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Challenges Faced by Undergraduates in the Online Classroom of an English Medium Higher Education Institution in the UAE

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Introduction

In most higher education institutions worldwide, the main focus currently is on online education. During the unprecedented events of the COVID-19 pandemic, many educational institutions had to shift to online teaching (Hysaj & Hamam, 2020). This included the UAE higher education sector where teachers were well-versed in technology with tech-savvy students who use technology daily in different contexts. Previous research has tackled various aspects of the student's online learning experience. This study focuses on the main challenges faced in undergraduates in online classes because developing a thriving online classroom environment that is engaging and dynamic can be essential in maintaining students' enrollment (McKenna, 2018). There is also a need to listen to students' voices and find the root of their problems in order to offer them solutions. Students need guidance to know the best practices of being a virtual student in order to benefit from the online classroom experience.

Literature Review

Previous research has identified nine main broad themes for the difficulties students face in online learning. These are 1) lacking a sense of community (Jaggars, 2014; Law, 2018; Martin & Bolliger, 2018), a feeling of isolation (Law, 2018), reduced interaction (Jaggars, 2014), self-directed learning

(Jaggars, 2014), self-efficacy, self-esteem and preference (Jaggars, 2014), issues with technology skills (Milheim, 2012), technical problems (Jaggars, 2014), suitability of online delivery (Milheim, 2012), and replication of the Face-to-Face Classroom (Milheim, 2012). One of the critical aspects that was considered in the current study is the use of technology and its impact on the students' online interaction. According to Bickle and Rucker (2018): "technology provides students with a more humanizing method of interaction (p.9) ". In addition, Lawrence, et al. (2020) mention that "technology use in English for Academic Purposes (EAP) programs is seen as a strategy to support pedagogical innovation and intensifying growth in post-secondary international student enrolments (p.101)". Another potential area for improvement in online classes is the students' ability to engage with their peers, teachers, and course material (Hamam & Hysaj, 2021). According to Conrad (2017), teachers can improve students' engagement by looking at students' data and noting patterns. On the other hand, students' success in online courses should not only be measured by the attributes mentioned. Other external factors might affect the students' ability to perform within the online classroom's unique environment. In their study, Mandernach, Donnelli, and Dailey-Hebert (2006) described 23 relevant factors affecting students' success in a virtual classroom. These were clustered into six broad themes. Within these themes, four issues emerge as the most predictive of online learner success: time, technology, initiative, and competence. This information can be used to facilitate students' success in online courses.

One of the main challenges of online learning is the sense of isolation. Croft, Dalton, and Grant (2010) addressed this pedagogical challenge by examining the experiences of distance learning students at a UK university, and explored concerns and barriers to collaboration by analyzing students' isolation. They discovered that the physical and temporal separation between students and the teachers and between the students themselves, could lead to feelings of isolation. The experience of E-learning might encounter many obstacles, such as the failure to provide the infrastructure to train the administrative and educational staff. Johnson et al. (2016) addressed another insufficient technology or communication factor: connection restriction. Implementing educational technology is difficult if a school lacks the necessary computers and a fast internet connection. The analysis by Ferri, Grifoni, and Guzzo (2020) shows that technical difficulties are primarily related to the unreliability of internet access and the shortage of required computer components among many students. Teachers and learners' lack of digital knowledge, lack of organized content versus a proliferation of online resources, learners' lack of interactivity and inspiration, and teachers' lack of social and cognitive presence are the primary pedagogical difficulties encountered in online classes. To address these issues, they proposed various options, including creating 5G networks, more compact devices that must be provided, and systematic planning programs to include professional development activities to improve teachers' and students' technological skills.

In addition, Peytcheva-Forsyth, et al. (2018) drew some significant assumptions about the perceptions and attitudes of Sofia University students toward online learning and distance education. The students have clearly shown a positive attitude toward online distance learning, suggesting that they are more likely to accept it as a mode of education. Furthermore, Zhu, AU, and Yates (2013) investigated Australian university students' attitudes towards online learning in a blended course and found that the students became strongly more positive towards online learning by the end of the course. Students can become more comfortable with the subject area, learn more about using different online classes, and gain more confidence in integrating the skills and knowledge taken from the course into their future teaching.

An evolutionary perspective suggests that humans have long perceived physical and social separation from the group as negative because it means deprivation of support and protection, which are critical for survival (Buss, 1996). In this study, the availability of support (or lack thereof) is a critical factor leading to isolation perceptions in today's online learning (Marshall, Michaels, & Mulki, 2007). Self-directed learning is based on the idea that learners take responsibility for reaching their learning objectives, as described by Garrison (1997). The concept of learner control is based on the online learners' control over their learning, i.e., learners' ability to repeat or skip any content as required. This is built on the efforts of

online learners to direct their own learning freely. Moreover, the idea of motivation is based on the learners' attitudes towards learning, and the concept of computer and internet self-efficacy refers to the students' acquisition of the skills needed to deal with technology. The final concept is online communication self-efficacy, which shows the degree to which the learners would adapt to the online classes by interacting with others through discussions, comments, and other means of communication on the online platform. i.e., interactions in the online setting (Hung, et al., 2010). Our paper re-examines the common challenges students face when joining the online classroom. The conceptual framework of the paper focuses on the following aspects: A feeling of isolation, online interaction, issues with technology skills, attitude towards learning and online learning success is presented in Table 1:

TABLE 1
Dimensions of Research in the Current Study and from the Literature

Dimensions (Current study)	Dimensions (From the Literature)
A feeling of isolation	Isolation
Online interaction	Online communication self-efficacy
Technology skills / Technical problems	Computer/Internet self-efficacy
Attitudes towards online learning/online learning success	Motivation for online learning, self-directed learning, learner control

Therefore, our study's main research question is: What are the main challenges faced by undergraduates in online learning? And based on the main research questions, several sub-questions are proposed:

1. What is the impact of students' isolation on their online learning success?
2. What is the impact of online interaction on online learning success?
3. What is the impact of technological skills on online learning success?
4. What is the impact of learning attitude on online learning success?

To answer these questions, we used a survey to explore the students' opinions.

Methods

This study utilized quantitative methods to provide statistical data on the Emirati students' experience during the online classes. Therefore, the study utilized a quantitative approach to explore the challenges encountered in online classes from the students' perspectives. After getting the required approvals, the students were asked to fill in a survey which was distributed by email or administered in class to collect students' opinions about the challenges faced during their experience in the online learning system. The participants of the current study were undergraduates who were enrolled in at least one 100% online course during or after the pandemic. A total of 1000 Emirati students were asked to fill in the survey in the middle of the semester, and a sample of 424 usable responses was obtained from various students in the bachelor's program with different majors, resulting in a response rate of 42.4%. The students were asked to reveal their opinions in reference to a five-point Likert-type scale, with anchors ranging from 1 (strongly disagree) to 5 (strongly agree). The survey was based on 1) a previous study done to develop a scale for online learning readiness by Hung et al. (2010). The scale was divided into five dimensions: self-directed learning, learner control, motivation for learning, computer/Internet self-efficacy, and online communication self-efficacy. Each of these dimensions can be mapped to the dimensions of interest in this study. 2) for the feeling of isolation, construction from another study was used in the context of work placement isolation (Marshall, Michaels, & Mulki, 2007) to measure the feeling of isolation by students learning online. So, the survey items were adapted with permission from Hung et al.(2010) and Marshall,

Michaels, and Mulki (2007) to explore the following dimensions: A feeling of isolation, online interaction, technological skills, attitudes towards online learning, and online learning success.

Results

A total of 517 respondents responded to the survey; however, 93 responses were incomplete or had missing values, so they were removed from the analysis. The analysis was done using the remaining 424 responses. Cronbach's alpha was used as it is considered a measure of scale reliability (Lavrakas, 2008). Table 2 summarises Cronbach's alpha for each group:

TABLE 2
Reliability Statistics (Cronbach's alpha for Each Group)

Variables (Groups)	Cronbach's Alpha	No of Items
Feeling of Isolation	0.872	4
Online Interaction	0.819	5
Technological Skills	0.869	3
Self-Directed Learning	0.852	5
Learners' Control	0.729	3
Learning Motivation	0.819	4
Online Learning Success/Satisfaction	0.926	6

The table demonstrates that all the variables are reliable under the internal consistency since their Cronbach's alpha is greater than 0.7, which is acceptable (Lavrakas, 2008). Initially, the variable "Feeling of Isolation" had low consistency (Cronbach's alpha: 0.64); therefore, the last item, "I feel isolated," was removed to raise it to 0.872. All the remaining items showed good consistency and proved to be a good measure of the associated variables.

To know if there is any relationship between the given variables, the correlation was calculated using Pearson's correlation coefficient, as shown in Table 3:

TABLE 3
Pearson's Correlation Coefficient

	Feeling Isolation	Online Interaction	Technological Skills	Self Directed Learning	Learners Control	Learning Motivation	Online Learning Satisfaction
Feeling _ Isolation							
Online_ Interaction	.359						
Technological_Skills	.292	.646					
Self_Directed_Learning	.461	.611	.635				
Learners_Control	.409	.673	.617	.707			
Learning_Motivation	.372	.607	.605	.742	.711		
Online_Learning_Satisfaction	.215	.612	.481	.472	.598	.510	
AttitudeTowardsOnlineLearning	.459	.701	.687	.902	.900	.903	.586

The results show a high correlation among all the variables and a powerful association among the variables of interest. The high correlation, i.e., above 0.90 in the case of "Attitude towards Online learning," and the other three variables (Self Directed Learning, Learners' Control, and Learning Motivation) should be ignored for analysis as these variables are combined together to constitute the main variable, i.e., "Attitude towards Online learning." Less feeling of isolation also led to higher online learning satisfaction/success (r=0.215, p<0.01). At the same time, all the other variables, like online interaction, were highly correlated with online learning satisfaction (r=0.612, p<0.01). Better technological skills also led to better online learning satisfaction (r=0.481, p<0.01). Increase in self-

directed learning (r=0.472, p<0.01), learners' control (r=0.598, p<0.01), and learning motivation (r=0.510, p<0.01) also showed a similar increase in online learning satisfaction.

To explore the relationships further, regression analysis is conducted. The regression model summary is shown in Table 4:

TABLE 4
Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
					Change Statistics					
1	.656ª	.430	.424	.82374	.430	78.933	4	419	.000	2.035

The results show that the model is significant (p<0.01), and 43% of the variation in the dependent variable (Online learning satisfaction) is predicted by the mentioned variables (R-Sq = 0.43). The value of the Durbin Watson (DW) test (2.035) shows that there is no autocorrelation detected in the sample, as the range of 1.5 to 2.5 are relatively normal according to Durbin and Watson (1950). Table 5 shows the relationship between the independent and dependent variables (online learning satisfaction).

TABLE 5
Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	.277	.221		1.250	.212
Feeling_Islolation	-.085	.041	-.087	-2.086	.038
Online_Interaction	.488	.068	.395	7.22 5	.000
Technological_Skills	.026	.064	.022	.404	.686
AttitudeTowardsOnlineLearning	.482	.087	.335	5.561	.000

Interestingly, when we entered the predictor variables together in the model, the feeling of isolation showed a reduced but statistically significant impact (β=-0.085, p<0.05). But since the volume of impact is very small, it is negligible. Online interaction (β=0.488, p<0.01) and attitude toward online learning (β=0.482, p<0.01) both show a significant positive impact on online learning satisfaction. However, surprisingly technological skills have no significant impact on online learning satisfaction. Since attitude "towards online learning" comprises self-directed learning, learning motivation, and learners' control, we repeated the regression analysis to dig deeper into the impact of these variables on online learning satisfaction. Table 6 shows the regression model summary.

TABLE 6
Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
					Change Statistics					
1	.669ª	.447	.439	.81302	.447	56.207	6	417	.000	2.021

The results show that the model is significant (p<0.01), and almost 45% of the variation in the dependent variable (Online learning satisfaction) is predicted by the mentioned predictors (R-Sq = 0.447). The value of the Durbin Watson (DW) test (2.035) shows that there is no autocorrelation detected in the sample, and DW test statistic values are relatively normal (Durbin & Watson, 1950).

Table 7 shows the relationship between the predictors and the dependent variable (online learning satisfaction).

TABLE 7
Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	.372	.223		1.672	.095
Feeling_Islolation	-.075	.041	-.076	-1.839	.067
Online_Interaction	.453	.067	.367	6.721	.000
Technological_Skills	.042	.064	.035	.666	.506
Self_Directed_Learning	-.046	.083	-.034	-.551	.582
Learners_Control	.392	.075	.319	5.248	.000
Learning_Motivation	.126	.081	.094	1.557	.120

The regression results in Table 7 show that technological skills, self-directed learning, and learning motivation have no significant impact on online learning satisfaction. However, online interaction has the highest significant positive impact on online learning satisfaction (β=0.453, p<0.01). The second variable positively impacts learners' control (β=0.392, p<0.01). The impact of the feeling of isolation is almost negligible. Based on these result, it can be concluded that only learners' control significantly positively impacts online learning satisfaction from the main variable, "Attitude towards online learning."

Gender Differences

Further analysis was done using the independent sample t-test to check if there is any significant difference in the responses from male and female students about the variables of interest. The result is displayed in Table 8:

TABLE 8
Independent Samples Test

Please indicate your Gender		N	Mean	t	Sig. (2-tailed)
Feeling_Islolation	Male	231	3.4481	.789	0.431
	Female	193	3.3627		
Online_Interaction	Male	231	3.6623	-1.866	0.063
	Female	193	3.8218		
Technological_Skills	Male	231	4.0390	-1.337	0.182
	Female	193	4.1572		
Self_Directed_Learning	Male	231	3.8000	-2.025	0.043
	Female	193	3.9606		
Learners_Control	Male	231	3.7085	-2.028	0.043
	Female	193	3.8826		
Learning_Motivation	Male	231	3.9838	-2.128	0.34
	Female	193	4.1503		
Online_Learning_Satsifaction	Male	231	3.7619	-.789	0.431
	Female	193	3.8454		
AttitudeTowardsOnlineLearning	Male	231	3.8308	-2.287	0.023
	Female	193	3.9978		

The independent-sample test shows a significant difference in online interaction, self-directed learning, learners' control, and overall attitude towards online learning. However, the means for isolation, technological prowess, learning motivation, and happiness with online learning do not show any significant difference.

It can be seen that females have significantly higher online interaction than males (t=1.866, p<0.1). Similarly, females also proved to be significantly better than male students in terms of self-directed learning (t=2.025, p<0.05). As per the results, the female students have significantly better learners' control than the male students (t=2.028, p<0.05) and also have a better attitude towards online learning (t=2.287, p<0.05).

Discussion

The findings of the study reveal that certain variables led to more satisfaction in the online learning experience for Emirati students; one variable was: online interaction (which had the highest positive impact on online learning satisfaction). This finding concurs with the findings of other researchers (Baber, 2020; Mehall, 2020; Nambiar, 2020) who stated that different interaction types are related to important results like satisfaction and academic achievement, and the findings of Hussin, Harun, and Shukor (2019). On the other hand, the same authors stated that there are five types of online interaction that are important in improving students' performance in learning, and they revealed that online interaction is very important for developing critical thinking skills. However, this finding contradicted the research results of Nieuwoudt (2018), who concluded that "significant relationships were found between student success and online learner participation, but not online interaction (p.53)." The next aspect was the attitude towards online learning. The study showed that this aspect had the second-highest positive impact on online learning satisfaction. This finding agrees with the findings of Aguilera-Hermida (2020), who stated that college students had a negative attitude toward online learning after the transition, and that played a role in the lack of their level of satisfaction. However, it was also found that technological skills do not significantly impact online learning satisfaction. This finding contradicts previous research like the study of Sun, et al. (2008), who confirmed that technological skills are one of the critical factors that influence student satisfaction, and the study of Wei and Chou (2020) who stated that students computer and internet self-efficacy contributed to their learning satisfaction. In terms of gender differences, female students had much more online interaction than males. Also, female students proved to be significantly better than male students when it came to self-directed learning. According to the analysis of the results, female students showed significantly better learner control and showed a better attitude toward online learning than male students.

Conclusion

The analysis of the findings showed that technological skills, self-directed learning, and learning motivation did not have a significant impact on the Emirati students' online learning satisfaction. However, the findings concluded that the main variables "online interaction" and "Attitude towards online learning" only had the most significant positive impact on online learning satisfaction. Also, female students were found to perform better regarding the following factors: online interaction, learners' control, attitudes toward online learning, and self-directed learning than male students. The study has certain limitations because it was completed after the COVID 19 mandatory requirement to move to online learning. Also, the study attempted to cover most of the factors that might impact students' satisfaction in online classes; however, some elements were not considered, like the students' own environment and location when they attended their online classes. Furthermore, students' scores and performance were not considered in this study as there was no comparison between the students' academic performance and the extent of their online satisfaction. The study sets the way for future research on how to solve online learning challenges to increase student satisfaction through appropriate and innovative course design in addition to the need of focusing on the higher education teachers' professional development programs.

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References

Aguilera-Hermida, A. P. (2020). College students' use and acceptance of emergency online learning due to COVID-19. *International Journal of Educational Research Open, 1*, 100011-100018. https://doi.org/10.1016/j.ijedro.2020.100011

Baber, H. (2020). Determinants of students' perceived learning outcome and satisfaction in online learning during the pandemic of COVID-19. *Journal of Education and E-Learning Research, 7*(3), 285-292. https://doi.org/10.20448/journal.509.2020.73.285.292

Bickle, M. C., & Rucker. (2018). Student-to-student interaction: Humanizing the online classroom using technology and group assignments. *Quarterly Review of Distance Education, 19*(1), 1-56.

Buss, D. M. (1996). *The evolutionary psychology of human social strategies.* The Guilford Press.

Conrad. (2017). Taking the pulse of the online classroom: Data-based student engagement. *International Journal, 11*(2), 16-21.

Croft, N., Dalton, l., & Grant, M. (2010). Overcoming isolation in distance learning: Building a learning community through time and space. *Journal for Education in the Built Environment 5, 5*(747-4205 (Online), 7-64 (38). https://doi.org/10.11120/jebe.2010.05010027

Durbin, J., & Watson, G. S. (1950). Testing for serial correlation in least squares regression I. *Biometrika, 37*, 409-428. https://doi.org/10.2307/2332391

Ferri, F., Grifoni, P., & Guzzo, T. (2020). Online learning and emergency remote teaching: Opportunities and challenges in emergency situations. *Societies, 10*(86), 1-18. https://doi.org/10.3390/soc10040086

Garrison, D. R. (1997). Self-directed learning: toward a comprehensive model. *Adult Education Quarterly*, 18-33. https://doi.org/10.1177/074171369704800103

Hamam, D., & Hysaj, A. (2021). Technological pedagogical and content knowledge (TPACK): Higher education teachers' perspectives on the use of TPACK in online academic writing classes. In *HCI International 2021-Posters: 23rd HCI International Conference Proceedings*. (pp. 51-58). Springer International Publishing.

Hung, M.-L., Chou, C., Chen, C.-H., & Own, Z.-Y. (2010). Learner readiness for online learning: Scale development and student perceptions. *Computers & Education*, 1080-1090. https://doi.org/10.1016/j.compedu.2010.05.004

Hussin, W. N., Harun, J., & Shukor., N. A. (2019). A Review on the classification of students' interaction in online social collaborative problem-based learning environment: How can we enhance the students' online interaction. *Universal Journal of Educational Research, 7*(9a), 125-134. http://doi.org/10.13189/ujer.2019.071615

Hysaj, A., & Hamam, D. (2020). Exploring the affordance of distance learning platform (DLP) in COVID19 remote learning environment. In *International Conference on Human-Computer Interaction Proceedings* (pp. 421-431). Springer. http:/doi.org/10.1007/978-3-030-60128-7_32

Jaggars, S. S. (2014). Choosing between online and face-to-face courses: Community college student voices. *American Journal of Distance Education, 28*(1), 27-38. https://doi.org/10.1080/08923647.2014.867697

Johnson, A. M., Jacovina, M. E., Russell, D. G., & Soto, C. M. (2016). Challenges and solutions when using technologies in the classroom. In *Adaptive educational technologies for literacy instruction* (pp. 13-30). Routledge.

Lavrakas, P. (2008). *Encyclopedia of survey research methods.* SAGE.

Law, M. (2018). Assessing connectedness in an online MBA course. *Journal of Instructional Pedagogies, 21*, 1-8.

Lawrence, G., Ahmed, F., Cole, C., & Johnston, K. P. (2020). Not more technology but more effective technology: Examining the state of technology integration in EAP programmes. *RELC Journal, 51*(1), 101-116. https://doi.org/10.1177/0033688220907199

Mandernach, B. J., Donnelli, E., & Dailey-Hebert, A. (2006). Learner attribute research juxtaposed with online instructor experience: Predictors of success in the accelerated, online classroom. *The Journal of Educators Online, 3*(2), 1-17.

Marshall, G. W., Michaels, C. E., & Mulki, J. P. (2007). Workplace isolation: Exploring the construct and its measurement. *Psychology and Marketing*, 195-223. https://doi.org/10.1002/mar.20158

Martin, F., & Bolliger, D. U. (2018). Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment. *Online Learning, 22*(1), 205-222.

McKenna, K. (2018). The online classroom: A thorough depiction of distance learning spaces. *The Journal of Continuing Higher Education, 66*(1), 13-21. https://doi.org/10.1080/07377363.2018.1415633

Mehall, S. (2020). Purposeful interpersonal interaction in online learning: What is it and how is it measured? *Online Learning, 24*(1), 182-204.

Milheim, K. L. (2012). Towards a better experience: Examining student needs in the online classroom through Maslow's hierarchy of needs model. *Journal of Online Learning and Teaching, 8*(2), 159.

Nambiar, D. (2020). The impact of online learning during COVID-19: students' and teachers' perspective. *The International Journal of Indian Psychology, 8*(2), 783-793. http:/doi.org/10.25215/0802.094

Nieuwoudt, J. (2018). Exploring online interaction and online learner participation in an online science subject through the lens of the interaction equivalence theorem. *Student Success, 9*(4), 53-62.

Peytcheva-Forsyth, R., Yovkova, B., & Aleksieva, L. (2018, December). Factors affecting students' attitudes towards online learning-The case of Sofia University. In *AIP Conference Proceedings* (Vol. 2048, No. 1, p. 020025). AIP Publishing LLC. https://doi.org/10.1063/1.5082043

Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y., & Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education, 50*(4), 1183-1202.

Wei, H. C., & Chou, C. (2020). Online learning performance and satisfaction: do perceptions and readiness matter? *Distance Education, 41*(1), 48-69. https://doi.org/10.1080/01587919.2020.1724768

Zhu, Y., AU, W., & Yates, G. (2013). *University students' attitudes toward online learning in a blended course*. Australian Association for Research in Education (AARE).