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Technology During A Pandemic: Friend or Foe?

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Abstract

During the Covid-19 pandemic, instructors had to transition traditionally taught Face-to-Face (F2F) classes to an online learning platform. The author shares the journey through a narrative description of a scholarly inquiry on how to modify the course and learning environment. An in-depth literature review led to identifying the three most important factors to consider were the student, engagement with the learning material, the instructor and each other and to reflect on the outcome, with the purpose to improve. The significance of this empirical journey can guide future situations where timely changes are imperative to ensure continuity of learning in a higher education environment.

Introduction

As the reality dawned in 2020 for Face-to-Face (F2F) classes to transition to online platforms, many educators were going through emotions of shock, excitement, anxiety, and hopelessness. Some educators felt they were well prepared for this transitioning, as both synchronous and unsynchronous learning have been introduced in most colleges and universities throughout the USA. As time moves on, many educators' enthusiasm was dampened by a less than a favorite response from the learners. Rather than embracing the technology to provide alternatives to traditional lectures such as narrated discussions, educational software, and videos, many of the traditional F2F students felt isolated and lost. Personal experience led the author to ask the question: *What can be done to assist F2F class students to engage in content and process as we move towards online teaching and learning?*

The seriousness of the situation and the need to find high-quality solutions within a short time did not allow for traditional research methodological approaches. The author wanted to find answers, implement actions, evaluate the outcome and improve courses in a cyclical pattern, rather than follow a linear process from a research problem to outcomes. This paper describes the scholarly journey of transitioning from a traditional class to an online platform in a College of Nursing.

Scholarly Inquiry

Scholarly inquiry and research are both methods to obtain information on a topic. Simplistic put, scholarly inquiry aims at finding information to solve a problem, and strengthening what we already know about a specific phenomenon. Research requires a rigorous process where we have to defend and prove the process was structured in such a way to lead to certain answers, conclusions and recommendations [1].

Boyer in Glassick [2] refers to the debate in higher education, on scholarly inquiry versus research. Glassick [2] proposes although scholarship in teaching and scholarship for teaching may be gray areas, there is a valid place for scholarly inquiry within the context of higher education. While these arguments are 20 years old, the debate is ongoing on scholarly inquiry versus educational research. Both these processes are distinctive and should be valued in quality improvement of teaching and learning.

Quality in Online Learning

Many factors impact the quality of online learning. Vadakula Elumalai et al., [3] used Chapnick's Criteria for E-Learning Readiness [4] to explore the seven critical factors impacting the quality of online learning. Course content and design, administrative and technical supports have been widely debated and embraced in higher education environments. Vadakula Elumalai et al., [3] emphasize social support as being of importance. In their study, they explored social support to the extent the online learning provides opportunities for participation, reflects the "…ambiance of the classroom" and "…encourages cooperation among the students…." (Vadakula Elumalai et al., [3], p.738).

For this inquiry, three (3) factors were identified as important variables to explore during the transitioning process to online learning (Figure 1). These variables have extensively been explored in online courses. The question was if, and how these variables have to be modified or accentuated when transitioning traditional F2F learning to an online platform.

Student

Various student (learner) characteristics play a role in how easily they move towards an online platform of learning.

Digital literacy

To ensure success in an online environment, students need to have digital literacy. The majority of the students in the courses the author was responsible for, was Gen Z students. The assumption is these students are "net" students [5]. As the demand for online learning emerged during the pandemic, the assumption was using Learning Management Systems (LMS), technology software and the web for searching information should not be a problem. Being used to social media and technology, it was expected students would embrace the opportunity for online learning, able to navigate technology and be

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successful in learning outcomes. Gomez, [6] states the use of LMS in F2F instruction is different compared to online learning, and by implication, it is not about transitioning a F2F course into the LMS without some modifications. Tseng [7] adds the importance of looking critically at the LMS and how it contributes to students' perceptions and outcomes.

These assumptions have been challenged by various researchers who found some students were reluctant to embrace online learning from the beginning, while some students, initially excited about the flexibility online learning was offering, became resistant later during the pandemic [8-10]. These findings were across different academic disciplines, countries, and demographic variables of student populations. Higher education institutions should look differently at digital literacy and how it impacts student outcomes [11].

Online access

With the transition of F2F teaching to the online platform, it was assumed (and put as a requirement) for students to have access to a reliable online connection, supported by a Webcam and the ability to do secured testing. Some instructors would also demand proof of online presence, by having the camera on at all times. Thus, if a student does not have uninterrupted access to an online connection (either due to not being available at all), competition in the environment as working from home parents and siblings also had to use the same connection, may negatively affect the student's ability to meet requirements.

Program of study

The type of program the student is enrolled in plays a significant role. Asgari et al., [12] in their study of factors impacting engineering students, argue students in programs requiring a significant hands-on approach for learning, need more support when transitioning to online learning. This was supported by researchers who addressed the concerns of nursing students during the Covid-19 pandemic [13,14]. Providing a satisfying simulated experience of the clinical skills required of the nursing student and new graduate was challenging and a concern to both the student and the instructor [15].

Engagement

Redmond et al., [16] explain definitions of engagement in online learning are not clear. The implication of engagement in determining the quality of online learning is well-described. Pittaway and Moss (2014) as cited by Redmond et al., [16, p.184] explain the relevance of "…emotional and intellectual investment…" students need to make when transitioning to an online learning environment. Some researchers see engagement as mainly the interaction between the student and the course content, while others argue successful engagement requires the interaction between the student, faculty, and other students [16].

Meyer [17, p.2] views engagement as a "…critical key…" in ensuring high-quality online learning. In an opinion expressed by Ives, [18], the value of engagement is further explored. Most LMS currently used, have room for online discussions. Further to this, the ability to have synchronous discussions may improve the ability to interact
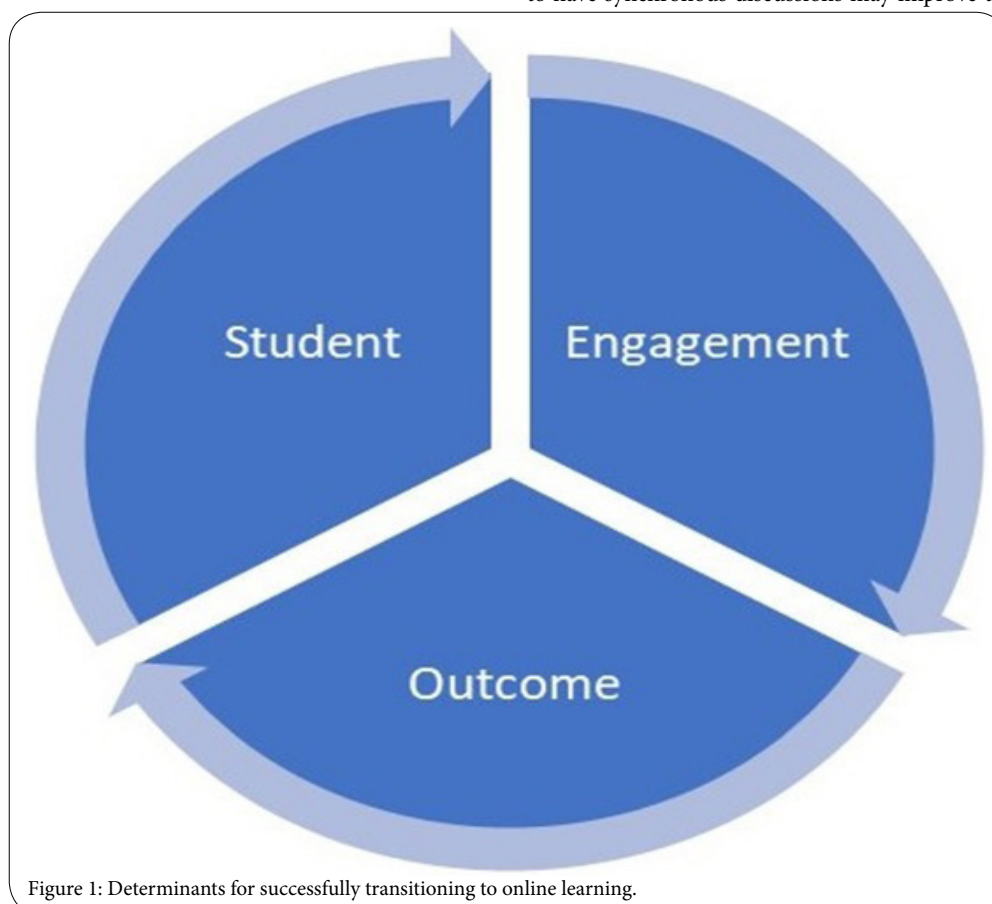

Figure 1: Determinants for successfully transitioning to online learning.

more positively with each other and faculty instructors. However, having these options available, do not necessarily imply a student be intellectually and emotionally engaged.

Outcomes

Traditionally when talking about the measurement of outcomes metrics in higher education, we refer to academic performance, percentage of students meeting the requirements, graduating and retention rates. These metrics are essential in proving the success of a course, program, and institution. The consumer (client)'s opinion is recognized as an important outcome measure. Within Higher Education, the student is the client, thus their perceptions on how the transitioning of F2F to online learning, should be taken into account. Various research studies conducted during the Covid-pandemic found students did not prefer and/or recommend online learning for traditional F2F courses [19-22].

Learner Support

It was evident to the author during transitioning to the online environment, specific support would be needed for students. The institution provided macro-support such as technical support related to computers, online access, and webcameras. The author thus focused on micro-support within the actual courses.

Instructions for use of LMS

Different institutions use different LMS. We use *D2L - Desire to Learn (D2L)* at our institution. The students who transitioned into an online environment during Spring 2020, have completed their freshman and sophomore years. Theoretically, students should have been competent in using the LMS. Students used to be in a class environment, tend to use the LMS mostly to check grades, emails and download course materials. It was evident they were not comfortable using the different modalities within the LMS. This is in line with the research done by Alzahrani and Seth [15] with a group of students in the UK.

A video with written instructions was made available. Further to this, during an online, synchronous class, students practiced through "screen sharing" how to use the different functionalities.

Use of e-books

Traditionally students depend on *PowerPoint* lectures to deliver the required content. Students rarely use their prescribed textbooks during class, and a limited number of students use the textbooks to add information or explanation to the slides and/or lecture notes. Students already have access to e-books. The use of e-books has been encouraged by various researchers as an innovative manner to increase the students' use of textbooks [23,24].

To further encourage students, the instructor identified specific information of importance, add notes to the e-book and provide examples of assessment questions. Students were able to enroll via their e-mail address and follow the author. This provided an incentive for some students who preferred to be prepared for classes, used for impromptu quizzes before, during, or at the end of the lecture. These quizzes were then used as opportunities to earn bonus points added to their final grade. Thus the textbook content became an integral part of the course design and course content.

Engagement

With the strict measures during Spring, 2021 limiting student-student interaction, the author recognized the need to improve the opportunity of peer-learning and interaction.

Groupwork

In general, students often are reluctant to participate in group work. Group work forms an important part of teaching in the education of nurses as it teaches them how to function within a team. Groupwork serves as an opportunity to enhance a feeling of being part of a learning community. Groupwork in online synchronous teaching is referred to as *breakout rooms* [25]. These breakout rooms create opportunities to interact with each other, improve critical thinking and find alternative ways to solve problems. A further advantage was to demonstrate to the students how to use a similar approach for study groups while direct contact was not possible.

Flipgrid

The LMS has the functionality to use discussions as a way to improve the interaction between students. Specific assignments would be given where students must create a posting and react to postings of other students. As an alternative, the author started using *Flipgrid* as a mechanism to have students post videos to introduce themselves, to react to a particular problem or video, and then react to another student's commentary. Lowenthal and Moore [26] strongly support the use of *Flipgrid* as an effective way of improving the interaction between students and students and faculty. Further benefits of using *Flipgrid* are being user-friendly, the ability for the instructor to screen postings before making them available for public viewing, and being of no additional cost to the students. During periods of quarantine, this was also used as a method for students to demonstrate clinical skills while access to the simulation laboratory was not available.

Virtual office hours

Virtual office hours were implemented for general questions and to do test and exam reviews. Students were given the option to do this individually and/or in groups. During these virtual office hours, students were able to share screens, demonstrate for example drug calculations while the author could see the students thought processes in solving a drug calculation problem and thus be able to assist and have discussions on the progress of narrative assignments. Virtual content reviews before tests and exams were also implemented based on student requests.

Flipped classroom activities

Flipped classroom activities as a teaching strategy to improve student engagement are well-known. During the Covid-19 pandemic, the challenge was how to use flipped classroom activities in a remote learning environment. Lee et al., [27] describe an investigation into how learner engagement can take place outside F2F classes. They conclude merely providing material for students to review, discuss and then comment on, not necessarily provides the active engagement needed for students to grow their critical thinking and problem-solving. As an alternative, the author created an outline of a specific lecture topic and questions based on the topics. During an online class, the outline was shared with all the students. Each group of students got a specific aspect of the topic to review, complete. Any group was allowed to add/change and comment on another group's work.

Creating exciting learning opportunities

Students who were used to a dynamic class environment with self-activities, group activities, and discussions, were suddenly expected to sit and stare at the camera for an online lecture. No clear expectations exist on the actual hours for an online class versus a F2F class. It was led to the instructor's preference of how, and the duration of online classes, as long as the student learning outcomes were met. For students to remain actively involved with the course content, different learning opportunities were created. One particular activity was the development of digital escape rooms. During the Covid-19 pandemic, escape rooms were widely discussed in professional nursing platforms as an innovative idea to promote the students' ability to develop and implement their problem-solving abilities. The author could not identify research literature discussing the value of digital escape rooms in promoting critical thinking. In a discussion, Diaz, and Clapper [28] summarize the findings of different perspectives on why and how escape rooms can be implemented to improve interaction and engagement with course content while promoting critical thinking. The idea of digital escape rooms is similar to real-life escape rooms, where the learner is provided with information and tools to escape from an existing situation and make progress to the next level or room.

Online presence

Rapanta et al., [29] mention the importance of maintaining an online presence. Online presence includes availability through virtual office hours at times suitable to the students' schedules. It requires the instructor to be responsive in communication, be 'seen' during discussions and feedback, and making sure the language used in LMS content modules is exciting and speaks to the student.

Outcomes

The purpose of this journey was to modify teaching during the Covid-19, providing students a satisfactory learning experience.

Formative feedback

Students were informed whenever a new technology or activity was introduced, what the purpose was, the process and encouraged to highlight any problems in using the technology or completing the activity. Feedback was used to make changes, clarify issues and enhance the quality of the activities for future use. Some students sometimes expressed concern and resistance to using new technology ("… I don't like it because it is new….", "just give us the PowerPoints and tell us what to learn…").

Summative feedback

At the end of each semester, after grades have been entered, instructors receive a summary of course feedback. The course evaluation tool was not modified to accommodate the online instruction format of Spring 2020 or the hybrid format (of F2F class and online learning) followed during Fall 2020 and Spring 2021 due to capacity limitations in the classroom. It is thus possible students' did not highlight positive and/or negative experiences in open-ended questions reflecting on the online format. The following themes were used to explore the qualitative remarks.

Learning management systems (LMS)

Students perceived the course design, outline, and flow of modules as facilitative to meet the student learning outcomes. An interesting observation was students' perceptions of announcing changes during the course. Some students indicated a need for stability, stringent adherence to the course calendar as announced in the beginning. They interpreted the communication (emails and news items) as confusing at times and difficult to keep track of. Other students, who had a systematic system of creating specific folders in their emails and updating their calendars, as not being a problem and were appreciative of adapting to changing circumstances. One clear issue identified, was the potential conflict between *D2L* and the type of computer the student uses. This has implications on the type and format of the material posted in the LMS.

Use of e-textbooks

Students expressed appreciation and usefulness of the e-textbook integration in the courses. Comments included: "… help me to understand the content….", "…the first time I am using a textbook since I am in college….", "… makes it more interesting….", "…help me to know what to focus on".

Breakout rooms for group work

Initially, students were not positive towards breakout rooms. However, as the semesters progressed, and the author became more confident in the use of breakout rooms, students started to interact actively during the breakout sessions. Students commented with "we loved the group work", "…helped us to feel less lonely when we cannot be in class….", "… made the online classes easier and less boring….".

Other activities

Students enjoyed the ability to make videos, meet other students and talk about their experiences and perceptions. These were explained by "….loved the Flipgrid…", "…the escape rooms were cool….", " loved the classes where we did our lecture…." (referring to the flipped classroom activities.

Engagement

Students made numerous comments about the availability of the instructor, timely feedback, and "…feeling part of a class, and in contact with the instructor", and the "instructor wants us to succeed".

Reflection

As part of scholarly inquiry, it is important to continuously reflect on what is happening in the empirical world of the classroom. Loughran, [30] approach to reflection provides the basis for reflection.

"However, for reflection to genuinely be a lens into the world of practice, it is important that the nature of reflection be identified in such a way as to offer ways of questioning taken-for-granted assumptions and encouraging one to see his or her practice through others' eyes." [30, p.33].

When reflecting on the experience of transitioning from a F2F to an online environment, it required a continuous search for problems as viewed by the students, rather than by the instructor. Reflection

requires questioning one own's practice rather than rationalizing existing practice. What we learn from reflective practice, is also what and how to move forward. With the pre-Covid education environment, we are moving towards, the lessons learned during the past year cannot be ignored.

Technology was put central in transitioning to online learning environments. Vladova et al., [31] explored the perceptions of students about the use of technology during the Covid-19 pandemic. Students and instructors expressed feelings of technology-related fatigue and burnout. It would be an unwise decision to return to the classroom, using the traditional lecture format and put technology aside. The author is planning, as part of an ongoing scholarly inquiry, to learn from the past. During the next phase, a critical analysis will be done on how to make sure we select the *right* technology for the *right* reasons and at the *right time*.

Competing Interests

The author declare that there is no competing interests regarding the publication of this article.

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