# HOW DID ONLINE LEARNING IMPACT THE ACADEMIC PERFORMANCE OF GRADUATE STUDENTS AMID THE COVID-19 PANDEMIC? A CASE STUDY OF THE UNITED ARAB EMIRATES

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Abstract

Covid-19 has changed the landscape of education forever. Online education has become the new normal for many graduate students with the pandemic outbreak. While online education is more cost-effective, there is little research on how online education has impacted graduate students academically. This study aimed to assess graduate students' academic experiences who took all their courses online. 240 master's and Ph.D. students participated in a questionnaire survey and shared their thoughts on the significance of online education in their academic learning and achievement. The findings revealed that the students perceived strong positive perceptions of engagement, ease of communication, academic learning, and academic achievement due to online education. Exploratory Factor Analysis extracted four factors contributing more than 60% variation to online education's overall impact on students. To conclude, online learning provides greater flexibility and convenience, allowing students to study at their own pace and in their own time. Additionally, online learning can be tailored to the individual needs of each student, providing a more personalized learning experience.

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1. Introduction

Graduate students have long been an increasingly important segment of the university population and face many challenges when completing their degrees. As a result, universities have responded by developing innovative ways to improve their academic experiences (Bukenova, Burrola, Contrata, Di Maria, Hartmann & O'Brien, 2020; Choudaha, 2019). Online learning has evolved from an experimental novelty to an almost ubiquitous educational tool. Online courses seek to combine social networking components with professional content as online resources grow daily (Hiltz & Turoff, 2005; Lowenthal, 2010). Such approaches rely on the active participation of many learners, regardless of educational goals, abilities, previous backgrounds, and experiences (Littlejohn & Hood, 2018; McAuley, Stewart, Siemens & Cormier, 2010). The emergence of online education has provided a unique opportunity for flexible access to learning. Many countries began to offer online and distance (ODL) programs to provide better access to people who could not afford regular education or have extra responsibilities (Gaba & Li, 2015; Ghosh, 2012; Zuhairi, Raymundo & Mir, 2020). More than 77% of university institutions today offer online courses (Parker, Lenhart & Moore, 2011). It is estimated that enrollment in online learning is growing ten times faster than traditional enrollment, and 31% of all college students now take at least one online course (Allen & Seaman, 2010). Many countries worldwide have shifted to online and distance education since the outbreak of the COVID-19 pandemic. The United Arab Emirates also implemented distance learning in all UAE public and private schools and higher education institutions as a precaution to protect students from Covid -19 (Ali, 2021; Masoud & Bohra, 2020).

Online education offers several advantages over traditional education, including flexibility, convenience, control over the pace of learning, and affordability. This mode of education provides greater control over the learning environment. Students can learn quietly without distractions or in a more traditional classroom setting (Dumford & Miller, 2018; Mukhtar, Javed, Arooj & Sethi, 2020). Online learning can improve motivation and satisfaction and provide a more individualized and tailored educational experience (Al-Rahmi, Alias, Othman, Alzahrani, Alfarraj, Saged et al., 2018; Chow & Shi, 2014). Additionally, online education influences academic experiences differently and can help improve graduate students' academic achievements (Jawad & Shalash, 2020; Sarikhani, Salari & Mansouri, 2016). With this mode of education, students' learning abilities, communication skills, critical thinking, and problem-solving abilities have been improved (Lockman & Schirmer, 2020; Pei & Wu, 2019). Also, students' engagement in their learning and course participation increases as they are expected to work more collaboratively with classmates (Duderstadt, Atkins, Van Houweling, & Van Houweling, 2002; Thurmond & Wambach, 2004). Students are engaged in activities to connect with peers and instructors and create a dynamic sense of community, enabling them to feel a sense of belonging and increase their overall well-being (Abrami, Bernard, Bures, Borokhovski & Tamim, 2012; Deng & Yang, 2021). Students also develop an enhanced sense of accountability for their learning and take responsibility for their progress. They can set their own pace and plan their study schedule around their family, work, social and other commitments (Beth, Jordan, Schallert, Reed & Kim, 2015; Yuhanna, Alexander & Kachik, 2020).

Despite the potential benefits, it is worth mentioning that online education programs require more learning independence than traditional forms (Sadeghi, 2019). Though there has been an enormous increase in the number of students enrolled in online courses, many educators are still not familiar with the pedagogy for online learning. This lack of preparedness has contributed to poor learning outcomes and the overall quality of academic experiences in online courses (Duffy & Kirkley, 2003; Garrison, 2009). Moreover, graduate students must juggle many responsibilities, including work, family, and school. Trying to attend physical classes on top of that can be challenging. The previous studies focused on exploring graduate students' perceptions of the effectiveness of traditional classroom education. But no studies in UAE were performed to assess the academic excellence of graduate students after COVID-19 impacted the country's education system. Online learning can be an excellent solution for graduate students because it allows them to attend classes from anywhere and anytime. Our knowledge of how online learning affects students learning and teaching practices has improved. But how online education can impact and enhance graduate students' academic experiences is still missing. Therefore, this study was designed to

address that research gap by investigating the academic incidents of postgraduate students who take online courses. The primary objectives of this study were to assess how online education impacted the academic performance of graduate students amid the Covid-19 pandemic in the United Arab Emirates. The main themes for evaluating students' academic performance include engagement, ease of communication, learning experiences, and academic achievements.

2. Literature Review

2.1. Role of Technology in Education During Covid-19

The beginning of the coronavirus across the globe caused by SARS-CoV has led to profound changes in all aspects of human life, such as healthcare facilities, transportation, traveling, business opportunities, and social structure (Kastanakis & Voyer, 2014; Mamun & Ullah, 2020; Rashid & Yadav, 2020). Thus, educational institutes do not have immunity to the COVID-19 pandemic resulting in the closure of schools, colleges, and universities in the UAE (Bayham & Fenichel, 2020). The coronavirus forced educational institutes to switch from face-to-face learning to online education and teaching students, which can only be possible with the help of suitable technology practices (Bao, 2020; Ebrahim, Ahmed, Gozzer, Schlagenhauf & Memish, 2020). Different institutes use different techniques and strategies of technology, such as video conferencing, audio-recorded lectures, direct online lectures, and sharing online material (Favale, Soro, Trevisan, Drago & Mellia, 2020). Technology has played an essential role in the education experience during the last few decades (Almahasees & Jaccomard, 2020; Almusharraf & Khahro, 2020) because technology helps change the methods, techniques, and strategies of educating students. Technology makes large online classes flexible and suits the needs of students (Siripongdee, Pimdee & Tuntiwongwanich, 2020).

2.2. Challenges for Graduate Students During Online Education

Online education quality is not good compared to direct learning because many students argued that online education is insufficient to adequately address lecture students (Thai, De Wever & Valcke, 2020; Widodo, Nursaptini, Novitasari, Sutisna & Umar, 2020). Adequate resources, lack of internet facilities, poor internet, and lack of confidence and self-discipline are the significant challenges faced during online education (Almaiah, Al-Khasawneh & Althunibat, 2020; Dhawan, 2020; Mukhtar et al., 2020). Lack of guidelines, infrastructure, facilities, and delivery of online lectures to students are the main challenges faced during online education by students in higher education in UAE (Noori, Orfan & Nawi, 2021; Salih & Taniwall, 2020). Many students do not have access to the material shared by their instructors, and the use of technology for more time impacts their physiological and mental disorders (Goldstein, Popescu & Hannah-Jones, 2020; Hamilton, Grant, Kaufman, Diliberti, Schwartz, Hunter et al., 2020). Even teachers face challenges mentoring students during online lectures. The key challenges include cultural differences, technical difficulties, time management, difficulty writing and receiving written feedback, and life events interrupting study. Additionally, faculty members often feel limited in the ways they can mentor online graduate students, indicating the need for professional development and instructional support at the institutional level (Kumar & Johnson, 2017; Pollard & Kumar, 2021).

2.3. Students' Perception of Online Learning

The outbreak of Covid-19 disturbed education in all contexts and educational settings required for the possible provision of teachers and students (Neuwirth, Jović, S., & Mukherji, 2021; Toquero, 2020). When the COVID-19 pandemic struck, many students scrambled to adapt to a new learning environment. But generally, students had a favorable perception of online learning during the COVID-19 pandemic and were willing to adopt this type of learning (Akuratiya & Meddage, 2020). Many authors emphasized the positive effects of online education on students' learning ability, as online education provides students with more opportunities to get help from their teachers. (Gonzalez, de la Rubia, Hincz, Comas-Lopez, Subirats, Fort et al., 2020; Gopal, Singh & Aggarwal, 2021). Students showed satisfaction with the management system of assessing and evaluating the grades and design of the LMS, having self-regulated learning that is creative and autonomous (Alam, 2022; Sáiz-Manzanares, Casanova, Lencastre & Almeida, 2022). In a broader scope,

students perceived that blended learning provides learners with more engaging and interactive content and opportunities for learners to have more control over their learning (Asghar, Afzaal, Iqbal & Sadia, 2022; Yam & Rossini, 2011). However, some students also faced difficulty understanding the material and assignments and preferred having an offline class over an online one. Issues such as low I.T. literacy, limited visualization, the absence of direct classroom communication, and poor internet connection lead to unsuccessful teaching and learning (Agung, Surtikanti & Quinones, 2020; Thandevaraj, Gani & Nasir, 2021).

3. Methods

3.1. Participants

A cross-sectional study involving 400 graduate students at a higher education institution in the United Arab Emirates (UAE) was conducted in the spring of 2021 to examine their academic experiences with online education and to evaluate its impact on their academic achievement. Of 400 invitations, 240 students ultimately finished the questionnaire survey (Duderstadt et al., 2002). The participants' demographic information showed that 54 % of students were between 20 and 30, 42 % were between 31 and 45, and the remaining 6 % were more than 45. The male-to-female ratio was 38:62. Most of the students in the sample were pursuing a master's degree (82.9 %), while the others were Ph.D. scholars (17.1 %).

3.2. Construction of the Questionnaire

Main theme	Code	Questions
Students' engagement	E1	I can show off my abilities by engaging in online learning
	E2	I feel more confident while engaging myself during the live class
	E3	When somebody else is sharing their ideas in the live class, I can add my thoughts freely
	E4	I am often involved in discussions during the live class
	E5	I always stay connected to my field of study
	E6	I can interact with other students while engaged in online and distance learning.
	E7	I can get direct support from instructors during online lectures
Ease of communication	C1	I can effectively communicate my ideas in the online class
	C2	I always get quick help whenever needed
	C3	Turning off videos make comfortable during online lecture
	C4	There is no restriction to getting clarification in online and distance learning courses
	C5	Class timings are suitable for my work schedule
	C6	Interactions with other students in the class are open
	C7	It is easy to collaborate with other students for group work
	C8	I feel it is very easy to communicate with instructors outside of class
	C9	My communications skills have been improved through online learning
Students learning experience	L1	I can get information about the course requirements easily
	L2	I receive timely feedback from my instructors on all the assigned work
	L3	The online teaching application used in the university is user friendly
	L4	It is easy to meet my instructor during office hours
	L5	I find myself highly motivated during online learning
	L6	It helps me set goals to complete on a daily and weekly basis
	L7	I feel distracted at home during a live lecture
	L8	I have plenty of time to complete assignments
	L9	I have access to many valuable resources for online learning
	L10	My learning schedule is very flexible
Students' academic achievements	A1	I can think more creatively after taking online courses
	A2	I can now solve academic problems more efficiently
	A3	I got a better sense of responsibility

Main theme	Code	Questions
	A4	I have been able to maintain good grades and GPA in my program.
	A5	My communication skills have been improved

Table 1. The Questionnaire survey developed for the assessment of students'
experiences with online learning

A questionnaire was developed through an in-depth and comprehensive review of the literature (Al Rawashdeh, Mohammed, Al Arab, Alara & Al Rawashdeh, 2021; Balcony, EmadEldeen, Farghaly, El-Bassiouny & Mohamed, 2020; Gopal et al., 2021, Lapitan Jr, Tiangco, Sumalinog, Sabarillo & Diaz, 2021), and the researchers' personal experiences in online learning. The scale comprised two sections (Table 1). The first section consisted of the demographics of graduate students, whereas the second section contained 31 items to collect information about students' academic progress, separated into four sub-sections, i.e., students' engagement, ease of communication, learning experience, and academic accomplishment. The students' responses were coded on a 4-point Likert scale: strongly disagree (1), disagree (2), agree (3), and strongly agree (4). The mid-point was omitted to encourage participants to give their "true opinion" rather than neutral responses about the statements (Duffy & Kirkley, 2003).

3.3. Data Collection Procedure

First, ethical approval to conduct this survey was obtained from the United Arab Emirates University's Social Sciences Research Ethics Committee. The survey was conducted between February to March of 2021 in collaboration with the Office of Graduate Student Studies. Afterward, participants were approached via email containing detailed instructions on the questionnaire survey and a consent form to participate in the study. Participants were given enough flexibility to continue or withdraw at the beginning and end of each section of the online questionnaire. Regarding confidentiality and anonymity, no participant was asked to provide their names, student I.D. numbers, or email addresses.

3.4. Statistical Analysis

The researchers used IBM SPSS (version 25) (IBM Corp, 2017) to ensure the validity and reliability of the data collected from the study sample. First, Students' involvement, communication, online learning experience, and overall academic achievement were tested for normality during online and distance learning using the Shapiro-Wilk test (Jurečková & Picek, 2007) that confirmed the heterogeneity of the data (p>0.05) (Table 2). The reliability of the latent constructs was evaluated using Cronbach's alpha test. Cronbach's alpha scores of 0.851 for engagement, 0.837 for communication, 0.802 for the learning experience, and 0.812 for overall academic achievement in internal reliability were observed (Table 2). The data were compared for descriptive statistics between two student groups based on their academic status (master and Ph.D.) by Mann-Whitney U test following non-parametric effect size.

$$r = Z/\sqrt{n}$$

Where r=effect size coefficient, n= number of students enrolled in master and Ph.D. programs.

The effect size represents an approximation of the difference between the mean scores of the two groups, which means the higher the effect size, the higher the difference between the two means. The value of Cohan's coefficient ranges between -1 to +1 (Cohen, 2013).

The variables were subjected to Exploratory Factor Analysis (EFA), which extracted latent factors that significantly affected variations among the tested variables (Stapleton, 1997). The KMO measure of sampling accuracy and Bartlett's sphericity test were used to determine the appropriateness for factor extraction (Aldhaheri, Xia & Nepal, 2022). KMO measures the sampling accuracy by looking at the correlation between the observed and the expected values. A high KMO value means the

sampling is accurate, while a low KMO value means the sampling is not accurate. Bartlett's test of sphericity is used to assess the degree of correlation between variables. In the present analysis, KMO observed a higher value of 0.864 compared to the acceptable limit of 0.60, whereas Barlett's test of sphericity confirmed the authenticity of the data for factor extraction ($\chi2$=6226.501, p<0.01). In this study, Principal Axis Factoring (PAF) was used as the extraction method to extract the factors most important in explaining the variation in the data, followed by varimax rotation (De Winter & Dodou, 2012).

Variable	W	Skewness	Kurtosis	DF	p-value	Cronbach's alpha
Students' engagement	0.778	-2.049	4.554	240	0.000	0.851
Ease of communication	0.833	-1.731	3.348	240	0.000	0.837
Students learning experience	0.775	-1.680	2.094	240	0.000	0.802
Students' academic achievements	0.816	-1.919	5.243	240	0.000	0.812

Where W=Shapiro-Wilk test statistic

Table 2. Shapiro-Wilk test of normality and reliability analysis

4. Results

4.1. Perceptions of Students on Graduate Students' Engagement in Online and Distance Learning

The descriptive statistics revealed that for students' engagement in online and distance learning, most responses had a mean value of more than 3, higher than the acceptable median value of 2.5 on a 4-point Likert Scale. The highest response was received on "active involvement of graduate students in discussion during the live class," with a mean score of 3.4667, followed by "sharing ideas in the live class," with a mean value of 3.4375. The least significant area of students' engagement in distance learning was interaction with peers, but well above the acceptable median. Mann Whitney U test was employed to compare the means of two student groups based on their academic status, "master and Ph. D." The findings revealed that statistically non-significant differences were observed for all the tested questions concerning students' engagement in online and distance learning except "students' interaction with other students," which recorded p<0.05 with a small Cohan's effect (0.1285). Small effect sizes were observed for all the tested engagement questions (Table 3).

Question	Overall Mean	Master	PhD	Mann-Whitney	Z	p-value	Cohan's effect size
E1	3.3375	3.2814	3.6053	3169.000	-2.537	0.011	-0.1638
E2	3.3708	3.3266	3.5789	3446.500	-1.761	0.078	-0.1137
E3	3.4375	3.4070	3.4238	3774.500	-0.857	0.392	-0.0553
E4	3.4667	3.4422	3.6780	3755.500	-0.914	0.361	-0.0590
E5	3.3792	3.3467	3.5526	3746.000	-0.927	0.354	-0.0598
E6	3.3042	3.2513	3.5559	3360.000	-1.99	0.047	-0.1285
E7	3.3125	3.2915	3.4211	3983.000	-0.269	0.788	-0.0174

Table 3. Student engagement in online and distance learning as measured by the Mann-Whitney U test

4.2. Perceptions of Graduate Students on the Ease of Communication in Online and Distant Learning

There was no significant difference in students' ability to communicate in an online and distance learning environment during the COVID-19 pandemic, as measured by the Mann-Whitney U test, as shown in Table 4. The COVID-19 pandemic showed mixed feelings about how easy it was for graduate students to communicate with faculty and other students via online and distance learning. "It's easy to communicate with my instructor" got the highest overall score (3.4375), also by master and Ph.D. students (3.4372 and 3.3947, respectively) (Table 4). The least preferred communication method was C9 stating, "My communications skills have been improved through online learning," but well above the median score.

The group comparison by the Mann-Whitney U test showed statistically non-significant differences for both groups. The students' opinion "it is easy to communicate with other students in online sessions" (z = 1.141, p = 0.887) was considered neutral (z = 1.07). Regarding "easy collaboration with other students for group work," their response was also neutral (z = 1.928, p = 0.054). According to the graduate students, turning off their videos helps them feel more comfortable sharing their thoughts and ideas in class, and they also believe that class times are convenient for their work schedules. The Cohan's effect size was small for all the criteria to assess the ease of communication (r=0.1 to 0.3) (Table 4).

Question	Overall Mean	Master	PhD	Mann-Whitney	Z	p-value	Cohan's effect size
C1	3.2500	3.2563	3.2632	4067.000	-0.034	0.973	-0.0022
C2	3.2375	3.2261	3.2895	3803.500	-0.743	0.458	-0.0480
C3	3.4375	3.4372	3.3947	3939.500	-0.394	0.694	-0.0254
C4	3.2208	3.2161	3.4395	3937.000	-0.384	0.701	-0.0248
C5	3.2000	3.1960	3.1579	3993.500	-0.231	0.817	-0.0149
C6	3.3333	3.3568	3.2512	3779.500	-0.818	0.414	-0.0528
C7	3.1708	3.2111	2.9474	3355.000	-1.928	0.054	-0.1245
C8	3.2583	3.2613	3.2368	4027.000	-0.141	0.887	-0.0091
C9	3.1833	3.0344	3.2935	3526.500	-1.537	0.124	-0.0992

Table 4. Students' ease of communication in online and distance learning
as measured by the Mann-Whitney U test

4.3. Graduate Students' Learning Experience in Online and Distance Learning

The students' perceptions of the learning experiences on online and distance learning have been demonstrated in Table 5. The findings show that all the variables in this category perceived a mean rank of more than 3, higher than the acceptable median rank. "I find myself highly motivated during online learning" and "I have access to many useful resources for online learning" observed the highest means (3.3083). Concerning the comparison by the Mann-Whitney U test for master and Ph.D. students' perception of academic learning during online and distance learning, all the tested variables illustrated statistically non-significant differences except "online teaching application used in the university is user friendly." The Cohan's effect size was also small for the tested variables under this category (r=0.1 to 0.3).

Question	Overall Mean	Master	PhD	Mann-Whitney	Z	p-value	Cohan's effect size
L1	3.2250	3.2462	3.1579	3723.500	-0.955	0.340	-0.0616
L2	3.2375	3.2513	3.3563	3816.000	-0.711	0.477	-0.0459
L3	3.2583	3.2613	3.2895	4062.500	-0.046	0.963	-0.0030
L4	3.2333	3.2362	3.2105	4040.500	-0.105	0.917	-0.0068
L5	3.3083	3.3266	3.3158	3814.500	-0.721	0.471	-0.0465
L6	3.2083	3.1910	3.4316	3734.500	-0.924	0.356	-0.0596
L7	3.2125	3.1859	3.3295	3540.000	-1.450	0.147	-0.0936
L8	3.2500	3.4310	3.0263	3481.500	-1.611	0.107	-0.1040
L9	3.3083	3.2915	3.4474	3656.500	-1.151	0.250	-0.0743
L10	3.2625	3.3065	3.1316	3437.500	-1.729	0.084	-0.1116

Table 5. Students' learning experience in online and distance learning
as measured by the Mann-Whitney U test

4.4. The Academic Achievement of Graduate Students in Online and Distance Learning Environments

The results revealed that graduate students had an overwhelmingly positive perception of their online and distance learning achievements during the COVID-19 pandemic. The results stated that "increased my cumulative GPA" got the maximum mean score, followed by a "better sense of responsibility." The Mann-Whitney U test demonstrated significant statistical differences for A1: "I can think more creatively after taking online courses," and A5, "my communication skills have been improved." The Cohan's effect size was small (r in the range of 0.1 to 0.3) even for students' perception of the impact of online learning on academic achievements (Table 6).

Question	Overall Mean	Master	PhD	Mann-Whitney	Z	p-value	Cohan's effect size
A1	3.2917	3.2261	3.6053	2943.500	-3.191	0.001	-0.2060
A2	3.2167	3.2312	3.2579	3428.000	-1.889	0.059	-0.1219
A3	3.3875	3.3467	3.4589	3528.500	-1.535	0.125	-0.0991
A4	3.4333	3.4020	3.5789	3591.500	-1.371	0.170	-0.0885
A5	3.1625	3.1859	3.0526	3219.000	-2.564	0.010	-0.1655

Table 6. Students' academic achievements in online and distance learning as measured by the Mann-Whitney U test

4.5. Exploratory Factor Analysis

Factor 1: Students' learning experience	Factor loading	Cumulative Variance
L6	0.866	22.320
L10	0.657	
L1	0.545	
L4	0.535	
L5	0.501	
L9	0.472	
L2	0.471	
L3	0.470	
L8	0.420	
Factor 2: Ease of communication	**Factor loading**	**Cumulative Variance**
C7	0.718	17.960
C1	0.671	
C4	0.581	
C8	0.574	
C3	0.55	
C6	0.536	
C5	0.52	
C9	0.445	
Factor 3: Students' engagement	**Factor loading**	**Cumulative Variance**
E5	0.907	12.132
E6	0.874	
E7	0.817	
E4	0.756	
E2	0.669	
E3	0.622	
E1	0.507	

Factor 4: Students' academic achievements	Factor loading	Cumulative Variance
A2	0.887	8.958
A3	0.841	
A5	0.801	
A4	0.739	
A1	0.698	

Table 7. Exploratory factor analysis (EFA) of the variables to assess students' experiences with online and distance learning

Given the current COVID-19 pandemic, many universities have switched to online instruction. The current research was conducted to assess the students' academic achievements due to this change. Exploratory factor analysis (EFA) was performed to evaluate the contribution of different variables to the overall performance of the graduate students. Principal axis factoring (PAF) was used to extract the factors, followed by varimax rotation. The findings of EFA revealed that the highest contributing factor was students' learning experience contributing 22.320 % to the overall academic achievement of graduate students during the COVID-19 pandemic. The second highest contributing factor to the academic performance of graduate students was the ease of communication, with a covariance of 17.960 %. The students' engagement in online learning and academic achievements contributed 12.132 and 8.958 %, respectively, to their overall performance during the COVID-19 pandemic due to online and distance learning (Table 7).

5. Discussion

The current study investigated the impact of online education on graduate student learning from students' perceptions. The results concluded after a comprehensive survey involving 240 participants revealed that online and distance education has impacted students learning in four ways, i.e., engagement, ease of communication, academic learning, and academic achievements. These four areas of impact were highlighted as highly significant by the participants. Graduate students are increasingly using online education to improve their academic achievements. Graduate students believe that online education can help them improve their writing skills, research abilities, and overall understanding of course material (Henao, 2017; Maulidah & Aziz, 2020; Sun & Chen, 2016). In addition to being a potential solution during times of crisis such as Covid-19, online or distance learning can also be a great way to provide educational opportunities to people who live in rural areas (Hu & Kuh, 2001; Simamora, 2020). Moreover, Online education students improve their academic achievement and incentivize students to increase their interest in lessons (Baturay & Yukselturk, 2015; Le, 2022). Students also enjoy the interactive activities displayed through online courses as these activities promote increased participation and stimulate further interest in learning new information (Erdogan, Bayram & Deniz, 2008; Gopal et al., 2021).

These current findings demonstrated that students feel very comfortable engaging themselves in a live class, resulting in confidence buildup in students. The students perceived that they were actively involved with their peers and instructors during online lectures and felt no hesitation in asking questions related to the course. Student engagement is a crucial ingredient of learning, and students' grades are closely connected to their involvement in the learning process. These findings emphasize that students who communicate well with online classmates and instructors are more likely to succeed academically (Appana, 2008; Gray & DiLoreto, 2016). Students more engaged in online and distance learning get better grades, even during the COVID-19 lockdown (Darling-Aduana, Woodyard, Sass & Barry, 2022; Gaba & Li, 2015). Previous researchers have supported the same, finding that the graduate students who actively participated online experienced enhanced teacher-to-student interaction and openly disseminated ideas, skills, and knowledge with their peers (Eom, Wen & Ashill, 2006; Fjelstul, 2006). The success of online and distance learning during the COVID-19 pandemic is attributed to the fact that students are required to be active participants in the learning process, which encourages them to remain engaged during the live lectures (Salas-Pilco, Yang & Zhang, 2022; Spitzer, Gutsfeld, Wirzberger & Moeller, 2021). In addition, online and

distance learning provides opportunities for students to learn at their own pace, allowing them to retain the lectures better (Fjelstul, 2006; Yokoyama, 2019). Students take the lead in learning by positively engaging with their environment (peers, instructors, and online tools) and creating knowledge (Anderson & Rivera-Vargas, 2020; Martin & Bolliger, 2018).

The questionnaire survey yielded positive feelings about how easy it was for graduate students to communicate with faculty and other students via online and distance learning. According to the study's findings, participants had no trouble communicating with the instructors in synchronous sessions. Depending on the circumstances, students may have had the opportunity to speak with professors in person or virtually during class or virtual office hours. A statistically non-significant difference was found in graduate students' perceptions of the ease of online and distance learning communication across their academic status. The literature also supports that online and distance learning communication patterns may allow for greater freedom regarding communication time, mode, and interaction between teachers and students (Appana, 2008; González-Gómez, Jeong & Airado-Rodríguez, 2016). Students with strong communication skills with online and distance learning are more likely to succeed in their studies (Gopal et al., 2021). Students communicate more precisely in an online learning environment with their fellows and teachers than in traditional classroom learning. This has increased social interaction during and outside online classes (Hiltz & Turoff, 2005; Kear, 2010).

The current findings demonstrated positive perceptions of graduate students concerning the impact of online and distance education on their academic learning. The students highlighted that they could set their goals flexibly and were highly motivated to learn during online classes. Students' academic achievements have been observed to get better grades in online learning than in traditional education. Some unique characteristics that students have developed in online and distance learning are improved thinking and enhanced academic problem-solving ability. Also, students developed a better sense of responsibility to take on new tasks. Concerning group comparison based on their academic status, no significant differences were observed in academic learning and achievements among master and Ph.D. students. Similar findings were found in a study that linked students' overall course progression experience and academic performance. The GPA for students with more positive experiences was significantly higher (Ho, Kember & Hong, 2012). Research shows that students with higher GPAs performed better with face-to-face online and distance learning instruction. As a result, students with lower GPAs could not perform well in online classes compared to face-to-face classes (Hachey, Wladis & Conway, 2015; Vella, Turesky & Hebert, 2016). Online learning positively impacts students in terms of motivation, academic achievement, and engagement, especially during pandemic periods. This may be attributed to the advancement in technology in education that continues to improve students' academic performance and promote a better learning experience both in and out of the classroom (Mandasari, 2020).

6. Conclusion

Online education has recently been gaining popularity in improving student academic achievement. This study explored the graduate students' perceptions of online education on improving academic achievements. A total of 240 graduate students from UAE universities participated in the study. The results showed that most participants found online education helpful in enhancing their academic achievements. More importantly, the participants found that interacting with other students and professors through online course forums was the most beneficial aspect of online education. The study found that student engagement is a critical factor in the success of distance learning programs. High levels of student engagement led to better grades and the quality of the learning experience. Institutions that want to improve distance learning programs should focus on increasing student engagement. Effective communication is essential for distance learning programs. Good communication between students and teachers leads to better outcomes in terms of grades and the quality of the learning experience. Additionally, positive experiences are essential for distance learning programs. Students with positive experiences in their distance learning programs are likelier to have better grades and the quality of the

learning experience. Overall, the graduate students' perceptions suggest that online courses can effectively improve one's skills and academic performance.

The findings of this study could help other institutions to design distance learning programs, where efforts to ensure high student engagement, effective communication, and positive experiences could be the foundation of a successful teaching and learning experience. As a result of this research, it is possible to draw conclusions that can be applied to students at other colleges and universities.

While the potential benefits of online education are significant, some potential limitations should also be considered prior conducting further research. The study's duration might not have been sufficient to capture the long-term impact of online education on academic achievement. Future research should consider conducting longitudinal studies to assess the persistence of the observed effects over an extended period. Another potential limitation is that the participants were exclusively from UAE universities, which may limit the generalizability of the findings to other regions or countries with different educational systems and cultural backgrounds. Despite these limitations, the study's findings still offer valuable insights into the positive perceptions of graduate students towards online education and its potential to enhance academic achievements. The study recommends that future research should be focused with larger and more diverse groups, and longer follow-up periods to provide further validation and a more comprehensive understanding of the topic.

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