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The Perils of Emergency Online Instruction, Students' Preferred Learning Modality & Opportunities for Growth

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Abstract

As a result of emergency online teaching during the covid-19 pandemic, this study was conducted to determine faculty (n=144) and students' (n=350) perceptions with their experience in an online teaching and learning environment as well as students' preferred learning modality. Compared to students, faculty indicated better overall satisfaction with their commitment to teaching and their comfort level with technology prior to emergency online instruction, Wilk's Λ= .851, F (7,428) = 10.721, p= <.001. Both, faculty and students were least satisfied with the quality of instruction during emergency online learning. The majority of students were more inclined toward in person learning (37%) followed by hybrid (33%) and online (30%) modalities. This study has uncovered additional challenges brought by the pandemic during emergency online teaching as well as opportunities expressed by participants. Future studies must explore learning modalities in greater depth (hi-flex, hybrid, fully online (synchronous/asynchronous), and in-person) to suit the diverse needs of students.

Keywords: Learning modality, emergency online instruction, Online learning, Hybrid learning, Student learning, Teacher perceptions.

1. Introduction

Despite recommendations from the H1N1 pandemic to plan and implement agile preparedness in higher education to prevent disruptions (Ekmekci & Bergstrand, 2010), in early 2020, as the Covid-19 pandemic disrupted education at all levels around the globe, educators and students faced challenges with the transition to remote platforms within a matter of weeks to mitigate the burden of school closures and interruption in education (Daniel, 2020; Gonzalez, et al., 2022; Lassoued, et al., 2020). Although there were some advances in remote technologies prior to the pandemic, it was in the midst of the pandemic when remote learning technology became a necessity and the method of choice to prevent further disruptions to the in progress academic year (Al-Balas, et al., 2020; Daniel, 2020).

The transition from in person to fully remote (online) teaching and learning in early march 2020 was challenging for students, educators (Almendingen, et al., 2021; Gonzalez, et al, 2022) and families (Daniel, 2020). Although most institutions worldwide adopted and adapted to the remote environment, challenges

became imminent (Adnan & Anwar, 2020) as differences in teaching and learning modalities became more apparent and well defined. In some areas of education, the online modality worked well, where some of the reported benefits included time saving and flexibility at meeting the learners where they were (Al-Balas, et al., 2020) while in other areas, such as those requiring the in person interaction to develop procedural skills, the online modality proved less efficient and the challenges reported included poor instruction, poor interaction between instructor and students and student to student (Al-Balas, et al., 2020). These challenges also brought opportunities for institutions to explore teaching and learning modalities more in depth and determine leverage on how to engage learners, provide training and offer instruction based on the needs of each discipline and environment.

Prior to the covid-19 pandemic, different learning modalities of teaching and learning had been slowly emerging with some skepticism among those who were not comfortable around technology or were too comfortable with the traditional in person teaching modality (Muller, et al., 2019). The covid-19 pandemic tested the limits of the current infrastructure and preparedness of educational institutions and uncovered the lack of infrastructure, such as good internet coverage, cost of internet (Adnan & Anwar, 2020), and lack of investment in technology and remote platforms (Al-Balas, et al., 2020) as some of the challenges faced in academia. In addition, training and development of faculty and students by institutions of higher education and other sectors of academia in combination to the government mandates to shut down institutions and isolate, appear to be some additional factors of why the covid-19 pandemic had negative effects in the educational environment worldwide (Al-Balas, et al., 2020; Ali, 2020).

1.1 Theoretical Framework

The work and understanding of online learning (Keengwe & Kidd, 2010; Muller, et al., 2019) pre-covid-19 pandemic, and hybrid teaching and learning modality (Walker, et al., 2021) during and post-covid-19 pandemic provided the framework for this study. The online modality has been used in higher education for quite some time and it is a well-rounded method for delivering instruction and providing students with options to access and learn outside of the traditional face to face environment (Muller, et al., 2019). The online methodology provides the learner with opportunities to access instruction remotely and by using a wide range of technologies and applications, ranging from web-based training, web-enhanced courses, e-simulations, and virtual learning are just some examples (Keengwe & Kidd, 2010).

The hybrid modality, also referred to as blended learning, combines the face to face or in person learning with online learning (Keengwe & Kidd, 2010). The hybrid modality picked up momentum during and after the peak of the covid-19 pandemic, which affected millions of students and teachers worldwide. This modality allows for flexibility in delivering instruction using remote learning technologies while also providing the in person component desired and or needed in some disciplines (Walker, et al., 2021). In person instruction is considered the traditional teaching and learning method where the student and instructor are physically present in the classroom setting (Keengwe & Kidd, 2010). In light of the disruption experienced at the beginning of the covid-19 pandemic, this study was conducted to determine faculty and students' perceptions with their experience in an online teaching and learning environment. To better understand the

individuals' responses regarding their perception and preferred learning modality, it was important to also understand what experience faculty and students had in an online teaching and learning environment or using remote learning technologies prior to the Covid-19 pandemic. This study focuses on the ways in which faculty and students responded to satisfaction towards technology accessibility, experience in an online teaching and learning environment prior to the Covid-19 pandemic, and students' preferred learning modality at six months from the initial phase of transitioning to fully online in late March 2020.

2. Methods

The study was reviewed and approved by the New Mexico State University IRB, which oversees research protocols for Doña Ana Community College. Approval # 19998

2.1 Research Questions

1. What experience did faculty and students have teaching/learning online prior to the beginning of the covid-19 pandemic?
2. What is the preferred learning modality by students as a result of emergency online instruction?
3. What are faculty and students' perceptions/satisfaction towards the use of technology as a result of emergency online teaching and learning during the beginning of the covid-19 pandemic?

2.2 Research Setting and Participants

This study was conducted using a mixed-methods survey design. Faculty and students from Doña Ana Community College, a multi-campus college, in Las Cruces, New Mexico participated in the study. The survey was created and deployed to faculty and students via e-mail using SurveyMonkey. The response rate was calculated based on number of emails sent to faculty (447) and students (4,331) and completion rate was calculated by the number of faculty (216) and students (783) who opened the survey and divided by the number of faculty (144) and students (350) who completed them (Table 1). Sample size for this study is being determined by those who completed the survey.

Table 1. Faculty and Students' Survey Response and Completion Rates

	Faculty n=144	Students n=350
Response Rate	48.32%	8.08%
Completion Rate	66.66%	44.69%

2.3 Questionnaire

The 15 questions included in this study were a mix of 4 point Likert scale, multiple choice and open ended. Faculty and Students were asked five questions to inquire about their overall satisfaction and comfort level with online teaching and learning and the overall support with the use of technology. In addition, faculty were asked the number of years they had been teaching and years teaching online. Students, were asked the years of experience they had taking online classes and to select the learning modality (online, face to face,

hybrid) they preferred for learning. Additionally, two open ended questions were asked of each group to determine what challenges they encountered during emergency online learning and what opportunities they foresee coming out of the emergency online learning experience.

2.4 Data Analysis

IBM SPSS for windows, version 21 was used to conduct statistical analyses. The quantitative pieces were analyzed using a combination of multivariate analysis (MANOVA) and descriptive statistics. The qualitative pieces were analyzed by grouping items into themes and providing a descriptive analysis.

3. Results

3.1 Demographics

Faculty and students' sociodemographic information included gender, race/ethnicity, age and income per year of all faculty and students who completed the sociodemographic questions (Table 2).

Table 2. Total Faculty and Students' Sociodemographic Data

	Faculty n=144		Students n=350	
Demographic	**Frequency**	**Percentage**	**Frequency**	**Percentage**
Gender				
Female	79	54.9	109	31.1
Male	59	41.0	233	66.4
Other	6	4.2	9	2.6
Race/Ethnicity				
Non-Hispanic White	77	53.5	71	20.3
Hispanic	44	30.6	243	69.4
Other/Prefer Not to Say	23	16.0	36	10.2
Age				
18-21 years			153	43.6
22-24 years			31	8.8

25-34 years	12	8.3	23	6.6
35-49 years	50	34.7	84	23.9
50 and over	82	56.9	60	17.1

3.2 Faculty experience teaching online prior to Covid-19

Faculty teaching experience ranged from no experience to six years or more (Table 3). Multivariate analysis showed between subjects' statistical significance between age and years teaching, Wilk's Λ= .849, $F(10,328) = 2.774$, p= .003. When faculty years teaching and age were compared, statistical significance was shown, p=<.001 between those in the age group 25-43 and 35-49; 25-34 and 50 and over, and p=.050 for those 35-49 and 50 and over. Teaching online and age were significant p= .017 in the age group 25-43 and 35-49 and p=.008 for those 25-34 and 50 and over.

Table 3. Faculty Teaching Experience

	Years Teaching n=143		Years Teaching Online n=144	
	Frequency	Percentage	Frequency	Percentage
No Experience	2	1.4	28	19.4
1-3 years	21	14.7	55	38.2
4-5 years	7	4.9	10	6.9
6 years or more	113	79.0	51	35.4

3.3 Students' experience in online classes prior to Covid-19

The results show that the majority of students (49.3%) reported having at least 1-2 years of experience in online learning, followed by no experience in online learning (40.6%) prior to Covid-19 (Table 4). A multivariate analysis showed statistical significance p=0.018, between those in the age group 18-21 and 50 years of age and over.

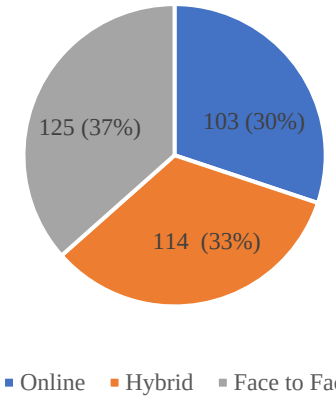
Table 4. Students' Experience in Online Learning Prior to COVID-19

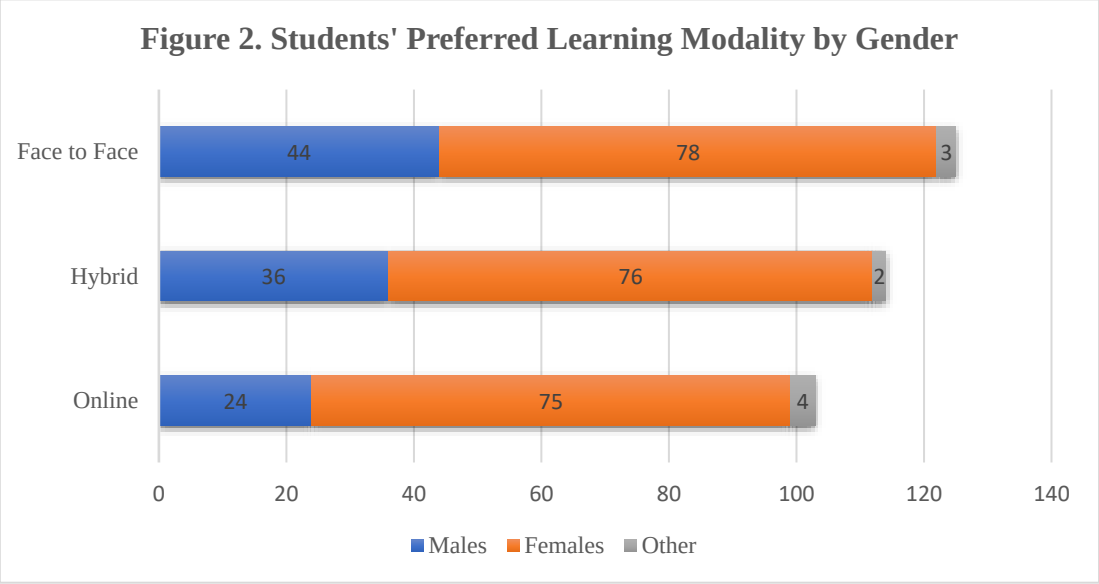
	Years of experience in online learning n=350	
	Frequency	Percentage
No Experience	144	41.1
1-2 years	171	48.9
3-5 years	22	6.3
5 years or more	13	3.7

3.4 Students' preferred learning modality as a result of emergency online instruction

The majority of the students preferred in person instruction (37%) followed by hybrid (33%) and online (30%) instruction (Fig. 1). When gender was considered as part of students' preferred learning modality, (Fig.2), the majority had a predilection for in person learning, followed by hybrid and online learning. There was statistical significance, p= <.001 between males and females who responded to preferred learning modalities.

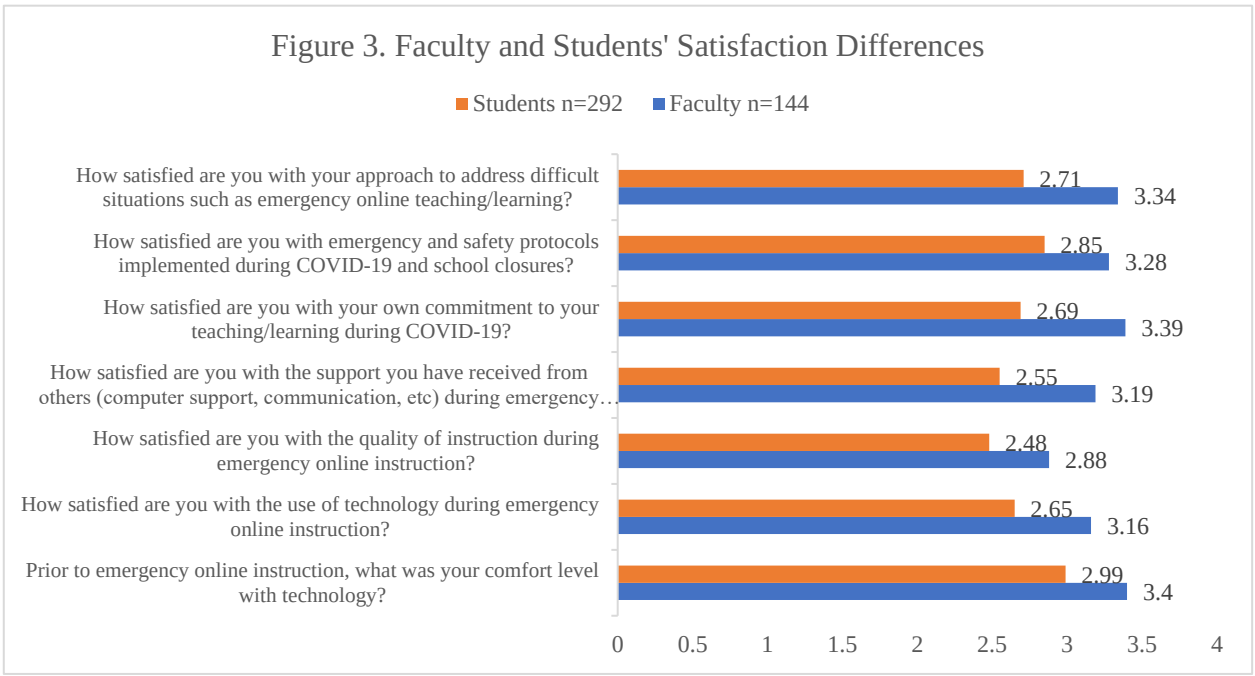
Figure 1. Preferred Learning Modality





3.5 Faculty and students' perceptions/satisfaction towards the use of technology as a result of emergency online teaching and learning during the beginning of the covid-19 pandemic

Figure 3 below, shows the reported satisfaction levels of students and faculty with online instruction and the support received during and after the transition to online learning as a result of the covid-19 pandemic. A MANOVA was conducted to determine differences in level of satisfaction. Statistical differences were found between faculty and students Wilk's $\Lambda = .851$, $F\ (7,428) = 10.721$, $p = <.001$.



3.6 Common Faculty and Students' Themes Identified in Open Ended Questions

Table 5 below represents a summary of the most commonly identified faculty themes to two open ended questions comparing the challenges experienced during emergency online instruction and opportunities they foresee coming out of the emergency online instruction. Table 6 represents the students' themes to the same open ended questions asked of faculty on Table 5.

Table 5. Common Faculty Themes

Q1. What major challenges have you encountered with emergency online learning?	**Q2. What opportunities do you foresee coming out of the emergency online learning?**
Students are less engaged	Identify those courses that should be taught asynchronous vs. synchronous or face to face
Students don't show up to class	Opportunity for health programs to expand reach if clinical sites can be secured where students live
Engaging students who didn't sign up for online classes and were forced online	Flexibility for students who work and have families to still receive an education
Lack of student organization and time management	Some aspects of online learning might be useful once emergency is over
Difficulty getting all the material on canvas	Improvement in technology
Having to learn canvas and zoom very quickly	Flexibility to work from home and not travel to school all the time
The lack of in person contact with students	More and better implementation of hybrid learning
How to address students in a recorded lecture when they are not present	More focus on better teaching
Not having the infrastructure at home to move everything online	Better ways to implement online learning
Being stuck at home	More comfort with online instruction by faculty and students
Lack of expectations for good online courses	Flexibility to be online or in person as needed
Lack of affordable internet for students	Better understanding and training of online instruction
Lack of computers for students to access school	Better understanding on how to successfully

work	build an online course
Educating students how to use technology	An opportunity to interrupt the moralized "gospel of education" that resists change and perhaps embrace other modalities of instruction.
Asynchronous delivery of instruction is not that great because students lack structure	More preparedness for the next emergency
Students taking their frustration with online instruction on the instructors	Improved professional development to incorporate online instruction
Motivation and time management are difficult	More knowledgeable on how to use technology and reach more students
Trying to provide quality education while addressing students' needs	Online classes will become more student centered
Increased workload	Stronger ability to teach online
Not enough support for part time faculty to navigate technology and online environment	Teach from home successfully
Maintaining integrity of exams and assignments	Less dependency on physical classrooms and buildings
Balancing work and family while everyone is at home	More teaching and learning opportunities for faculty and students

Table 6. Common Students' Themes

Q1. What major challenges have you encountered with emergency online learning?	**Q2. What opportunities do you foresee coming out of the emergency online learning?**
Difficulty getting assignments done	Not having to commute to school all the time
Teaching myself	Saving money on gasoline
Having to figure it all out on my own	To be more self- motivated
Professors not responding	Growth in knowledge of technology use
Professors' lack of knowledge with technology	Online assignments will be easier to submit
Lack of good internet connection	More opportunities to take online classes
Not understanding assignments and directions	Better technology skills
Not been able to access labs or clinicals	Back to normal learning
Lack of help from professors	Ability to take classes online and care for children at the same time
Finding the right place at home to join zoom	Stronger time management skills

meetings	
Time management	Learning ways to secure technology from hackers
Financial problems	Better training for college instructors
Mental Health	Preparedness for future online learning
The lack of human interaction with online instruction	Socialization will be different
Lack of motivation	Opportunities to find work from home
Work and school balance	More enrollment of those who couldn't attend in person classes
Lack of hands on learning	Better understanding and flexibility from instructors
Online fatigue	Better internet signal
Teacher's children interrupting online classes	Being able to work on assignment at any time
Lack of tutoring	Improved discipline
Difficulty obtaining technology and internet issues	Improving self-management skills
Excessive amount of work for all classes	Improvement in digital content and applications

4. Discussion

4.1 Experience with online teaching and learning prior to the Covid-19 pandemic

The online teaching and learning literature dates back to pre-pandemic and as far back as the 70s (Keengwe & Kidd, 2010; Muller, et al., 2019). The current study asked faculty and student respondents for their experience teaching and learning online respectively to determine the level of experience in the online environment prior to the covid-19 pandemic. Faculty reported the bulk of teaching experience in an online environment between one and three years (38%) and six or more years (34%). Students on the other hand, reported their experience in an online environment prior to the covid-19 pandemic as no experience (41%) or one to two years of experience (49%). In this study, the majority of students were under the age of 24 (52.4%) and out of those, 44% were under the age of 21 which is similar to those reported by (Nambiar, 2020). This is important because the majority of students who were enrolled at the time of the pandemic and when emergency online instruction took place, reported no experience with online instruction. One assumption made by the author was that although there is a belief that students under the age of 24 are tech savvy, those skills were not translating to the use of technology in an online academic environment or that there was a lack of technology available to students in the academic environment prior to entering college. Other authors (Gilbert, Morton, & Rowley, 2007) have also explored the student experience with online learning and found that students' e-learning [pre-pandemic] may have not been as well defined and studied, thus, concluding that students expectations of the online learning environment were not well documented and the use of online resources was dependent on each students' expectations individually (Gilbert, Morton, & Rowley, 2007).

Other studies, similar to the present study focusing on faculty and students' perceptions with their experience in the online environment have uncovered that the main struggle with online learning at present times is the lack of infrastructure to support teaching and learning and the lack of preparation to transition courses from in person to online delivery (Al-Balas, et al., 2020; Alexander, et al., 2009; Almendingen, et al., 2021; Gilbert, et al., 2007; Nambiar, 2020; Rahayu & Wirza, 2020). This study has uncovered faculty and students' perceived experience with online learning prior to the pandemic and has put it into context as emergency online teaching and learning took place amidst the covid-19 pandemic. The findings demonstrate that although faculty reported better experience teaching online prior to the pandemic in comparison to students who reported little to no experience with online learning, both groups struggled coping with the effects of emergency online teaching and learning (Gonzalez, et al. 2022; Irawan Andi Wahyu & Lestari, 2020; Mheidly, et al., 2020) and both groups reported dissatisfaction with the quality of instruction at the time which is similar to the finding reported by other authors (Adnan & Anwar, 2020; Al-Balas, et al., 2020; Alexander, et al., 2009; Ali, 2020; Almendingen, et al., 2021; Faize & Nawaz, 2020; Gilbert, et al., 2007; Nambiar, 2020; Muller, et al., 2019; Rahayu & Wirza, 2020)

4.2 Students' preferred learning modality

This study has uncovered students' preferred learning modality at the time of emergency online instruction. Interestingly, students expressed that they preferred face to face instruction, followed by hybrid, and online. Nambiar, 2020 also reported students' better satisfaction with in person instruction when compared to online learning. The results on learning modality preference, i.e., face to face first, may reflect student's hesitation or the struggles faced with the immediate switch to online instruction when most students reported very limited experience with online instruction.

The majority of faculty also reported limited online teaching experience which made it difficult for students and faculty to readily accept the online transition. In some disciplines, such as the health sciences and other career technical professions, hybrid instruction was pertinent and better accepted because it allowed students to receive online didactic instruction and in-person hands on instruction to satisfy the course completion requirement and degree plans. These findings are also supported in other studies (Al-Balas, et al., 2020; Mukhatar, et al., 2020) that reported advantages of using hybrid instruction in areas where online instruction alone was not able to adequately replace the hands on learning and procedural skills.

The continuation of online instruction during the Covid-19 pandemic has shown to be less effective in countries that lack the infrastructure to sustain online teaching and effective students' interactions in an online environment (Yuhanna, et al., 2020; Irawan Andi Wahyu & Lestari, 2020; Mukhatar, et al., 2020). Prior to the covid-19 pandemic, there was a robust body of research that indicated the need for better infrastructure and preparedness (Ekmekci & Bergstrand, 2010) to support online learning and other types of teaching modalities (Keengwe & Kidd, 2010).

4.3 Faculty and students' perceptions/satisfaction towards the use of technology as a result of emergency online teaching and learning during the beginning of the covid-19 pandemic.

The study provided insight to faculty and students' level of satisfaction while both groups were managing the transitions to online teaching and learning during first 6 months of the pandemic (Al-Balas, et al., 2020; Ali, 2020; Daniel, 2020). Although the study was conducted in a U.S. community college, it does echo the challenges institutions worldwide faced when moving to online instruction as an emergency mitigation strategy to curve the spread of covid-19 and ensure the continuation of instruction (Ali, 2020; (Gonzalez, et al., 2022; Lassoued, et al., 2020). Faculty in the present study, reported better overall satisfaction levels in response to the Covid-19 pandemic and assistance they received as compared to students. Both, faculty and students also reported higher comfort levels with the use of technology prior to the covid-19 pandemic. Furthermore, faculty and students' lowest mean satisfaction was reported on the perceived quality of instruction received as a result of the emergency online teaching and learning, which aligns with the perceived level of support they received during this period of online teaching and learning and the overall satisfaction with the use of technology available. Other studies show similar findings that have uncovered faculty (Hassan, et al., 2020; Nambiar, 2020) and students' dissatisfaction with the lack of available technology, for example, poor internet connections, cost of internet, lack of remote learning platforms, and the lack of infrastructure available to support teaching and learning in an online environment (Adnan & Anwar, 2020; Al-Balas, et al., 2020; Ali, 2020; Almendingen, et al., 2021; Hassan, et al., 2020; Lassoued, et al., 2020; Mukhatar,et al., 2020). These findings also support the idea that although institutions in countries like The United States of America may have better access to technology in comparison to developing countries, the covid-19 pandemic uncovered the lack of preparedness among educational institutions worldwide, despite previous recommendations from the H1N1 pandemic to be agile and ready for the next pandemic to come (Ekmekci & Bergstrand, 2010).

4.4 Perceived opportunities as a result of emergency online instruction

This study, like many other studies (Adnan & Anwar, 2020; Al-Balas, et al., 2020; Ali, 2020; Daniel, 2020; Nambiar, 2020) have explored and identified the challenges with emergency online instruction and online learning during the covid-19 pandemic. However, this study also provides a perspective on the possible opportunities as a result of the emergency online teaching and learning (Table 5 and 6). Other studies have not reported faculty and students' perceptions and the perceived benefits brought forth by the covid-19 pandemic, specifically, the emergency online teaching period. Both faculty and students felt that better preparedness and understanding of the online and hybrid environment would be a benefit past the emergency period. Similar to findings reported in a pre-pandemic study, faculty felt that the amount of work required to prepare an online or hybrid course requires more work and responsibility than the traditional (face to face) learning modality (Keengwe & Kidd, 2010). Another theme seen in both the faculty and student samples was the need to embrace and incorporate current and new technologies to improve teaching and learning and reach students regardless of their ability to attend classes in person or online; better training for faculty and students (Keengwe & Kidd, 2010) and a better understanding that "technology alone does nothing to enhance online pedagogy" (Keengwe

& Kidd, 2010, p.538).

4.5 Limitations

While this study has provided additional insights into how faculty and students perceived the transition to online learning during emergency online teaching and learning and the students' preferred teaching modality, the survey did not ask faculty about their preferred teaching modality which would have been good to understand how faculty prefer to teach. The sample of faculty and students who responded to the survey was from a community college, thus, generalizations may be problematic, however, the data does provide a good insight on teaching and learning modalities and overall satisfaction of faculty and students with their approach to online teaching and learning during the initial phase of the covid-19 pandemic.

5. Conclusion

Though only three learning modalities were factored in the study (online, hybrid and in person), future studies should consider more learning modalities (hi-flex, hybrid, fully online (synchronous/asynchronous), and fully in-person) to suit the diverse needs of students. Creative scheduling to accommodate multiple teaching and learning modalities will require much thought towards how faculty and institutions schedule courses that can allow for students to create their schedules with a variety of options, so that there is not any unintended competition for timeslots for students. Significant investments are needed in the following areas, (1) virtual/distance education technology preparation and (2) creative/flexible scheduling to adapt to different teaching and learning modalities based on course content need and career specific considerations as well as to meet the needs of students. It is also important for institutions of higher education across the globe to remain adaptable and to continue to strengthen their infrastructure to support multiple ways of instruction by investing in better technology and to have a plan in place to modernize technology at least on a bi annual basis. Another important aspect of setting a robust infrastructure is to create, put in place, and maintain a plan of action to provide training to all faculty and students on technology and how to mitigate risks in the online environment. As learned by the latest pandemic (covid-19), there is a need for faculty and students to also be prepared and to have the tools needed, such as training in online and hybrid delivery, flexibility to transition to an online environment as a mitigation strategy to prevent the spread of potentially deadly pandemics and to prevent disruption in the academic/learning environment.

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