The Implementation of Online Learning in Conventional Higher Education Institutions During the Spread of COVID-19: A Comparative Study

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Abstract—The purpose of this study is to investigate and explore the degree of success of the implementation of online learning in conventional higher education institutions instead of face-to-face learning during the spread of the Covid-19 Pandemic during the 2019/2020 academic year, via exploring the undergraduate students' perceptions of the application of the online learning system at Ajman University in UAE, and Griffith University in Australia. In the study, the descriptive approach was used. A questionnaire consisting of 40 items was designed and distributed to 630 students from Ajman University and 675 students from Griffith University, who were randomly selected from different faculties of the two universities during the 2019/2020 academic year during the COVID-19 pandemic. The results of the study revealed that students' a moderate satisfaction with the University's readiness, training, and technical support for online learning and the university's teaching and learning process during the COVID-19 pandemic, with female students finding them more satisfaction than male students. Disciplines and computer skills also showed an impact on such satisfaction, with Pharmacy & Health Science College students at Ajman University and Architecture, Art, and Design discipline students at Griffith University, and those with excellent computer skills in both Universities. In addition, the results showed positive attitudes of students towards the use of online learning at the two universities during the COVID-19 pandemic.

Keywords—online learning, conventional higher education, COVID-19 pandemic, a comparative study

1 Introduction

A novel corona virus, known as Covid-19 pandemic, which discovered in the last month of the year 2019, in a seafood market in Wuhan is not only a serious public health emergency but an emergency on all societal levels, political, economic, social, and even on education level too [1]. World Health Organization (WHO) announced social distancing as a means of curbing the spread of this severity pandemic [2]. As a result of this announcement, schools, colleges, and universities around the world have closed down their campuses so that students are taking and follow social distancing measures [3]. According to the United Nations (UN) report, the pandemic of COVID-19 caused the greatest disruption of education systems in history, affecting approximately 1.6 billion students in more than 190 countries and all oceans. As a consequence of this severe pandemic, the educational system through their educational institutions has been motivated to create and develop modern learning strategies to support the continuity of education and training that are appropriate to the environment of this pandemic [4]. Online learning or distance learning has been adopted in most educational institutions like universities, schools in the world as one of the educational solutions during the covid-19 pandemic [5, 6]. On another side, although distance learning or online learning was a widespread matter of concern for political authorities, education, businesses, teachers, parents, and students alike, there was no other alternative. Most academic heads are now promoting online education as a solution to this crisis [4]. [7] indicated that online learning has become extremely prevalent in a number of higher education institutions around the world. The biggest international universities over the past decade are gradually moving their programs online and doing away with traditional learning delivery [8, 9]. Top universities in the world such as Peking University, Harvard, MIT, Yale, Oxford, Cambridge, among others are moving in this direction [10]. However, moving smoothly from an environment of conventional education to distance and virtual learning could not happen overnight. This rapid transformation is linked to various obstacles and challenges at this point [11]. For students Lack of proper interaction with instructors is a major concern associated with online learning [12]. It is important that online learners are familiar with the use of technology to make full use of the e-learning system because they will get frustrated when they are not familiar with the technology and lower their level of satisfaction [13, 14]. In the United Arab Emirates (UAE), 91% of residents use mobile Internet and more than 98% of households have Internet access [15]. In addition, mobile devices, such as smartphones, are used to access the Internet primarily at home or at work (Federal Competitiveness and Statistics Authority). The UAE government through cooperation with both of ministry of education and Etisalat Company implemented online learning during of COVID-19 pandemic from March 2020, and still applied it up to date in all UAE education sectors like public and private schools and higher education institutions. The main objective of this measure is to take precautions to protect students from the COVID-19 pandemic and to ensure students continue to learn in an appropriate manner and with high-quality teaching methodologies. In order to ensure a successful online learning process during of COVID-19 pandemic, the Ministry of education in UAE implemented professional

training for school teachers and allowed private schools to access their own online learning system. Moreover, It launched smart learning platforms and guidelines and instructions manual to manage students' behavior on online learning. In addition, the UAE government offered free satellite broadband services for learners in areas with no connectivity and free home internet for families with no home internet connection. Ajman University started implementing the online learning system, after joining the UAE's efforts to take the necessary precautionary measures to limit the spread of the new Coronavirus known as (COVID-19) in light of the directives of the Ministry of Education in the UAE. Moreover, the university organized training courses for more than 300 faculty members, which included methods and mechanisms for online learning to ensure full readiness for this experiment, and the absence of any challenges that could hinder the communication process. Furthermore, an interactive environment has been provided between students and the instructors that enable them to exchange views and ideas during the process of explaining educational materials pointing out that the online learning process is compatible with the skills of the current generation of students in their active dealing. Prior to COVID Griffith university, online learning and blended modes of learning (through the institutional learning management system) were already present but for the majority of faculty and students, fully online learning was new. Griffith focused on providing support to both students and staff in online learning. Numerous online training opportunities were provided to help upskill teaching staff in the use of digital tools.

2 Literature review

2.1 Coronavirus disease (COVID-19) pandemic

A novel strain of respiratory tract infection associated with the COVID-19 emerged in December 2019 in Wuhan at China which is the sprawling capital of Central China's Hubei province. This virus has spread rapidly worldwide in all countries of the world, regardless of whether they are rich or poor countries [1]. WHO On 12 January 2020 isolated this pathogenic virus and named it as the 2019 novel coronavirus [2]. According to [16], Coronavirus (COVID-19) is an enveloped, positive-sense, single-stranded, RNA virus genome in the size ranging from 26 to 32 kilobases, causes mild to severe symptoms of acute respiratory syndrome infections and even mortal. Similarly, the Ministry of health and prevention of the UAE defined it as a new strain of coronavirus that may cause illness in animals or humans. In humans, several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases.

2.2 Online learning

Online learning as a model of education emerged in 1982 in California in the united states [17]. This model of education as its first application has had great potential for effect on the planning, development, and construction of the education system at

all educational institutions and its educational levels [18–21]. Allen & Seaman [22] referred that online learning uses computers, laptops, other devices, and the Internet as the delivery mechanism with at least 80% of the course content delivered online. Where it is clear that long text-based lectures were not appropriate for the online environment, and learners were not easily and quickly engaged in discussion activities [23]. According to [24], as online learning started to expand, the governments of nations also began funding educational institutions that provided online programs in an improvement in the quality of online learning. Garrison [25], referred that online learning derives from constructivist theory learning, it poses a major change in contrast to conventional distance education, which is focused on the concept of autonomy and the industrial development of prepackaged study materials. Moreover, according to [26], online learning shifted learning from teacher-centered learning that presented in a classroom environment during traditional learning to learner-centered learning, where learners have much more responsibility and ownership. Where those learners in the online learning environment are able to choose what to learn when to learn, and who to learn with [27–29]. Thus, a certain degree of Self-guiding is required to pass an online class. Online learning, according to [14, 30–32], is a form of distance education in which technology mediates the learning process, teaching is provided entirely via the internet, and learners and teachers are not required to be present at the same time and location. Luyt [33] pointed out that features of online learning like access to the internet and the flexibility of online classes have made online learning an essential component of the learning system in higher education institutions. Limperos et al. [34] pointed out that the existence of financial problems in some institutions of higher education and many students' demands have directed the focus and shift of these institutions towards using online learning as one of the propitiate solutions that can be implemented. Furthermore, Al-Qatawneh et al. [35] pointed out that learning nowadays has become reliant on several advanced instructional methods, systems, and multimedia technology, which have led to the looks of the e-learning platform. Moreover, Online learning has progressively are becoming prevalent, providing learners flexibility in regard to the time and location they study, and enabling them to get knowledge rapidly by using numerous sources of education [36]. Moreover, Chaney [37] referred that nowadays, the expansion of the use of the Internet and technology have produced a surge in the demand for internet-based learning. Online learning is attractive to a variety of students and has become more familiar throughout educational environments including primary schools to secondary school and into higher education institutions like universities [23]. Moreover, Waldeck [38] pointed out that online learning comprises a wide variety of programs that use the Internet within and beyond school walls to provide access to instructional materials as well as facilitate interaction among teachers and students. Furthermore, according to Garrison [25], in the mid-1990s, advancements in educational technology and increased interest in asynchronous discussion groups gave rise to the term e-learning, which sought to describe learning delivered entirely online as well as learning that combines online and face-to-face elements referred to as blended or hybrid learning. Online learning environments can be classified into three core categories: Asynchronous Online Courses, Synchronous Online Courses, and Hybrid Courses as seen in Figure 1.

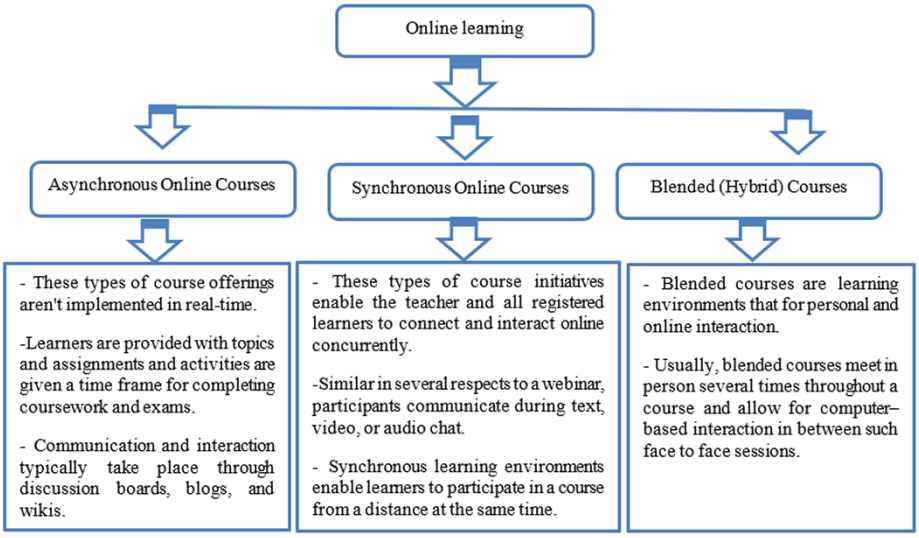

Fig. 1. Categories of online learning environments

The spread of the COVID-19 pandemic, like so many other aspects of daily life, has had a major influence on students, teachers, and educational organizations all over the world [39]. This forced most countries of the world to close their educational institutions [40]. According to [3], this procedure was done so that students could follow social distancing measures and thus protect them from the risk of contracting a Coronavirus disease (COVID-19). There is uncertainty as to when the pandemic will disappear completely in our lives and the lives of our students. Hence, in effort to maintain continuity of learning, most educational institutions around the world decided to take advantage of the available technologies, existing resources, and modern means of communication to create online educational programs [41]. Crawford et al confirms that the process of shifting smoothly from an environment of traditional learning to online learning could not happen directly overnight and hence a rapid shift in learning systems will surely be connected to diverse obstacles, problems, and challenges [11]. In reality, Covid-19 compelled experts and decision-makers in educational institutions to adopt online learning as a logical choice to address the risk of students ceasing to learn and study while the Covid-19 Pandemic spread [41]. The rapid shift in learning system is a test of how well educational institution like universities and schools are prepared to deal with the crisis of pandemic, and how effectively they are able to harness advanced technology, including hardware and software, to enable effective online learning [42–45]. Oncu and [46] identify the four goals for research to support the success of online learning environments classes (Figure 2).

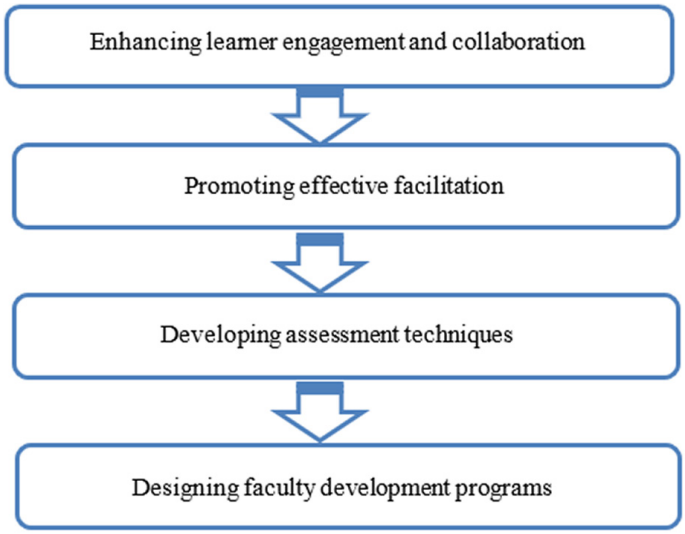

Fig. 2. The most important factors in the success of online learning classes

Online learning is considered to hold potential benefits and positive features given below as seen in Figure 3 [30, 47–49].

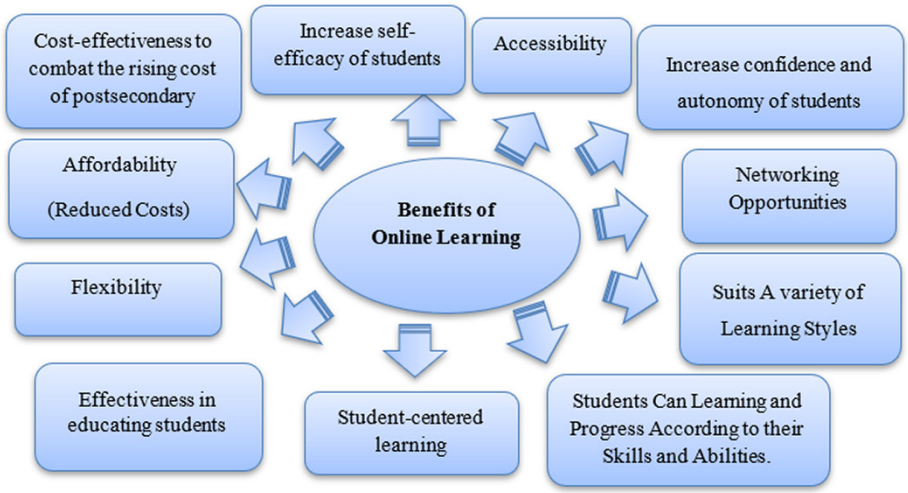

Fig. 3. Benefits of online learning [30, 47–50]

However, there are also potential disadvantages refers to the disadvantages of online learning such as: poor accessibility in Remote Areas, online learning more effective in digitally advanced countries; lack of access to fast, affordable, and reliable internet connections, online learning can cause social Isolation, online teachers tend to focus on theory rather than practice, and online learning is inaccessible to the computer illiterate population [30, 51].

2.3 Previous studies

Online learning has been present in higher education for many years. Most institutions of higher education have been steadily transitioning to online learning, either fully or as blended models. But, with the advent of the COVID pandemic, the steady transition turned into a literal dive into online learning. In lockdown online learning changed from choice to mandate. Almost overnight, instructors and students around the world were plunged into a fully online environment, many with little or no preparation or experience. Different educational institutions, in different countries and cultural contexts all across the globe found themselves to be on the common ground of the challenges of a sudden, forced shift to online learning. The situation, though unfortunate, provided a unique opportunity to gain cross-country insights into the experience of online learning, precipitating a large volume of literature and stimulating international collaboration among academics. To gain insight into the breadth of literature around online learning during the pandemic, the authors turned to Scopus. Scopus (https://www.elsevier.com/en-au/solutions/scopus), lays claim to being the largest database of peer reviewed literature, and therefore provides adequate insight into the breadth of literature around scientific topics of interest, including online learning and teaching during the COVID 2019 pandemic. A brief single 'surface' search, in September 2021 of Scopus articles, abstracts and keywords in articles (using keywords COVID AND learning AND (higher education), limited to conference papers and journal articles from 2020–2021 yielded 1863 relevant documents and the statistics available on Scopus showed that over three quarters of documents were journal articles with almost one-third of articles in the social sciences with computer science and medicine being disciplines of particular focus. The top 'producers' of literature were United States, Indonesia and the UK, in that order. A theme overview of the first 50 relevant papers, by abstract, provides an indication of the focus of the literature. Predictably, there is an emphasis in literature on the challenges of the Pandemic for higher education institutions and concern for how the pandemic is reshaping the future of higher education (twenty-eight of the fifty papers). Investigations of the impact of the pandemic on the student learning/experiences and faculty experience were also a focal point (nineteen of the 50 papers). Given the current state of higher education where institutions are already being challenged to survive in a global economy and now, even more uncertain economic times, the emphasis in literature on the institutional challenges and response as well as on the student experience is not surprising. It was observed that exploration of experiences of learning and teaching is occurring mostly within the confines of a particular institution or within a particular country. Comparative studies across countries were not common with only two of the 50 most relevant paper. Adding 'comparative' to the search terms yielded an additional five cross-country comparison research but these studies are seemingly scarce despite the potential richness of knowledge to be gained from what is a 'global laboratory [52]. Some studies representative of comparative studies of learning and teaching during COVID 19 are discussed below. Hall et al. [53] write about the impact of COVID on an international mobile learning project (European DEIMP Project) occurring across six countries including UK, Australia, Belgium, Cyprus, Ireland and The Netherlands. They explore the strategies used by each country to provide continuity of education across educational systems. One of the key issues arising is that of the digital divide and its impact particularly on schools and their students. Focusing narrowly

on higher education, Oleksiyenko, et al. [54] examine the impact of COVID from the frame of comparative education and international higher education from a global perspective. Tejedor et al. [55] take up the theme of digital literacy and the necessity of guaranteeing digital literacy for students and teachers to enable higher education to meet its objectives. The study also considered student perceptions of the competency of their teachers to teach successfully online, and empowerment of students in the online classes. Their quantitative study via questionnaire of 376 students across universities in Spain, Italy and Ecuador showed the necessity of adapting teaching methodologies in the presence of online learning pointing out that technology is merely a tool and its use alone does not create effective learning experiences. Tejedor et al. [55] demonstrate the necessity of training in "competencies within the scope of digital literacy in higher education students" (p. 2) – something that is often taken for granted. The study assessed from student perspectives the skill of the teacher to create engaging classes and the usability of teacher's engaging methodologies (which 56.8% of students found to be engaging and useful. Across Spain, Italy and Ecuador, students in Spain 72.3% perceived the classes during lockdown to be positive, while 36.95% Ecuador students and 52.8% of students in Italy perceived classes to be positive [55]. Interestingly, around three-quarters of students from Italy and Ecuador students felt teachers had skills appropriate to teaching online while approximately three-quarters of students from Spain felt that their teachers did not have appropriate skills [55]. The almost global 'unpreparedness' of institutions to pivot into online learning during the pandemic is a re-occurring theme in the surrounding literature. Kummitha, Kolloju, Chittoor and Madepalli [56], add the digital divide as a major concern for institutions. In a cross-sectional study of 281 academics across India and Ethiopia, the authors' found that lack of institutional preparedness and especially the digital divide severely limited the effective implementation of online learning. The situation was compounded by a lack of training programs to help academic staff utilize web resources. However, it is the issue of equitable access to technologies which is stressed as the most urgent challenge for higher education if online learning is to be effective and equitable. Furthermore, Zalite and Zvirbule's [57] study of digital readiness across the European Union pointed to a general lack of digital literacy adequate to support effective online learning and teaching. They also noticed the digital gap existing between more developed Nordic European countries and the less developed Southern and Eastern European countries. Insights into the student experience in the studies revealed that students perceived technological problems as less of an issue than the increased need to take personal responsibility for time management and learning process. Students' digital literacy and/or digital readiness as a factor impacting on learning and the learning experience is taken up by [58]. An k-means cluster analysis of results of 1826 university students revealed significant variation in their digital learning readiness (technology availability, prior experiences and skills). They also found that socio-emotional perceptions also play an major role in student learning and the student experience during online learning. One interesting backdrop to the findings of studies across international borders is the higher education student experience data obtained from the Student Experience Survey (SES) undertaken by QILT (Quality Indicators for Learning and Teaching) funded by the Australian Government Department of Education, Skills and Employment. The SES was developed in 2011 as the University Experience Survey but has since been renamed and expanded to include student from non-university higher education. The SES 'paints a picture' of the student experience

across the higher education sector in Australia. The 2020 SES included all 41 Australian Universities and 92 non university higher education institutions. 295, 473 valid surveys were received, a response rate of 44.1 per cent. In undergraduate students, the quality rating of their experience fell from 78% in 2019 to 69% in 2020. The greatest decline in the experience was in relation to learner engagement down 16% to 44% in 2020. It is interesting that while engagement decreased, participation in discussions either online or face to face increased marginally from 59% in 2019 to 60% in 2020. Teaching quality rating was seen to decline to a record low at 78%. The unpreparedness of teachers, students and institutions to pivot to online learning is apparently well documented in literature. In the few cross country studies of learning and teaching online as a result of COVID clearly show predominantly commonalities the experience and response of students, teachers and institutions to online learning during the pandemic. The dominating themes are around student, teacher and institutional readiness, the socio-emotional toll of rapid shift to online learning, and the exacerbation of the impact of the digital divide.

2.4 Research *problem*

Nowadays, the COVID 19 pandemic has had a major impact on many aspects of daily life. The education sector is considered to be one of the main aspects affected by this pandemic, which has forced all the world's educational institutions into a paradigm shift in the education system from face-to-face to online learning in the context of the pandemic. Implementing online learning effectively can be considered one of the 'wicked problems' in education. Institutions of higher educations have been delving into online learning since the advent of the internet in the late 1990's. The promise that online learning and new technologies would transform education remains, with a few exceptions, largely unrealized. The forced and rapid shift to online learning as a consequence of COVID-19 is likely to amplify the challenges and opportunities of online learning and perhaps crystalize new awareness. Hence, it is important to explore the success of the implementation of online learning in conventional higher education institutions during COVID-19. As the end-users of online education, insight into the experiences and perceptions of students are important to gaining greater insights into how online learning may be improved. Thus, the current study came to verify of degree of success of the implementation of online learning during a pandemic COVID-19 in higher education institutions in two higher education university, the first is Ajman University at the United Arab Emirates and the second is the Griffith University at Australia during the academic year 2019/2020, via exploring the undergraduate students' perceptions of the application of online learning system at Ajman University and Griffith University as two examples of higher education institutions in the world.

2.5 Research purpose

With the intent of contributing to an understanding of how quality online learning can be implemented, the purpose of this study is to explore undergraduate students' perceptions of the application of the online learning systems at Ajman University in UAE, and Griffith University in Australia during the spread of the Covid-19 Pandemic during the 2019/2020 academic year.

2.6 Research questions

To explore the degree of success of the implementation of online learning during COVID-19 in two higher education universities, Ajman University at the United Arab Emirates and Griffith University at Australia, the researchers raise the following questions for study:

RQ1: What is the level of student satisfaction with the University's readiness, training, and technical support for online learning during the COVID-19 pandemic at Ajman University and Griffith University?
RQ2: What is the level of student satisfaction with the University's teaching and learning process at Ajman University and Griffith University during the COVID-19 pandemic?
RQ3: What are students' attitudes toward the use of online learning at university during the COVID-19 pandemic at Ajman University and Griffith University?
RQ4: What are students' perceptions about development and improvement of Online Learning at Ajman University and Griffith University?
RQ5: Are there any differences in satisfaction with the use of online learning during the spread of the COVID-19 pandemic from the perspectives of students at Ajman University and Griffith University based on gender, disciplines, and computer skills?

2.7 The significance of the research

The significance of the study is rationalized as follows:
This Investigation

– will highlight of students' perception of the implementation of online learning in conventional higher education institutions during the spread of COVID-19 to solutions that higher education institutions have implemented in the countries of the world during spread of COVID-19 pandemic.
– may contribute to providing a clearer picture of the difficulties and challenges that students face during implemented of the online learning approach.
– may contribute further insights to the long-standing problem of implementing quality online learning

3 Method

3.1 Approach of the study

This study conducted by using the descriptive research approach via a quantitative (questionnaire) research method. According to Nassaji [59], the prime purpose of descriptive research is to examine phenomena and their specific features. Thus, a questionnaire and Interview instruments will be used to gather data from a sample of the population.

3.2 Study participants

The current study included 630 students from Ajman University and 675 students from Griffith University, who were randomly selected from different faculties of the two universities during the 2019/2020 academic year. during the COVID-19 pandemic. Tables 1 and 2 shown the Demographic information of Participants and Figures 4 and 5 show the frequency and percentage of participants.

Table 1. Demographic information of participants (Ajman University, UAE)

Study Variables	Variables Levels	Frequency (f)	Percentage (%)
Gender	Female	319	50.63
	Male	311	49.37
	Total	**630**	**100.00**
College	Dentistry	77	12.22
	Pharmacy & Health Sciences	63	10.00
	Engineering and information Technology	88	13.97
	Architecture, Art and design	78	12.38
	Business Administration	84	13.33
	Law	84	13.33
	Mass Communication	54	8.57
	Humanities and Sciences	71	11.27
	Medicine	31	4.92
	Total	**630**	**100.00**
Student academic evaluation (GPA)	2 – less than 2.5	188	29.84
	2.5 – less than 3	244	38.73
	3 – less than 3.5	133	21.11
	3.5–4	65	10.32
	Total	**630**	**100.00**
Computer Skills	Poor	77	12.22
	Moderate	122	19.37
	Good	256	40.63
	Excellent	175	27.78
	Total	**630**	**100.00**

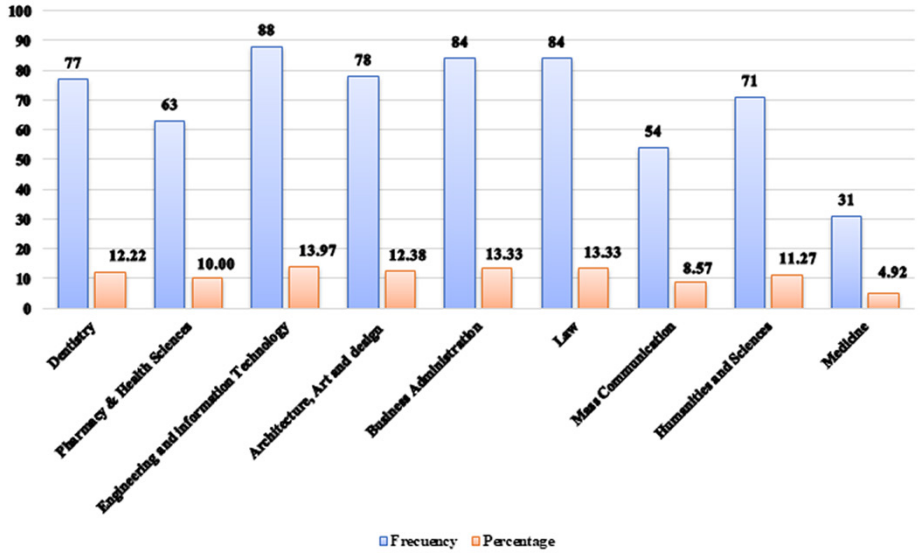

Fig. 4. Participants frequency and percentage (Ajman University, UAE)

Table 2. Demographic information of participants (Griffith University, Australia)

Study Variables	Variables Levels	Frequency (f)	Percentage (%)
Gender	Female	331	49.04
	Male	344	50.96
	Total	**675**	**100.00**
College	School of Medicine	91	13.481
	School of Humanities, Languages, and Social Science	92	13.630
	School of Pharmacy and pharmacology	83	12.296
	School of Information and Communication Technology	97	14.370
	Griffith Law School	82	12.148
	Griffith Business School	81	12.000
	School of Education and Professional Studies	76	11.259
	School of Dentistry and Oral Health	51	7.556
	Architecture, Art, and Design	22	3.259
	Total	**675**	**100.00**

(Continued)

Table 2. Demographic information of participants (Griffith University, Australia) *(Continued)*

Study Variables	Variables Levels	Frequency (f)	Percentage (%)
Student academic evaluation (GPA)	2 – less than 2.5	179	26.52
	2.5 – less than 3	276	40.89
	3 – less than 3.5	148	21.93
	3.5–4	72	10.67
	Total	**675**	**100.00**
Computer Skills	Poor	84	12.44
	Moderate	143	21.19
	Good	267	39.56
	Excellent	181	26.81
	Total	**675**	**100.00**

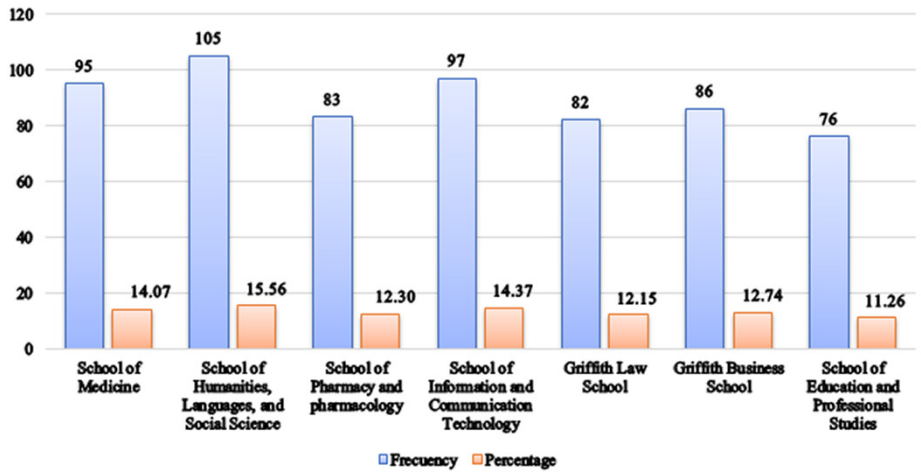

Fig. 5. Participants frequency and percentage (Griffith University, Australia)

3.3 Study instrument

The questionnaire was used to gather data from the participants students. It was sent to them during the second semester of the academic year 2019/2020, during the occurrence of the COVID-19 pandemic. The questionnaire comprised of two sections, the first section concerned students' basic information, and the second part represented the questionnaire elements (n=40) based on the study's objectives.

The validity of the instrument. A group of arbitrators (10 faculty members of UAE universities) with extensive experience in the field of education were asked to express their views on the items of the questionnaire, in terms of the relevance of items for achieving the research aims and the number and comprehensiveness of the

questionnaire items. The educational specialists' comments and suggested modifications were taken into account, and relevant deletions, amendments, and additions were made. As a result, the questionnaire after modification consisted of 27 elements, to achieve the objective of the research.

Reliability of the instrument. To verify the internal consistency of the study tool, Cronbach's α method was used. It was applied to a pilot study involving 35 students from outside the study sample, for which the calculated Cronbach alpha coefficient was 0.776. see Table 3.

Table 3. Cronbach's alpha coefficients for the reliability of questionnaire domains

Domain	No. of Items	Reliability Coefficient of Alpha Cronbach
University Readiness/Training and Technical Support for Online Learning	7	0.857
Students Attitudes Towards the Use of Online Learning	20	0.812
Challenges Facing Students in Online Learning	8	0.729
Development and Improvement of Online Learning	5	0.773
All questionnaire	**45**	**0.776**

3.4 Data analysis measures

In this analysis, a five-dimensional Likert scale is implemented, as shown in Table 4 below.

Table 4. Evaluation of scale data based on the options of scale and score intervals

Description	Scores	Intervals
Very high	5	4.21–5.00
High	4	3.41–4.20
Moderate	3	2.61–3.40
Low	2	1.81–2.60
Very low	1	1.00–1.80

3.5 Statistical analysis of the data

For data analysis, the researchers used the Statistical Package for the Social Sciences (SPSS) to compute the percentage, mean, standard deviation (SD), independent t-test tests, one-way ANOVA, and the Scheffe test.

3.6 Ethical considerations

This study was approved by the Research Ethics Committee/Deanship of Graduate Studies and Research of Ajman University (Reference number: H-F-H-2020-Oct-21) on September 26, 2020.

4 Results

First question: What is the level of student satisfaction with the University's readiness, training, and technical support for online learning during the COVID-19 pandemic at Ajman University and Griffith University?

To answer the first question of this study, mean scores and standard deviations for the students' responses to each of the questionnaire items 1−7 were calculated, as shown in Table 5.

Table 5. Descriptive statistics for the students' responses to the items about the degree of satisfaction with the University's readiness, training, and technical support for online learning during the COVID-19 pandemic at Ajman University and Griffith University

No	Items	Ajman University			Griffith University		
		Mean	SD	Description	Mean	SD	Description
Q1	The university provided me enough information about the online learning policy	2.76	0.95	Moderate	2.73	0.94	Moderate
Q2	The University has provided me with information on how to access and use the online learning system, (e.g. manuals, videos, email, website)	2.76	1.01	Moderate	2.74	1.02	Moderate
Q3	The information on how to access and use the online learning system provided by the university on online learning are simple, clear and sufficient	3.12	0.84	Moderate	3.01	0.90	Moderate
Q4	My university provides the online learning technical support services that I require	3.07	0.86	Moderate	3.07	0.88	Moderate
Q5	My university provides different ways to contact the technical support service	2.77	1.02	Moderate	2.72	1.04	Moderate
Q6	The University provides a speedy response to requests for technical support services	2.71	0.99	Moderate	2.68	1.01	Moderate
Q7	The online learning systems used by our university are clear and easy to use	2.91	0.89	High	2.87	0.91	Moderate
Total mean for the dimension		**2.87**		**Moderate**	**2.83**		**Moderate**
Standard deviation		**0.94**			**0.96**		

The results presented in Table 5 revealed that the arithmetic mean of all questionnaire items (1–7) for the AU was (2.87), with a standard deviation of (0.94), while for the GU it was (2.83), with a standard deviation of (0.96). This finding means that student satisfaction regarding readiness, training, and technical support for online learning during the COVID-19 pandemic at Ajman University and Griffith University came at a Moderate level. Table 5 also shows that the responses of AU students to item 3

"The information on how to access and use the online learning system provided by the university on online learning are simple, clear and sufficient" had the highest average (3.12), while for GU, item 4 "My university provides the online learning technical support services that I require" was the highest average (3.07), and the two items came in at the Moderate average level. Similarly, a 'Moderate' level was also found for Items 4, 7, 5, 2, and 1, of AU with the respective average values of 3.07, 2.91, 2.77, 2.76, and 2.76. while for GU, the Item 3, 7, 2, 1, and 5, with the respective average values of 3.01, 2.87, 2.74, 2.73, and 2.72. Furthermore, it is clear from the students' responses of the two universities (AU and GU) in Table 5, that the lowest average (2.71) for AU, and (2.68) for GU was obtained for Item 6 "The University provides a speedy response to requests for technical support services" with also moderate level.

Second question: What is the level of student satisfaction with the University's teaching and learning process at Ajman University and Griffith University during the COVID-19 pandemic?

To answer the second question of this study, mean scores and standard deviations for the students' responses to each of the questionnaire items 8−27 were calculated, as shown in Table 6.

Table 6. Descriptive statistics for the students' responses to the items about the degree of students' satisfaction with the University's teaching and learning process at Ajman University and Griffith University during the COVID-19 pandemic

No	Items	Ajman University			Griffith University		
		Mean	SD	Description	Mean	SD	Description
Q8	I am confident I can succeed academically when learning online	3.23	1.51	Moderate	3.17	1.54	Moderate
Q9	I have the time management/ organizational skills needed to succeed with online learning	3.23	1.45	Moderate	3.13	1.48	Moderate
Q10	I have the technical skills needed to learn online	3.02	1.45	Moderate	3.02	1.36	Moderate
Q11	I can get help easily, when I need it, from my instructors/tutors when I learn online	3.19	1.40	Moderate	3.11	1.43	Moderate
Q12	Using online tools, I can easily connect with other students, when learning online	3.58	1.41	High	3.55	1.43	High
Q13	I like the flexibility offered by online learning	3.20	1.38	Moderate	3.17	1.39	Moderate
Q14	I prefer to learn online	3.12	1.37	Moderate	3.08	1.37	Moderate
Q15	I prefer to learn on-campus in face-to-face mode.	3.33	1.37	Moderate	3.29	1.38	Moderate
Q16	Learning online is more difficult than learning in face-to-face mode	3.64	1.32	High	3.60	1.34	High

(Continued)

Table 6. Descriptive statistics for the students' responses to the items about the degree of students' satisfaction with the University's teaching and learning process at Ajman University and Griffith University during the COVID-19 pandemic *(Continued)*

No	Items	Ajman University			Griffith University		
		Mean	SD	Description	Mean	SD	Description
Q17	I find getting motivated is more difficult in online learning than in face-to-face modes	3.07	1.35	Moderate	2.94	1.45	Moderate
Q18	I find teamwork more difficult online than in face to face modes	3.55	1.36	High	3.50	1.36	High
Q19	Online education organizes my time in a productive way.	3.53	1.38	High	3.51	1.40	High
Q20	Online learning develops my skills in the use of IT.	3.48	1.31	High	3.42	1.32	High
Q21	I think that online learning takes into consideration individual differences between students	3.77	1.27	High	3.61	2.34	High
Q22	Academic achievement has improved for me by online learning.	3.43	1.34	High	3.41	1.34	High
Q23	Online learning gives me the opportunity to get back to the recorded lecture at any time.	3.47	1.34	High	3.42	1.36	High
Q24	Online learning promotes students' self-confidence	3.42	1.33	High	3.43	1.35	High
Q25	Online learning does not provide me the interaction and discussion I need with the instructor	3.67	1.35	High	3.66	1.37	High
Q26	I feeling that Using online learning is comfortable for me.	3.05	1.37	Moderate	3.26	1.45	Moderate
Q27	Online learning increases my social isolation	3.39	1.23	Moderate	3.74	1.29	High
Total mean for the dimension		**3.37**			**3.35**		**Moderate**
Standard deviation		**1.36**			**1.44**		

The results presented in Table 6 revealed that the arithmetic mean of all questionnaire items (8–27) for the AU was (3.37), with a standard deviation of (1.36), while for the GU it was (3.35), with a standard deviation of (1.44). This finding means that student satisfaction with the university's teaching and learning process at Ajman University and Griffith University during the COVID-19 pandemic is at a Moderate level.

Third question: What are students' attitudes toward the use of online learning at university during the COVID-19 pandemic at Ajman University and Griffith University?

To answer the third question of this study, mean scores and standard deviations for the students' responses to each of the questionnaire items 28−35 were calculated, as shown in Table 7.

Table 7. Descriptive statistics for the students' attitudes toward the use of online learning at university during the COVID-19 pandemic at Ajman University and Griffith University

No	Items	Ajman University			Griffith University		
		Mean	SD	Description	Mean	SD	Description
Q28	I experience Technical problems happening during the online classes (network failure or slowness – audio outage)	3.39	1.30	Moderate	3.40	1.31	Moderate
Q29	Faculty members have weak skills to teach online learning	3.45	1.36	High	3.46	1.37	High
Q30	The weakness of student's skills in using online learning.	4.21	1.01	V. High	4.24	1.00	V. High
Q31	Failure and delay of the services of technical support.	3.05	1.37	Moderate	3.06	1.40	Moderate
Q32	Students find difficulty in dealing with online learning assessments.	3.42	1.33	High	3.72	1.15	High
Q33	Online examination systems are difficult to use	3.67	1.35	High	3.66	1.37	High
Q34	The unsuitability of students' home environment for participation in online learning (limited area /presence of children / ....) is problematic	3.05	1.37	Moderate	3.06	1.40	Moderate
Q35	Online learning reduces the level of direct communication between students and faculty members.	3.33	1.37	Moderate	3.61	1.16	High
Total mean for the dimension		**3.45**			**3.53**		
Standard deviation		**1.31**			**1.27**		

The results presented in Table 7 revealed that the arithmetic mean of all questionnaire items (28–35) for the AU was (3.45), with a standard deviation of (1.31), while for the GU it was (3.53), with a standard deviation of (1.27). This finding means that the students' attitudes toward the use of online learning at university during the COVID-19 pandemic at Ajman University and Griffith University came at a High level. Table 7 also shows that the responses of AU and GU students to item 30 "The weakness of student's skills in using online learning." had the highest average with the respective average values of (4.21), and (4.24) and it came in at the High level. Similarly, a 'High' level was also found for Items 33, 29, and 32, of AU with the respective average values of 3.67, 3.45, and 3.42. while for GU, the Item 32, 33, 35, and 29, with the respective average values of 3.72, 3.66, 3.61, and 3.46. Furthermore, it is clear from the students' responses of the two universities (AU and GU) in Table 7, that the lowest average (3.05) for AU belong to Item 34, and also Item 34 (3.06) and Item 31 (3.06) for GU was obtained with also moderate level.

Fourth question: What are students' perceptions about development and improvement of Online Learning at Ajman University and Griffith University?

To answer the fourth question of this study, mean scores and standard deviations for the students' responses to each of the questionnaire items 36−40 were calculated, as shown in Table 8.

Table 8. Descriptive statistics for the students' responses to the items about the development and improvement of Online Learning at Ajman University and Griffith University

No	Items	Ajman University			Griffith University		
		Mean	SD	Description	Mean	SD	Description
Q36	There needs to be provision for continuous training for different and updated applications for online learning.	3.64	1.32	High	4.16	1.19	High
Q37	The necessity to design Courses Empowered with Videos	3.07	1.35	Moderate	3.02	1.36	Moderate
Q38	There needs to be improvement in providing technical support in quickly and continuously	4.17	1.18	High	3.60	1.34	High
Q39	There needs to be re-organization and adjustment the assignments, quizzes, and exams.	3.53	1.38	High	3.51	1.40	High
Q40	The necessity of Creating interactive content.	3.48	1.31	High	3.42	1.32	High
Total mean for the dimension		**3.58**			**3.54**		
Standard deviation		**1.31**			**1.32**		

The results presented in Table 8 revealed that the arithmetic mean of all questionnaire items (36–40) for the AU was (3.58), with a standard deviation of (1.31), while for the GU it was (3.54), with a standard deviation of (1.32). This finding means that the students' attitudes toward the use of online learning at university during the COVID-19 pandemic at Ajman University and Griffith University came at a High level. Table 8 also shows that the responses of AU students to item 38 "There needs to be improvement in providing technical support in quickly and continuously" was the highest mean (4.17), while for GU, item 36 "There needs to be provision for continuous training for different and updated applications for online learning." The highest average (4.16), the two items came in at the high level. Similarly, a 'High' level was also found for Items 36, 39, and 40, of AU with the respective average values of 3.64, 3.53, and 3.48. while for GU, the Item 38, 39, and 40, with the respective average values of 3.60, 3.51, and 3.42. From the students' responses of the two universities (AU and GU) in Table 8, it is clear that the lowest average (3.07) for AU belongs to Item 37, as well as Item 37 (3.02) for GU with a moderate level.

Fifth question: Are there any differences in satisfaction with the use of online learning during the spread of the COVID-19 pandemic from the perspectives of students at Ajman University and Griffith University based on gender, disciplines, and computer skills? The independent t-test and variance test were conducted to investigate the significance of differences between averages. Scheffe's test for post-hoc comparisons

were also conducted to find the significance of differences between means. The results related to the responses of the study subjects are detailed below according to the study variables.

Table 9. The means and standard deviations of the students' responses according to gender

University	Gender	N	Mean	Std. Deviation	T. Value	Sig (tailed)
AU	Female	311	3.37	1.904	1.904	0.029*
	Male	319	3.28	0.6504		
GU	Female	331	3.37	0.657	1.919	0.028
	Male	344	3.27	0.646		

Note: *Statistically significant at $\alpha \leq 0.05$.

In Table 9, for AU, the calculated t-value of 1.904 was greater than that of the t-table, indicating significant differences in males and females at the 0.029 significance level, which is lower than the required level (0.05) which was in favor of female students. Also, for GU the computed t-value of 1.919 was greater than the t-table, which indicates significant differences in males and females at the significance level of 0.028, which is less than the required level (0.05), and came also in favor of female students.

Table 10. Analysis of variance according to the disciplines variable by One-Way ANOVA test

			Sum of Squares	df	Mean Square	F	Sig (tailed)
AU	disciplines	Between Groups	14.291	8	1.786	4.391	0.001
		Within Groups	252.634	621	0.407		
		Total	266.926	629			
GU	disciplines	Between Groups	16.293	8	2.037	5.007	0.000
		Within Groups	270.917	666	0.407		
		Total	287.210	674			

Note: *Statistically significant at $\alpha \leq 0.05$.

The findings of the one-way ANOVA test of this variable are shown in Table 10. As displayed in Table 10, the results clearly illustrated that there are statistically significant differences in students' perspectives according to the variable of disciplines. For the AU the p-value is 0.001, which is less than the required statistical significance level (0.05). Also, for the GU the p-value is 0.000, which is also less than the required statistical significance level (0.05). In order to determine the reason for the differences between the comparisons presented in Table 10, the LSD test was applied. Results from the LSD test were showed in the Table 11.

Table 11. Results from the Scheffe test were used to determine the causes of differences among students' responses in relation to the disciplines variable of AU and GU

Ajman University				Griffith University			
(I) College	**(J) College**	**Mean Difference (I–J)**	**Sig.**	**(I) College**	**(J) College**	**Mean Difference (I–J)**	**Sig.**
Medicine	Dentistry	0.22674	0.095	School of Medicine	School of Humanities, Languages, and Social Science	0.06841	0.468
	Business Administration	.39952*	0.003		School of Pharmacy and pharmacology	.20515*	0.034
	Engineering & IT	.42459*	0.002		School of Information and Communication Technology	.27124*	0.004
	Mass Communication	0.07578	0.598		Griffith Law School	.27694*	0.004
	Pharmacy & Health Sciences	–0.01893	0.892		Griffith Business School	–0.18252	0.061
	Humanities & Sciences	0.24916	0.070		School of Education and Professional Studies	0.13518	0.173
	Law	.27988*	0.037		School of Dentistry and Oral Health	0.08164	0.465
	Architecture, Art, and Design	.38995*	0.004		Architecture, Art, and Design	–0.22932	0.131
Dentistry	Medicine	–0.22674	0.095	School of Humanities, Languages, and Social Science	School of Medicine	–0.06841	0.468
	Business Administration	0.17278	0.086		School of Pharmacy and pharmacology	0.13675	0.157
	Engineering & IT	.19785*	0.047		School of Information and Communication Technology	.20284*	0.029
	Mass Communication	–0.15096	0.183		Griffith Law School	.20854*	0.032
	Pharmacy & Health Sciences	–.24567*	0.024		Griffith Business School	–.25093*	0.010
	Humanities & Sciences	0.02242	0.831		School of Education and Professional Studies	0.06678	0.500
	Law	0.05314	0.598		School of Dentistry and Oral Health	0.01324	0.905
	Architecture, Art, and Design	0.16321	0.112		Architecture, Art, and Design	–.29773*	0.050

(Continued)

Table 11. Results from the Scheffe test were used to determine the causes of differences among students' responses in relation to the disciplines variable of AU and GU *(Continued)*

Ajman University				Griffith University			
(I) College	**(J) College**	**Mean Difference (I–J)**	**Sig.**	**(I) College**	**(J) College**	**Mean Difference (I–J)**	**Sig.**
Business Administration	Medicine	–.39952*	0.003	School of Pharmacy and pharmacology	School of Medicine	–.20515*	0.034
	Dentistry	–0.17278	0.086		School of Humanities, Languages, and Social Science	–0.13675	0.157
	Engineering & IT	0.02507	0.797		School of Information and Communication Technology	0.06609	0.489
	Mass Communication	–.32374*	0.004		Griffith Law School	0.07179	0.470
	Pharmacy & Health Sciences	–.41845*	0.000		Griffith Business School	–.38767*	0.000
	Humanities & Sciences	–0.15036	0.144		School of Education and Professional Studies	–0.06997	0.490
	Law	–0.11964	0.225		School of Dentistry and Oral Health	–0.12351	0.277
	Architecture, Art, and Design	–0.00957	0.924		Architecture, Art, and Design	–.43447*	0.005
Engineering & IT	Medicine	–.42459*	0.002	School of Information and Communication Technology	School of Medicine	–.27124*	0.004
	Dentistry	–.19785*	0.047		School of Humanities, Languages, and Social Science	–.20284*	0.029
	Business Administration	–0.02507	0.797		School of Pharmacy and pharmacology	–0.06609	0.489
	Mass Communication	–.34881*	0.002		Griffith Law School	0.00570	0.952
	Pharmacy & Health Sciences	–.44352*	0.000		Griffith Business School	–.45376*	0.000
	Humanities & Sciences	–0.17543	0.085		School of Education and Professional Studies	–0.13606	0.164
	Law	–0.14471	0.137		School of Dentistry and Oral Health	–0.18960	0.086
	Architecture, Art, and Design	–0.03464	0.727		Architecture, Art, and Design	–.50056*	0.001

Mass Communication	Medicine	–0.07578	0.598	Griffith Law School	School of Medicine	–.27694*	0.004
	Dentistry	0.15096	0.183		School of Humanities, Languages, and Social Science	–.20854*	0.032
	Business Administration	.32374*	0.004		School of Pharmacy and pharmacology	–0.07179	0.470
	Engineering & IT	.34881*	0.002		School of Information and Communication Technology	–0.00570	0.952
	Pharmacy & Health Sciences	–0.09471	0.424		Griffith Business School	–.45946*	0.000
	Humanities & Sciences	0.17338	0.133		School of education and Professional Studies	–0.14176	0.163
	Law	0.20410	0.067		School of Dentistry and Oral Health	–0.19530	0.086
	Architecture, Art, and Design	.31417*	0.006		Architecture, Art, and Design	–.50626*	0.001
Pharmacy & Health Sciences	Medicine	0.01893	0.892	Griffith Business School	School of Medicine	0.18252	0.061
	Dentistry	.24567*	0.024		School of Humanities, Languages, and Social Science	.25093*	0.010
	Business Administration	.41845*	0.000		School of Pharmacy and pharmacology	.38767*	0.000
	Engineering & IT	.44352*	0.000		School of Information and Communication Technology	.45376*	0.000
	Mass Communication	0.09471	0.424		Griffith Law School	.45946*	0.000
	Humanities & Sciences	.26809*	0.015		School of Education and Professional Studies	.31770*	0.002
	Law	.29881*	0.005		School of Dentistry and Oral Health	.26416*	0.021
	Architecture, Art, and Design	.40888*	0.000		Architecture, Art, and Design	–0.04680	0.760

(Continued)

Table 11. Results from the Scheffe test were used to determine the causes of differences among students' responses in relation to the disciplines variable of AU and GU *(Continued)*

Ajman University				Griffith University			
(I) College	**(J) College**	**Mean Difference (I–J)**	**Sig.**	**(I) College**	**(J) College**	**Mean Difference (I–J)**	**Sig.**
Humanities & Sciences	Medicine	–0.24916	0.070	School of Education and Professional Studies	School of Medicine	–0.13518	0.173
	Dentistry	–0.02242	0.831		School of Humanities, Languages, and Social Science	–0.06678	0.500
	Business Administration	0.15036	0.144		School of Pharmacy and pharmacology	0.06997	0.490
	Engineering & IT	0.17543	0.085		School of Information and Communication Technology	0.13606	0.164
	Mass Communication	–0.17338	0.133		Griffith Law School	0.14176	0.163
	Pharmacy & Health Sciences	–.26809*	0.015		Griffith Business School	–.31770*	0.002
	Law	0.03072	0.765		School of Dentistry and Oral Health	–0.05354	0.643
	Architecture, Art, and Design	0.14079	0.179		Architecture, Art, and Design	–.36450*	0.019
Law	Medicine	–.27988*	0.037	School of Dentistry and Oral Health	School of Medicine	–0.08164	0.465
	Dentistry	–0.05314	0.598		School of Humanities, Languages, and Social Science	–0.01324	0.905
	Business Administration	0.11964	0.225		School of Pharmacy and pharmacology	0.12351	0.277
	Engineering & IT	0.14471	0.137		School of Information and Communication Technology	0.18960	0.086
	Mass Communication	–0.20410	0.067		Griffith Law School	0.19530	0.086
	Pharmacy & Health Sciences	–.29881*	0.005		Griffith Business School	–.26416*	0.021
	Humanities & Sciences	–0.03072	0.765		School of Education and Professional Studies	0.05354	0.643
	Architecture, Art, and Design	0.11007	0.273		Architecture, Art, and Design	–0.31096	0.056

The results shown in Table 11 indicate that the source of the differences in the students' the perspective of students of Ajman University, the differences were related to the disciplines variable in favor of the Pharmacy & Health Sciences discipline. While from the perspective of students of Griffith University, the differences were related to the disciplines variable in favor of the Architecture, Art, and Design discipline.

Student academic evaluation (GPA). The One-Way ANOVA test results for students' responses related to the Student academic evaluation (GPA) variable are shown in Table 12.

Table 12. Analysis of variance according to the Student academic evaluation (GPA) variable by One-Way ANOVA test

			Sum of Squares	**df**	**Mean Square**	**F**	**Sig (tailed)**
AU	Computer skills	Between Groups	2.328	3	0.776	1.836	0.139
		Within Groups	264.598	626	0.423		
		Total	266.926	629			
GU	Computer skills	Between Groups	2.904	3	0.968	2.285	0.078
		Within Groups	284.305	671	0.424		
		Total	287.210	674			

Note: *Statistically significant at $\alpha \leq 0.05$.

The results reported in Table 12 indicate that there are not statistically significant differences in students' perspectives according to the variable GPA, for both Universities AU and GU.

5 Discussion

The primary purpose of the present study was to gain insights into the level of success of the implementations of online learning during the COVID-19 pandemic in two institutions, Ajman University in the United Arab Emirates, and Griffith University in Australia. The surveyed students' at Ajman University and Griffith University acknowledged positive aspects of online learning amid the disruption of COVID-19. The challenges of online learning are also apparent from student responses to the survey items. Interestingly, means of the students' responses to most survey items were comparable across AU and GU, pointing to similarities in students' perceptions and experiences of online learning across both universities – likely a reflection of the similar manner in which both Universities were forced to plunge, with little time for preparation, into online learning. When other studies of the online learning experiences of university students during the pandemic are examined, it becomes apparent that despite institutional and cultural differences across international borders, there are commonalities in student perceptions and experiences of online learning during COVID-19. The results of the present study show that students hold an overall positive view of online learning. The positive student response of university students to online learning during the pandemic

is documented in other studies such as [60], Responses to the survey in the present study indicate student awareness and experiences of some shortcomings in technical preparedness of institutions, preparedness of students themselves and the capabilities of staff to teach online. The lowest means in the descriptive statistics related to university readiness, training and technical support are indicative of students' moderate disagreement that the university provided needed technical information and instructions on how to use and access online learning, timely technical support, and adequate mechanisms for contacting support services. Technical preparedness of institution, faculty and students is identified in literature as an important factor to the success of online learning [60]. In the descriptive statistics of the survey items relating to student attitudes towards online learning there is further evidence of the manifestation of technical challenges of online learning – students agreed that they experienced technical problems alongside failure and delay of technical support services. It is clear that technical preparedness (technical support, information, quality of service, training) is an important element of the online learning experience given that students highly agreed that the provision of continuous training and updated applications for online learning are necessary improvements. More so, students highly agreed on the necessity of providing continuous and timely technical support to support their online learning. For most universities, prior to the Pandemic, the trajectory to online learning was characterized by incremental change, and sometimes fragmented adoption as they sought to shift technology rich education for social, economic and pedagogical reasons. In the context of having to unexpectedly respond the circumstance of the Pandemic, the technical preparedness of universities for supporting online learning on mass was put to the test. The need for better technical infrastructures and timely technical support is brought to the fore in other studies of student experiences of online learning during COVI-19 [60, 61]. The preparedness of institutions aside, it is also apparent from the study results that students may have felt themselves to not be as well prepared for online learning as they needed to be/ or could have been for online learning. They very highly agreed on the importance of the weakness of students' skills in using online learning. This finding reinforces that online learning differs substantially from face to face learning and students require additional skillsets and capabilities to engage successfully in online learning. The students surveyed in both universities only moderately agreed that they had the necessary time management, technical and organizational skills and confidence to succeed – a finding supported by other studies of student perceptions of online learning during COVID-19 [62]–[67]. Flexibility is an oftentimes stated advantage of online learning. Surveyed students responded positively to the flexibility and more 'individualized' and self-directed capability of online learning, they also acknowledged the challenges, highly agreeing that motivation, teamwork, connection with others and especially assessment are difficult in the online environment.

6 Conclusion

The COVID-19 was unexpected and disrupted higher education globally. It provided a unique opportunity to study online learning across international borders as universities around the world found themselves in very much 'the same situation'. There's little

doubt that the pandemic has not only accelerated the move online learning but amplified the under-developed state of technology rich education and online learning. If we are to truly realize the 'transformation of education' that some authors [68–70] claim as the result of the impact of COVID-19 on education, then we are called to investigate, analyze and learn from the experiences of online learning of institutions on an international stage [70–78]. With this in mind, the current study was undertaken and the survey was constructed to covering a comprehensive range of aspects of the student experience of online learning during the pandemic across two higher education institutions Ajman University in the UAE and Griffith University in Australia, the study enriches our understanding of what is important to students in online learning and the results provide some foundation for formulating some recommendations for practice and future research. The study has highlighted the comparable experiences of students in universities across two countries and serves to highlight the broader issues and challenges that universities, regardless of location, are likely to face on the stage of online learning. To help progress quality online education, some recommendations and considerations arising from the present study are given below in the hope that they will trigger further discussion and analysis towards advancing high quality online learning.

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