PANDEMIC-DRIVEN MOBILITY IN HIGHER EDUCATION: THE GOOD, THE BAD AND THE USEFUL

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ABSTRACT

The purpose of this mixed method research study is to describe the experiences of faculty and students in post-secondary education institutions as they shifted to remote education at the start of the COVID-19 pandemic, and to understand these experiences in the context of previous research about pre-pandemic remote or mobile education. One hundred and two participants in the study include full-time and adjunct faculty, undergraduate and graduate students. A convergent mixed method survey queried about participants' demographics, mobility experiences in terms of frequency of access to technology and a suitable learning/teaching environment and usefulness of various web and video conferencing and Learning Management Systems (LMS) tools to support education in this format. The findings indicate that on average, faculty and students report positive experiences, especially for participants who had prior involvement with online education. Qualitative data highlight challenges associated with access to technology, managing the out-of-classroom physical environment and balancing personal and education responsibilities at the time of the pandemic outbreak. These results have implications that may be relevant as the world of education evolves, applying lessons learned during the pandemic. Resource allocation, training faculty in remote education pedagogy and providing infrastructure support for students to improve mobile education experiences are crucial for success in the new normal world of higher education.

KEYWORDS

Emergency Remote Education, Mobility in Higher Education, Faculty and Students Experiences

1. INTRODUCTION

The COVID-19 pandemic is entering its third year, and its impact on higher education has been significant (Robinson-Neal, 2021). The sweeping mandatory shift to emergency remote education in March of 2020, forcing the world of education to quickly adapt to a mobile learning mode, has presented multiple challenges for students and faculty. Research emerging about the experiences of faculty and students during the pandemic reveals obstacles ranging from varying computer literacy levels, limited accessibility to mobile learning technology (Onyema et al., 2020), and adjustments in pedagogy and learning styles (Berger, Mallow & Tabag, 2022). While some studies found no significant differences in students' academic performance after the emergency shift to an online learning environment (Barletta et al., 2022), others noted that students required additional support in order to successfully navigate this change, such as more frequent communication with professors, extension on due dates and encouraging dialogue among students (Basford, 2021). Likewise, instructors have reported challenges in adapting to online teaching and emphasized the importance of adjusting expectations and reexamining goals (Ross & Disalvo, 2020). Yet remote education has existed long before the pandemic. During the half decade preceding the pandemic, nearly three quarters of all public, private, and for - profit institutions of higher education have been offering online courses and full online programs (Calderon & Sood, 2018). There is a wide body of research about remote learning experiences that highlights the following challenges, to name but a few: students' acculturation to remote learning especially in regards to technology-related interruptions and distractions (Cilezis, 2015), institutional infrastructure needed to support successful remote learning (Snow et al., 2018), preferred modes of communication (Snow et al., 2018) and students' reduced sense of social connectedness in remote education (Irani et al., 2014; Stewart et al., 2011). At the same time, the literature offers evidence of positive outcomes of remote learning including higher student satisfaction, and grades (Ling, 2017; Simon, et al., 2014), decrease in teaching costs, and the role of

mobility in enhancing integration of social, family, and personal life with education, along with an increase in students' active participation and empowerment (Gonzalex-Yebra, 2019). However, these findings may or may not apply to an emergency shift to remote education during tumultuous times such as the pandemic. Therefore, the purpose of this article is to describe the experiences of faculty and students in post-secondary education institutes during the emergency shift to remote education, thus adding the body of knowledge on what is becoming an increasingly wide, and possibly a permanent format, of higher education (Yeigh & Lynch, 2020). We hope that results of this study will contribute to a better understanding of the challenges and advantages of remote education during an emergency state and how pre-pandemic knowledge about remote learning may have been useful when adjusting to the increased mobility in higher education.

2. METHODS

2.1 Sampling and Participants

The target population for this study is comprised of faculty and students in post-secondary education, who, due to COVID-19, experienced an abrupt shift to emergency remote education during the spring semester of 2020. A random sample was obtained through recruitment via the first two authors' professional organizations in the United States. One hundred two participants include full-time and adjunct faculty, undergrad and graduate students. Table 1 illustrates the sample characteristics.

Table 1. Participants' characteristics

Gender Distribution Among All Participants			
Female		*Male*	
91%		9%	
Ethnicity Distribution Among All Participants			
White	*Hispanic*	*Asian*	*Black*
60%	14%	10%	6.5%
Average Household Income Range			
Undergraduates Students		$70,000-79,000	
Graduate Students		$90,000-99,000	
Faculty		$100,000 – 149,000	

2.2 Instrument

This study utilized two mixed-method surveys, designed by the first two authors for the purpose of this research project. The two surveys were geared towards investigating the respective experiences of students and faculty after the shift to remote learning in March 2020. Although the language of some items differed between the students and faculty surveys, to reflect learning vs. teching experiences, the two surveys covered the same content areas. The parallel in the surveys' content allowed for evaluating teaching and learning experiences in relationship to similar aspects of the emergency shift to a remote education environment. The surveys consist of 5 content areas, each: Section A asked a few demographics questions to gain a better understanding of who our participants are. The rationale for the items in this section was to provide context within which we could interpret data about students and faculty experiences in relationship to Socio-Economic-Status (SES), ethnic diversity, and previous experience with the online educational environment. Section B asked students and faculty to rate the frequency with which they were able access technology learning and teaching tools (e.g., desktop computers, laptops, Ipads) during the spring or summer 2020 semesters. Items in this section utilized a 3-point ordinal sale response option, ranging from daily access to no access. The purpose of this section was to investigate the respective variability in students' and faculty's access to technology when they were not able to rely on school-based devices.

Section C asks students and faculty to rate the frequency with which they were able to access a suitable learning and teaching environment, respectively, during the spring or summer 2020 semesters. Items in this section addressed access to suitable place to join or teach online class as all as access to a suitable place to study or do homework (student survey), or prep classes and grade papers (teachers survey). The rationale for this section was to investigate students' and faculty's access to a physical environment from which to engage in remote education during campus closure.

Section D asked students and faculty to rate the helpfulness of web conferencing tools, including Learning Management System (LMS) features, in learning and teaching, respectively. Items included web conferencing tools such as webcam, break out rooms, as well as other online pedagogical tools such as online exams and assignments, and course digital communication applications such as emails and announcements. Items in this section utilized a 4-point ordinal scale response option, ranging from not at all helpful to very helpful. The purpose of this section was to gain an understanding of the degree to which various online tools contribute to learning and teaching.

Open ended questions followed each set of the quantitative questions in sections B ,C, and D, inviting participants to add comments on their accessibility to technology, suitable environment and helpfulness of online teaching and learning tools.

Finally, section E comprised of open-ended questions about motivation for learning/teaching during the COVID 19 pandemic, and general life experiences during the pandemic. The purpose of this section was to allow participants to share general reflections on the pandemic in order to gain a wider context for a deeper understanding of participants' experiences during the shift to emergency remote learning and teaching. However, data from section E are not included in the current analysis and will be reported in future papers.

2.3 Procedure

This study was approved by the first author's University's Institutional Review Board, under an exempt category. A link to the survey utilizing the Anthology platform was included in a recruitment email distributed via the respective professional national listserv the first two authors are members of. The survey was available for a period of 4 weeks in the summer of 2020, during which two reminders were posted on the respective listservs.

2.4 Data Analysis

Quantitative data about faculty and students' access to technology and a suitable environment and their respective rating of web-based learning and teaching tools helpfulness were analyzed using descriptive statistics. T tests and two-by two factorial analysis was used to compare faculty and students' responses to items within these dimensions. Pearson correlation was used to examine the relationship between faculty and students' rating of their experiences along the various dimensions, and the rating of participants' overall teaching and learning experience during the emergency shift to remote education.

The constant comparison method (Grinnell, Williams, & Unrau, 2019) was used to analyze participants' comments on their experiences within each dimension of the survey.

3. RESULTS

3.1 Access to Technology Tools and a Suitable Learning and Teaching Environment

On average, faculty reported regular access to computer technology for teaching (M = 1.03, SD = .17). On the other hand, students had more difficulties accessing technology for learning. On average, students reported that they had only a somewhat regular access to technology tools (M = 1.63, SD = .56). Access to a laptop was most frequent (M = 1.04; SD = .28), whereas access to a desktop computer was least frequent (M = 2.03, SD = .96). On average, faculty and students reported they had regular daily access to a suitable environment from which

to prep classes, teach, do homework and join classes. Analysis of Variance revealed that level of household income did not differentiate among levels of students' and faculty's frequency accessing technology and a suitable environment for earning and teaching.

3.2 Helpfulness of Video or Web Conferencing Tools

On average, students reported that web conferencing tools were moderately helpful to learning (M= 1.55, SD = .50). Virtual white board, audio, chats, and share screen were the most helpful tools for learning. Interestingly, while faculty reported regular use of video or web conferencing technology in teaching, (M = 1.03, SD = .17), faculty's use of the type of tools varied. In fact, some faculty did not use the very tools that students found to be most helpful in learning. Students reported that nearly 19% of their professors did not use the virtual white board and nearly 7% of the professors did not use the chat tool. On the other hand, students reported that all their professors used the share screen tool. Faculty members reported that, on average, web conferencing tools were moderately helpful in teaching (M= 1.53; SD = .53). Faculty reported that screen share was the most helpful in teaching (M= 1.09, SD = .40), while breakout rooms were least helpful in teaching (M= 2.6; SD = 1.15).

3.3 Helpfulness of LMS Tools

On average, students reported that Learning Management System (LMS) tools were moderately helpful in their online courses (M = 1.54; SD = .49). Students reported that use of emails, course content posted online and online exams were very helpful in the online courses. On the other hand, blogs, journals and announcement were rated as only moderately helpful in the online courses. It is interesting to note that while announcements were considered only moderately helpful in the online course, 99% of the students reported their professors used this tool. On the other hand, all, or most of the students, reported their professors communicated with them by email (100%), posted course content online (99%), and used online exams (96%), all of which students found to be very helpful in their online course. Ninety seven percent of faculty reported using LMS tools in their remote classes. Posting course content on the LMS was rated as most helpful in teaching (M = 1.06, SD = .24), while blogs were rated as least helpful (M = 2.56, SD = .88).

3.4 Overall Teaching and Learning Experiences During the Shift to Emergency Remote Education

On average, both students and faculty reported their respective learning and teaching online experience was good (M_{students} = 1.87, SD = .87; M_{faculty} =- 1.82, SD = .63).

A two-tail independent T test revealed significant differences in overall rating of online teaching and learning experience between faculty and students who did and did not have previous experience with online or blended courses ($t_{faculty}$ = -3.3 (32), p = .002; $t_{students}$ = -.2.06 (52), p = .045). For both faculty and students, those with previous online involvement reported a better experience during the emergency shift to remote education environment. A two-tail Pearson correlation revealed that students' overall rating of their online learning experience is positively correlated with their frequency of accessing a suitable environment, (r = .362 , p = .007) but not with their frequency of access to technology (r = .142 , p = .315). Even so, only 13% of students' overall online learning experience was explained by their access to technology. On the other hand, students' overall rating of their online learning experience is positively correlated with their rating of web conferencing tools and LMS tools helpfulness to learning. Students' rating of web conferencing tools to learning explains 19% of the variability in their overall online learning experience (r = .44, p = .002). Students' rating of LMS tools helpfulness to learning explains 28% students' overall rating of their online learning experience is positively correlated with their (r = .530, p = .000). A two-tail Pearson correlation revealed that faculty's rating of the overall online teaching experience was not associated with either frequency of access to technology (r = -.232, p = .186) or with access to a suitable place to teach (r = .252, p = .150). similarly, no correlation was found between faculty's rating of the overall online teaching experience and faculty's rating web conferencing tools helpfulness to teaching (r = -.283, p = .111) , or faculty's rating of LMS tools helpfulness to teaching (r = .025, p = .890).

3.5 Comments on Emergency Shift to Remote Learning

Students and faculty were invited to comment on their respective experiences accessing technology, a suitable environment, helpfulness of web conferencing and LMS tools. A constant comparison content analysis yielded 348 units of meaning, which have been coded and grouped into 17 categories. These yielded five themes that reflected both negative and positive experiences. Table 2 illustrates the results of this analysis.

Table 2. Content analysis of students' comments

Themes	**Categories**	**Select Units of Meaning**
The basic components of remote learning	Place	"studied from Home"
	Web conferencing tools or features	"zoom"; " recorded lectures"
	Device type Mentioned	"personal laptop"; "my phone"
	Financial considerations	"needed a new laptop but could not afford it";
Challenges in remote learning	Interruptions in the learning environment	"hectic"; "less noise"
	Input/say over the environment	"I enjoy…that I can control my environment's noise"
	Personal circumstances interference with the learning environment	"it can be hard with my family and dog around"
	Web conferencing tools interference with learning experience	"We had some ghosts appear in our classes through zoom"; "We could not access some of the video materials"
	Device-related experiences	"mine did not have the right camera"; [computer] very slow"
	Connection issues	"Internet was sometimes a problem"
Positive experiences in remote learning	Positive experiences in the environment	"without the interruptions encountered in the classroom"
	Web conferencing tools contributing to learning experience	"Zoom was very helpful during lectures"; "Classes were clear using web conferencing"
	Positive experience	"had no issues";" The technology was easy to access"
User's input/contribution to remote education	Input/say over the environment	"once I developed a routine of classes…I found a good balance"
	Faculty/administration management of web conferencing tools	"Professor had class room noise under control"; "The breakout rooms need to be led by an instructor"
General reflections on remote learning	Perspectives on others' experiences	"I have talked with others about their online sessions, and …they have a harder time focusing on their classes"
	General reflections on web conferencing tools	"the experience felt similar to attending class in-person"; " I think it was an adjustment for everyone"
	Reflections on technology and learning	"different type of learning"; "prerecorded lecture were helpful"; zoom classes should be an option in future; regardless of covid 19"

3.5.1 Challenges Associated with the Emergency Shift to Remote Education

Students discussed challenges such as managing out-of-classroom learning environment, financial hardship due to cost of devices or software needed for their remote classes, and balancing personal and educational responsibilities while accessing classes from home. Students described how positive or negative management of web conferencing tools by faculty and administration has contributed to, or detracted from, their remote education experience. For example, students commented that the quality of the remote classes depended on the professors' grasp on the use of the technology and on the tools provided to the faculty by the university.

3.5.2 Positive Experiences Associated with the Emergency Shift to Remote Education

Students commented on the enjoyable aspects of remote learning (e.g., preferred way of learning, peaceful without the interruptions typical to the in-person class environment). Students explained how web conferencing tools helped their learning (e.g., tools gave students the information they needed, prerecorded lectures were helpful because students were able to review them as their convenience). Finally, students noted how important it was for them to have a say in regards to their learning environment, such as controlling their space and preferring to study from home.

4. CONCLUSION

The purpose of this study was to describe the experiences of faculty and students during the COVID-19 emergency shift to remote learning. Unlike some of the previous research on adjusting to the emergency remote education, the current results suggest faculty and students had positive experiences, with no significant difficulties in adjusting to the use of LMS and web or video conferencing tools. However, while faculty reported no difficulties accessing the technology needed for remote teaching, students had some challenges accessing technology needed for remote learning.

Neither faculty nor students reported difficulties accessing a suitable environment for teaching and learning. However, environment, not technology access, has emerged as a correlate of students' experience in the remote education, highlighting a challenge of mobile learning that is relevant for students, but not for faculty. Interestingly, SES did not differentiate in frequency of access to either technology or environment, suggesting this may not be a factor of finances but rather of lifestyle. Possibly students' living arrangements (dorm rooms, shared apartments etc.) are less conducive to learning outside of the traditional classroom. Indeed, qualitative data revealed more nuanced students' experiences, highlighting challenges managing the learning environment and the cost of devices needed for remote learning.

Interestingly, positive experiences were associated with previous involvement with remote education, suggesting that the prevalence of pre-pandemic remote education helped faculty and students to adjust during the COVID-19 emergency shift. Consistent with Gonzalex-Yebra, 2019, the current findings indicate that students appreciate having greater say in their educational environment. Similar to findings by Snow et al. (2018) There were some differences between faculty and students in terms of preferred features of LMS and web conferencing tools, but in general faculty and students found these tools to be helpful. Consistent with Snow et al., (2018), institutional support has emerged as an important factor impacting the quality of faculty and students' experiences during the shift. Thus, unique mobile learning advantages and challenges that are evident in the pre-pandemic world, have also emerged during the emergency shift to this modality, suggesting that such advantages and challenges are typical in the mobile learning environment regardless of the circumstances that prompt choosing this education model. On the hand, the current findings did highlight pandemic-unique challenges for students, such as having to balance educational with personal responsibilities during a health emergency situation.

The current findings have important implications that may be relevant as the world of education evolves to reflect greater mobility in higher education. Faculty should consider attaining certification in online education and attending regular classes to enhance their online teaching skills. Universities may want to consider requiring this as a professional development opportunity for faculty. Pedagogy must take into consideration students' preferred modes of communication to enhance effective connectedness in the mobile education environment. When students begin their orientation at a university, more education on the learning management system should be given so students are prepared, especially in unforeseen circumstances such as a pandemic or another emergency. Resource reallocation may be needed to support successful mobile education and meet emerging needs of faculty and especially of students, such as providing students with appropriate devices and access to technology. Special attention should be paid to pedagogy and resources that support students learning in the mobile environment, taking into consideration students' appreciation for more control of their learning environment on the one hand, and the challenges students face in accessing a suitable learning environment outside of the traditional classroom. Experts in remote education design should be added to a university Information Technology team to facilitate effective use of technology in teaching and learning.

The mixed method design used in this study was a strength in that it allowed for richer data, expanding on both students and faculty perspectives. However, the study is limited in that the sample is small and insufficient in scope since recruitment has taken place mostly in the northeast region of the United States. Many of the faculty and students were from two disciplines only (nursing and social work). Therefore, it is difficult to generalize the results of this study. Future studies should include faculty and students from across the country, and possibly internationally, and from varied disciplines to deepen the understanding of faculty and students experiences in remote education and its implications in the increasingly mobile world of academia.

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