COVID-19 pandemic.

Engaging online students

Student engagement is a concept that has been discussed, debated, and researched for more than 75 years. Tyler (1948) explored ways of improving teaching and suggested that students needed to put in time with course material for desired outcomes (Kuh, 2009; Groccia, 2018). Since then, theories and strategies have been conceptualized like Astin's (1984) student involvement theory which focused on and expanded the idea of student involvement in course material. Astin (1984) theorized that student success and satisfaction in their studies is directly related to the psychological and physical energy that is dedicated to their studies (Kuh, 2009).

Scholars like Chickering and Gamson (1987) compiled guiding principles outlining the best practices in higher education settings. Several principles contribute to the enhancement of meaningful interaction among faculty and students, as well as

fostering interactions between students themselves. Emphasizing the significance of students' "time on task" as part of the learning process, integrating active learning methods into courses, and delivering timely and valuable feedback on student work are among these principles (Chickering and Gamson, 1987; Kahu, 2013; Martin and Bolliger, 2018). These principles, especially time on task, aim to increase student engagement with the course material.

Student engagement refers to the amount of "time and effort" a student applies to their course material (Kuh, 2009; Martin and Bolliger, 2018). One option for increasing the amount of time a student engages with the material is to ensure there is a clear connection between the learning outcomes for the course and their professional goals (Rioch and Tharp, 2022). For students in a business and professional communication course this could be conducting online presentations to help prepare them for their career. These presentations could be collaborative which helps foster peer engagement. Each member could provide feedback to one another and the assignment could include an element where they reflect on the process, all of which help students engage with the material and one another (Bolliger and Martin, 2021). Online learning environments necessarily create scenarios where students can take greater responsibility for their learning and engagement with the material, their faculty, and peers (Huang et al., 2023).

Student engagement can be attributed to class size, instructor technology gaps, instructor competency, student satisfaction, student motivation to learn in an online environment, and teacher availability (Page et al., 2020; Kordrostami and Seitz, 2022; Yan et al., 2022). Increased student engagement and satisfaction are linked with higher academic success (Subramanian and Mahmoud, 2020). One of the characteristics of successful online faculty is high self-efficacy which has been linked with willingness to continue teaching online (Chou and Chou, 2021). Students must view their faculty as competent which includes elements such as field knowledge, technical savvy, course organization, and their ability to engage with the class (Chou and Chou, 2021; Kordrostami and Seitz, 2022).

Students shared that in an online course they would prefer increased communication in the form of emails and announcements with information regarding their upcoming assignments which helps students to view their faculty as being proactive (Sood et al., 2021; Dennen et al., 2022). Although students preferred more communication the faculty reported that student communication significantly decreased in the online classroom (Salarvand et al., 2023). They found students had lower motivation to learn and were less likely to participate in cooperative learning opportunities (Salarvand et al., 2023) which increases the pressure on faculty to engage these students. Outside of communicating with their faculty, students are more likely to be engaged when they have collaborative opportunities with other students which helps to increase their motivation in online learning (Gopinathan et al., 2022).

An additional factor that increases engagement is when the lessons have an interactive element (Kortemeyer et al., 2023). Discussion boards are one of the most effective ways to foster interaction and engagement between faculty and the students as they help to fill the gap as it relates to in class discussions (Moore and Shelton, 2013). These boards can be a place for general connections or more specific ones designed so that

students can ask each other questions about a current assignment. As with all elements of teaching there are certain ways that faculty can engage in the discussions which are more effective at enhancing the learning process, increasing critical thinking, and motivation to engage with the course material (Kwon et al., 2019). Kwon et al. (2019) categorized instructor comments into distinct types. Perspective-widening comments serve to motivate students to evaluate viewpoints expressed by their peers in discussion posts and to integrate novel ideas or solutions. These comments not only facilitate engagement among students, but also foster interaction between the instructor and students. On the other hand, elaboration-oriented comments encourage students to further develop the ideas that they have shared on discussion boards (Kwon et al., 2019). Elaboration-oriented comments are a great example of how instructors provide feedback which helps students improve and this style of feedback should be used at the individual, group, and classroom levels (Kwon et al., 2019; Kordrostami and Seitz, 2022). Instructors should be mindful of the types of comments used in order to have stronger student engagement while also promoting critical thinking and increased knowledge construction. Some aspects of quality online teaching are related to the faculty and the student, and other elements relate to the structure and organization of the course.

Transitioning any course from a traditional classroom to an online environment requires careful planning. Many faculty who are teaching online classes have little training in the best practices and are not aware of the time and work needed to (re)develop their class(es) (Dennen et al., 2022). Teaching synchronously through software such as Zoom is not the equivalent to an in-person lecture as there are fewer chances to monitor the students social and emotional cues and provide one-to-one feedback (Dennen et al., 2022; El-Soussi, 2022; Imran et al., 2023). The inability to see students' non-verbal displays of confusion or doubt increase the difficulty in ensuring students are progressing in an online course (Caliskan et al., 2020; Chou and Chou, 2021). Lecture classes present one set of challenges while others come with skills-based classes where the professor conducts demonstrations for the class while students follow along with the steps on their own computer (Dennen et al., 2022). If the faculty member is virtually sharing their screen for the demonstration, then students are unable to use their computer to follow the steps as they would during an in-person class (Dennen et al., 2022).

Simply having students present during class time is often more challenging in an online course. Faculty must be aware of varied student needs such as access to technology, time commitments such as work or childcare which may make synchronous activities (lectures, group projects) more challenging (O'Shea et al., 2015; Collins et al., 2019; Muir et al., 2019; Dennen et al., 2022; Salarvand et al., 2023). Collins et al. (2019) found that students who felt isolated and disconnected from the course had greater challenges learning and engaging in the online environment. Tang et al. (2023) found that those who had not taken courses prior to the transition to online learning were more likely to contemplate leaving the university. These results underscore the importance of directing attention toward student engagement within online courses, as active involvement plays a crucial role in fostering a sense of connection among students, the instructor, peers, and the course content.

Managing online interactions

Well-organized courses that include pedagogically-sound material delivery and assessments (or assignments) are rooted in the types of interactions present in the online course setting (Kim et al., 2022). Moore (1989) first wrote about three distinct interactions present in distance education courses and his work has since been cited more than 1,200 times. Moore (1989) identified three types of interaction inherent in effective courses that are still relevant today: (1) learner-to-learner interaction, (2) learner-to-instructor interaction, and (3) learner-to-content interaction.

Learner-to-content interactions

Learner-to-content interactions are at the center of all education and refers to the student's interaction with the course material (Moore, 1989; Cho and Cho, 2017). For students to grasp and internalize the content presented in their courses, it is essential that they dedicate sufficient time to the assigned tasks. In order to fully engage with the given materials, students should involve themselves in activities such as reading and watching the provided resources, dedicating sufficient time to completing assignments, taking comprehensive notes during the review process, and seeking clarification or assistance whenever necessary (Moore, 1989). There are a variety of learner-to-content delivery methods including readings, video lectures, lecture notes and/or presentations, multimedia content, and application assignments (Cho and Cho, 2017). When considering learner-to-content interactions, Van den Berg (2020) noted that students often find these interactions intellectually stimulating which helps increase student engagement.

Learner-to-instructor interactions

Learner-to-instructor interactions facilitate learner-to-content interactions and involve the "interaction between the learner and the expert who prepared the subject material" (Moore, 1989, p. 2; Cho and Cho, 2017). Learner-to-instructor interactions are a traditional connection that is essential to the learning process (Kim et al., 2022). This interaction is two-way with invested instructors that provide material and feedback to learners and active learners who engage with the material and instructor (Cho and Cho, 2017). For student-to-instructor interactions, Kim et al. (2022) recommend starting online courses off with asynchronous introduction videos and synchronous informal meetings to help build rapport between the instructor and the students as well as between students. Garrels and Zemliansky (2022) recommended establishing set times instructors are available to connect with students, which is similar to what is recommended for face-to-face classes. Instructors must strike a balance in terms of their digital presence within online courses, aiming to avoid excessive communication and overwhelming content. Instead, they should establish scheduled periods for online interaction, ensuring authenticity when engaging with students and making a meaningful impact without overpowering the comment section (Garrels and Zemliansky, 2022; Kim et al., 2022). Clear

organization and structure of course material in the online learning platform can help students more easily engage with the material (Kim et al., 2022). Learner-to-instructor interactions are vital to student satisfaction, success, and engagement in the course; instructors need to be responsive and engaged with the course and students (Cho and Cho, 2017; Van den Berg, 2020).

Learner-to-learner interactions

Learner-to-learner interactions exist between a learner and another learner, or with a group of learners and can include providing feedback, sharing information, and collaborating on work for courses through a variety of channels such as video chats, recorded videos, emails, and discussion boards (Moore, 1989; Cho and Cho, 2017). Cho and Cho (2017) examined the link between the types of interactions and student efficacy and regulation. Student self-efficacy in online learning environments is positively correlated with learner-to-content and learner-to-teacher interactions (Cho and Cho, 2017). Self-regulation and self-efficacy are indicators for positive interactions in online courses and student engagement (Cho and Cho, 2017; Kara et al., 2021; Kayaduman et al., 2022).

Garrels and Zemliansky (2022) suggest developing relevant yet meaningful social interactions such as group assignments focused on building group cohesion between students and completing tasks. These opportunities can help recreate the feeling of being in the same physical space a classroom gives to a course (Kim et al., 2022). Van den Berg (2020) noted student feedback on learner-to-learner interactions ranged from appreciation to more negative experiences. The study identified student context and individual learning styles as key factors related to receptivity of learner-to-learner interactions (Van den Berg, 2020) and helps to highlight that not all interactions are viewed positively.

Delivering instruction effectively online

High online student engagement is considered to be “instructor facilitated and student owned” (Schroeder-Moreno, 2010; Buelow et al., 2018, p. 330). The implications of this statement for the instructor are designing a well-organized online course, having a strong presence in the course, understanding the challenges online students face, and developing student interaction points within the course (Buelow et al., 2018; Martin and Bolliger, 2018; Page et al., 2020). Using effective multi-media delivery methods, introducing high impact assignments such as collaborative projects and gamified activities, clear communication, creative activities, and being mindful of student life commitments outside of school are common themes to use to increase online student engagement (Fredrickson, 2015; Muir et al., 2019; Dichev et al., 2020; Lange and Costley, 2020; El-Soussi, 2022; Martin and Borup, 2022).

Faculty should strive to create customized, immersive, interactive learning environments (Imran et al., 2023) which foster “deep thinking, understanding, reflecting, creating, and expressing one’s own arguments” (Huang et al., 2023, p. 13). This might be

achieved through open-book exams where students are required to search for the answers and conduct their own research (El-Soussi, 2022). Faculty must also strive to provide increased feedback to their students (El-Soussi, 2022). Kordrostami and Seitz (2022) note instructors can help facilitate student’s retention of learning goals by implementing metacognition activities to maintain the student-content interactions in an online course. Examples of metacognition activities include course progress surveys for students and “what did you learn activities” (Kordrostami and Seitz, 2022, p. 248). Students should have multiple opportunities to practice self-reflection and self-assessment so that they can better understand what they have learned and what they need to focus on moving forward (Huang et al., 2023).

These skills are valuable as there are fewer opportunities to engage with their faculty informally for assistance compared to an in-person course. If faculty can instill these skills, the students will be better prepared to succeed in and out of the classroom whether it be in-person or online. Faculty must utilize the technological advances at their disposal to connect students to the material and to one another (Dziubaniuk et al., 2023). By allowing students to interact with the material they are able to organize it in such a way that is most beneficial to their learning style (Clay et al., 2023). Having students connect with one another allows for greater collaboration in the learning process (Bailey and Lee, 2020). Delivering impactful and engaging online instruction requires institutional support and instructor commitment to achieve increased online student learning outcomes through a willingness to get creative and try new ways to overcome the challenges of online teaching (Tang et al., 2023).

Understanding learning management systems

A quality learning management system (LMS) is a crucial element to having a successful online course (Veluvali and Surisetti, 2022). Jarvie-Eggart et al. (2023) found that the most important characteristic for successfully using an LMS was simply faculty familiarity with the system. This is a requirement because the courses taught today rely almost completely on an LMS to manage all aspects of the course (Veluvali and Surisetti, 2022). It allows the faculty member to interact with students, monitor their participation, deliver lectures, provide space for discussion boards, allow for submission of assignments, and delivery of exams (Veluvali and Surisetti, 2022). A significant benefit to online courses is that material can be accessed at any point in the day through the LMS which allows students to utilize the materials on their own schedule and even during synchronous lectures (Veluvali and Surisetti, 2022; Dziubaniuk et al., 2023). Many online courses allow students to self-pace and the LMS gives students the freedom and responsibility to progress through the course in a way that works best for them all while having the ability to interact with their classmates (Veluvali and Surisetti, 2022). LMS provide instructors with an observable behavioral engagement by documenting how long students log in to a course or watch videos (Mohammed et al., 2022). These online interactions and the ability to do so day or night is a significant change from the traditional classroom setting.

Thoughtful attention to the design, accessibility, organization, and presentation of course material in the LMS has an impact on student engagement. Making sure that courses in the LMS have straightforward navigation and clear organization of material is a proactive step for increasing student engagement (Sadaf et al., 2019; Kordrostami and Seitz, 2022). Maximizing the benefits of a course requires the strategic incorporation of a diverse range of advanced instructional technologies which can facilitate three crucial types of interactions: student-content, student-student, and student-instructor interactions. Some of these technologies include “glass boards”, word bubble creation, real-time quizzes, polling, breakout grouping, virtual collaborative workspaces, and virtual communication tools (Kordrostami and Seitz, 2022). Developing high quality re-usable material such as recorded lectures and student (self)-guided exercises can save time so that instructor energy is focused on more customizable student-instructor interactions like discussion board comments (Kordrostami and Seitz, 2022). Instructors can create emotional engagement opportunities in online classes to foster a warm learning community for students by including introduction videos and responses, tips to succeed in class, and ice-breaker activities (Sadaf et al., 2019; Kordrostami and Seitz, 2022). As stated earlier the need for interactive and gamified environments is key to engaging students and without a robust LMS these elements would not be part of the class (Veluvali and Surisetti, 2022).

Looking to the future of online education

The COVID-19 pandemic accelerated the adoption of online learning in ways that were previously unforeseen. With a significant increase in undergraduate students enrolled in online classes, it is evident that online education has become an integral part of the academic landscape. This trend is expected to continue and necessitates a greater focus on online learning in the future. The transition to online instruction during the pandemic created challenges for both faculty and students. Faculty members faced difficulties related to a lack of institutional infrastructure, limited technical knowledge, increased work demands, and fatigue. Students, on the other hand, experienced uncertainties regarding course delivery and the unfamiliar environment of taking classes online which added to the complexity of the situation. Although there was considerable uncertainty many faculty reported that what they learned during these challenging times helped them to inform both their future online and face to face courses (Bailey and Lee, 2020; Bajaj et al., 2021). These faculty are open to additional training which should focus on increasing their knowledge of online teaching, the best techniques for effective delivery of their content, which can vary by field, and greater knowledge of how an online student might be different from a traditional on-campus student (Pai, 2022). Areas for future research to consider are related to online interactions, barriers to using technology, and the level of training faculty members have as it relates to teaching. Additional research needs to be conducted evaluating the impact of the different types of interactions in online courses to understand how they relate to student engagement as interactions are one of the best indicators for student engagement in online

courses (Daher et al., 2021). This research would provide greater insight into the types of interactions instructors should focus on in online classes to increase engagement. To get the most from these interactions students need to have a strong technological foundation and an understanding of what online learning entails to truly benefit from these courses. Research into development and offering of student training or course embedded training are suggestions that can be enacted at the university, unit, or instructor level to ensure students are comfortable in online courses (Van den Berg, 2020). Future inquiries focused on university instructor barriers to using technology and lack of pedagogical training in university instruction are needed to fill in gaps in knowledge about the instructor’s role in student engagement and online education (Polly et al., 2021; Heinonen et al., 2023). In addition to these areas of focus faculty may need encouragement to move away from the traditional style of lecture to a more interactive approach (Zemliansky, 2021).

Looking ahead, it is crucial for institutions to prioritize student engagement in online learning. Student engagement encompasses various factors such as class size, instructor competency, student satisfaction, motivation, and teacher availability. Institutions should aim to enhance student engagement as it is directly linked to academic success. This can be achieved by providing faculty with the necessary support and training in online teaching best practices, promoting effective communication and collaboration among students, and incorporating interactive elements into online lessons. When it comes to creating training for faculty teaching online it should occur in a short time frame, involve peer mentoring, as well as experienced faculty who have had success in developing and teaching online courses, and there needs to be enough support staff to help those who are completely new to this teaching environment (Báez et al., 2019). Those with little experience will benefit from detailed step-by-step instruction that helps them to integrate these new digital tools into their teaching (Richardson et al., 2020). It should also include faculty from across the university as often instructors do not interact with those outside of their department and seeing how faculty at their university are using the available technology can be helpful (Richardson et al., 2020). Once the initial training has been completed another best practice is to create learning communities where small groups of faculty from across campus remain in touch to support each other while continually working on their online teaching skills (Richardson et al., 2020). By educating their faculty and embracing the opportunities presented by online learning, institutions can create an effective and engaging learning environment where they are improving their communication competence which will allow them to foster stronger connections with their students. We might not see another situation where campuses are closed, but the transition to online learning has helped inexperienced faculty gain the confidence to use these tools in all of their classes which will benefit future students.

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