Readiness and Acceptance of Maternity and Community Undergraduate Nursing Students for Adopting E-Learning during COVID 19 Pandemic

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Abstract

Background: Electronic learning (E-learning) is the most suitable solution for academic universities to continue the education process during the coronavirus disease 2019 (COVID-19 pandemic). **Aim:** This study aimed to assess the readiness and acceptance of maternity and community undergraduate nursing students for adopting E-learning during COVID-19 pandemic. **Setting:** This study was conducted at the Faculty of Nursing, Mansoura University. Egypt. **Subjects:** A nonprobability purposive sample of 401 regular maternity and community undergraduate nursing students was enrolled in this study. **Data collection tool:** An online questionnaire was used to assess the general characteristics, readiness, and acceptance for adopting E-learning of the nursing students. **Results:** More than half (52.6%) of the students under the study were ready for adopting E- learning. Additionally, less than half (48.4%) of the students accepted E-learning. **Conclusion:** Around half of the studied students were ready and accept to adopt E-learning during COVID-19 pandemic. **Recommendations:** Organizational investment for technological software, hardware, or license is essential to increase the acceptance and readiness rate of students at universities for adopting E-learning. Moreover, the development of training workshops to increase students' skills in using technology for education is important.

Keywords: COVID-19, E-learning acceptance, E-learning readiness.

Introduction

Globally, the newest trend in academic educational institutions and universities is electronic learning (E-learning) **(Rieley, 2020)**. Before the coronavirus disease 2019 (COVID-19) pandemic, E-learning increased by approximately 15.4% annually in educational institutions to adopt the advent of technology **(Tanis, 2020)**. Recently, during the COVID-19 pandemic, global restrictive measures to limit the dissemination of this deadly and infectious disease were undertaken, and the educational institutions had been forced to deliver the educational process through the E-learning platform **(Afrianti & Aditia, 2020; Seah & Agrawal, 2020).**

Higher educational institutions, faculties, and universities had used various electronic educational platforms. Blackboards, social network sites, office software, messaging applications, host services, and mobile technologies were used according to the plan and readiness of universities to deliver E-learning. The online platform utilized to create the electronic environment at Mansoura University is called MOODLE, which stands for Modular Object Oriented Dynamic Learning Environment. It is the most widely used tool for creating E-learning academic courses **(Adesope & Ahiakwo, 2016; Caliskan & Bicen, 2016)**.

E-learning is a technique of teaching and learning in which electronic media and devices are employed as tools to improve interaction between teachers and students using the information technology system and university online educational platform **(Salloum, Alhamad, Al-emran, Monem, & Shaalan, 2019)**. E-learning systems have several advantages, including ease of access to courses' content, effortless collaboration between teachers and students and on-time interactive discussions **(Al-Rahmi et al., 2018)**. In addition, E-learning creates independent learners, improves problem-solving skills of

students and allows them to develop their creativity skills **(Khan, Vivek, Nabi, Khojah, & Tahir, 2020)**.

The readiness of students for E-learning is an essential factor for success of adopting the new learning strategy. It refers to the degree to which the students are prepared to participate in the online learning courses. Learners must have the necessary abilities, skills and orientation before enrolling in E-learning courses. These skills include the ability to use technology, self-confidence in using technology, prior training on using the E-learning platform and willingness to participate in the E-learning experience. Measuring the readiness of students for E-learning helps educational institutions identify the requirements to optimally facilitate the E-learning process **(Yeh & Chu, 2018; Alem, Plaisent, Zuccaro, & Bernard, 2016)**.

Many factors can affect the readiness of students for E-learning during COVID-19 pandemic, including students' initial preparedness and motivation for E-learning, self-efficacy on E-learning, and self-directed abilities **(Callo & Yazon 2020; Naji et al., 2020)**. Before this ongoing pandemic, e-learning was never considered real learning or a formal way of education. However, during the epidemic most educational institutions are exploring alternative teaching methods and embracing E-learning to make learning more accessible to students. Additionally, teachers are exploring electronic teaching software to bring the maximum possible ease for students **(Khan et al., 2020)**.

Lectures can now teach and students can study in new ways through E-learning platforms. The role of lecturers is to guide students through their learning process. Within this context, university lecturers should adapt their teaching techniques and technologies to allow students to accept and adopt the implementation of E-learning while still collaborating with their peers and lecturers **(Fadel, Elbilgahy, Ibrahim, & Elmashad, 2019)**.

Significance of the Study

The fast growth of E-learning has been observed recently, and it is quickly becoming a significant component of higher education. In addition, the advanced technology has been playing a great role during COVID-19 pandemic **(Raheem, 2020; Mousa, Aldeen, Nasir, & Hamdi, 2020)**. Since the outbreak of COVID-19 in Egypt, the Egyptian government has implemented a number of strict measures to prevent the disease's rapid spread. The education sector has been one of the sectors most affected by the pandemic, with nearly 20 million students enrolled in schools and institutions across the country **(Ewiss & Mohammed, 2020)**. Several studies have indicated the possibility for adopting E-learning in the education process **(Al-Emran, Mezhuyev, & Kamaludin, 2018)**. However, compared with face-to-face learning settings, the online courses are often faced with low student persistence and consequently low completion rates **(Bovermann, Weidlich, & Bastiaens, 2018)**. At Mansoura University, several studies focusing on E-learning and technological innovation in learning have been conducted; unfortunately, limited studies have focused on the preparation and readiness of students to adopt E-learning thus, this study was conducted to assess the readiness and acceptance of maternity and community undergraduate nursing students for adopting E-learning during COVID-19 pandemic.

Aim of the Study:

This study was designed to assess the readiness and acceptance of maternity and community undergraduate nursing students for adopting E-learning during COVID-19 pandemic.

Study Question:

Are maternity and community undergraduate nursing students ready and accept for adopting E-learning during COVID-19 pandemic?

Subjects and Method

Research Design:

A descriptive cross-sectional study design was utilized in this study. This study was conducted from the beginning of June 2020 to September 2020. The cross-sectional study design is best used when the researcher is

interested to gather information at one point in time; it provides a snapshot of the population.

Research Setting:

The study was conducted at the Faculty of Nursing, Mansoura University.

Sampling

A nonprobability purposive sample of 401 regular maternity and community undergraduate nursing students who were in active enrollment during the study period and willing to participate in this study was enrolled in this study. Graduate and part-time students were excluded from the study.

Sample Size Calculation

Considering the level of significance of 5% and power of 80%, the sample size was estimated based on data from the study by **Khan, Vivek, Nabi, Khojah, & Tahir, (2020)** to assess the students' perception toward E-learning during the COVID-19 pandemic in India according to the following formula: $[(Z_{1-\alpha/2})^2.SD^2]/d^2$ with the following assumptions $Z_{1-\alpha/2} = 1.96$ for 95% confidence interval, required margin of errors (d) = 0.05, and standard deviation (SD) = 0.511. This resulted in $[(1.96)^2. (0.511)^2]/ (0.05)^2 = 401.2$. Since the total number of students (N) was relatively small (2209), the final sample size was 401.

Data Collection Tool

An online questionnaire adapted from **Hung et al., (2010), Ünal et al., (2014), Doculan (2016), and Chung et al., (2020)** was used**.** It was designed in Google Forms and used as the tool for data collection. The questionnaire consisted of three parts: the first part was about the general characteristics of the nursing students, including gender, age, and academic level (first, second, third, or fourth level), and residence. The second part assessed the nursing students' readiness for adopting E-learning. The students were instructed to rate themselves on their readiness for adopting E-learning in a 3-point Likert scale (i.e., agree, neutral, and disagree). The scale consists of 32 items in seven dimensions, namely, availability of technology (6 items), the use of technology (8 items), self-confidence (4 items), training (2 items), self-directed learning (6 items), motivation for E-learning (3 items), and willingness for E-learning (3 items). Moreover, 30 items of the scale were positive statements, whereas two statements were negative. A scoring system was used to quantify the students' readiness for E-learning. Each positive statement was given a score of 3 marks for agree, 2 marks for neutral, and 1 mark for disagree. Negative statements were given a reversed score in Statistical Package for the Social Sciences (SPSS) (IBM Corp., Armonk, NY, USA) as follows: 1 mark was given to agree, 2 marks to neutral, and 3 marks to disagree. The third part was related to the students' acceptance for adopting E-learning. A self-rating scale was developed and used to measure E-learning acceptance among the nursing students. The scale was scored using a 3-point Likert scale (i.e., agree, neutral, and disagree). It consisted of 18 items in five dimensions, namely, performance expectancy (7 items), effort expectancy (2 items), attitude toward E-learning (4 items), constructs of image (3 items), and compatibility (2 items). The items were scored as follows: 1 for disagree, 2 for neutral, and 3 for agree (**Ngampornchai & Adams, 2016).**

Validity and Reliability of the Tool

The face and content validity of the questionnaire was revised by a jury of five experts, including three experts in the field of community health nursing and education and two professors in the field of maternity nursing, and their modifications were considered according to their remarks as simplify the meaning of some statements to be understood. The reliability of the developed questionnaire was confirmed using Cronbach's alpha, which was 0.968, indicating high reliability.

Pilot Study:

A pilot study was conducted on 10% (41 nursing students) to examine the objectivity and applicability of the study tools and the feasibility of the research process and to estimate the time needed to answer the items in the study tools. Students in the pilot study were excluded from the study.

Ethical Consideration:

Data collection was started after obtaining a formal authorization from Ethical

Committee, Faculty of Nursing, Mansoura University, Egypt. The fourth researcher sent the link of the questionnaire to all students enrolled at the Faculty of Nursing, Mansoura University, as the fourth researcher is the manager of the Faculty E-learning Unit via the official channel for each level after clarifying the purpose of the study. Then, written consent was obtained via Google Forms. Participation in the study was voluntary. Moreover, the students were assured of the confidentiality and anonymity of the collected data as well as were informed of their right to withdraw from the study.

Research Process

This study was conducted in the aforementioned setting from the beginning of June 2020 to September 2020. The researchers developed an online questionnaire after a detailed review of the literature (**Khan, Vivek, Nabi, Khojah, & Tahir, 2020; Chung et al., 2020; Doculan, 2016; Ünal et al., 2014; Hung et al., 2010).** Official permission was obtained from the Ethical Committee, Faculty of Nursing, Mansoura University, Egypt. The online questionnaire was available for 12 weeks to allow enough time for the students to respond.

Data Entry and Analysis

The researchers exported the data from the collected questionnaire into Microsoft Excel (Microsoft Office 2013; Microsoft Corporation, Redmond, WA). The data were coded and then analyzed using SPSS (version 21; IBM Corp., Armonk, NY, USA). The normality of data was first tested using the one-sample Kolmogorov–Smirnov test.

Qualitative data were described using number and percentage. Continuous variables were presented as mean ± standard deviation. The two groups were compared using Student's t-test, whereas comparisons between more than two groups were tested using analysis of variance. The results were considered significant when the probability of error is less than 5% ($p \leq 0.05$). The smaller the p-value obtained, the more significant the results. Cronbach's alpha reliability test was used to explore and confirm construct validity.

Results

The mean age of the nursing students was 19.80 ± 1.24 years **(Table 1)**. More than two-thirds (70.8%) of the students were females. Regarding their academic level, slightly less than half students (47.1%) were at the first level. In relation to their residence, almost two-thirds of the students (66.1%) lived in rural areas. Concerning their income level, more than one-fourth of them (26.4%) had inadequate income.

Figure 1 presents that, most students (96%) had Android phones or other types of phones. However, only 19% and 28.2% had laptop and Internet access, respectively.

Only 15.5% of the students disagreed that they had the technology needed for E-learning **(Table 2)**. More than half students under the study have used technology and were confident in using the technology (58.6% and 59.4% respectively). Additionally, nearly two-thirds (64.8%) were ready for a self-directed learning. The overall score of E-learning readiness among the students revealed that 52.6% were ready for E-learning with an overall mean of 2.01 ± 0.42.

More than half (50.9%) of the students agreed that E-learning would improve their academic performance **(Table 3)**. Approximately half (45.9%) of them had a positive attitude toward E-learning. Additionally, 38.4% and 34.4% of the students under study agreed that E-learning would be easy and improve their image, respectively. The overall score level of E-learning acceptance among the students revealed that 48.4% of them accepted adopting E-learning with an overall mean of 2.04 ± 0.59.

An association was found between the students' socio-demographic characteristics and E-learning readiness score **(Table 4)**. The students' gender and academic level were significantly associated with E-learning readiness ($t = 3.87$, $p \leq 0.001$ and $F = 15.17$, $p \leq 0.001$, respectively). Additionally, the nursing students' E-learning readiness was significantly associated with the ownership of

laptop and Internet access (t = 4.33, $p \leq 0.001$ and t = 4.67, $p \leq 0.001$, respectively).

An association was found between the students' socio-demographic characteristics and E-learning acceptance score **(Table 5)**. Moreover, the students' gender and academic level were significantly associated with E-learning acceptance (t = 4.007, $p \leq 0.001$ and F = 11.02, $p \leq 0.001$, respectively). Additionally, the nursing students' E-learning acceptance was significantly associated with the ownership of laptop and Internet access (t = 1.93, p = 0.054 and t = 3.78, $p \leq 0.001$, respectively).

Table 1: General characteristics of the nursing students (N = 401)

Socio-demographic data	No.	%
Age		
± SD	19.80 ± 1.24	
Range	18–23	
Sex		
Female	284	70.8
Male	117	29.2
Academic level		
First	189	47.1
Second	124	30.9
Third	40	10
Fourth	48	12
Residence		
Rural	265	66.1
Urban	136	33.9
Income		
Enough	252	62.8
Not enough	106	26.4
Enough and save	43	10.7

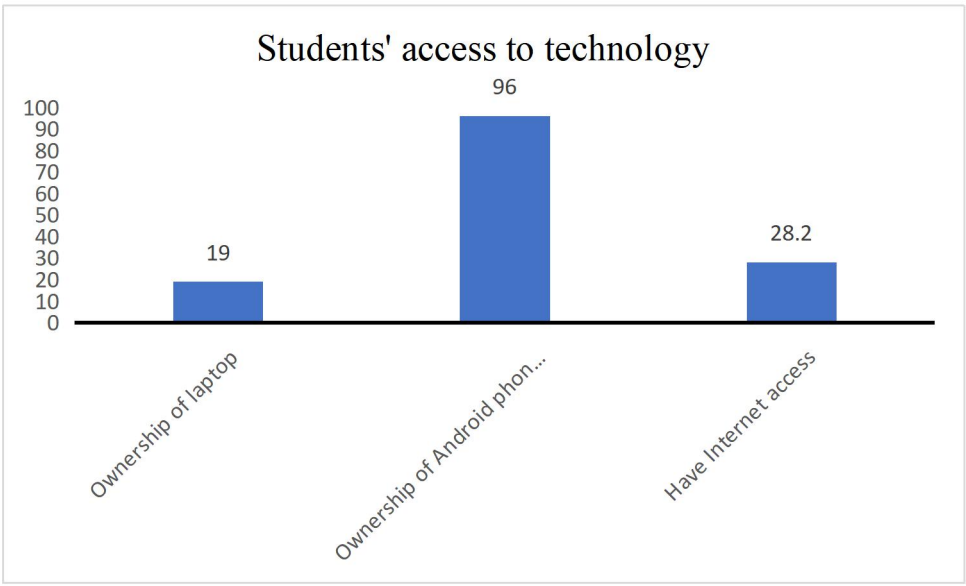

Figure (1) Percentage of nursing students who have access to technology

Table 2: Mean and standard deviation of E-learning readiness among the nursing students (N = 401).

E-learning readiness	Mean ± SD	Total = 401 Agree No. (%)	Neutral No. (%)	Disagree No. (%)
Availability of technology	1.77 ± 0.58	103 (25.7%)	236 (58.9%)	62 (15.5%)
Use of technology	2.17 ± 0.54	235 (58.6%)	149 (37.2%)	17 (4.2%)
Self-confidence in using the technology	2.27 ± 0.57	238 (59.4%)	144 (35.9%)	19 (4.7%)
Training	1.57 ± 0.59	43 (10.7%)	195 (48.6%)	163 (40.6%)
Self-directed learning	2.29 ± 0.57	260 (64.8%)	119 (29.7%)	22 (5.5%)
Motivation for E-learning	1.97 ± 0.70	155 (38.7%)	167 (41.6%)	79 (19.7%)
Willingness for E-learning	2.05 ± 0.69	186 (46.4%)	144 (35.9%)	71 (17.7%)
Total	**2.01 ± 0.42**	**211 (52.6%)**	**189 (47.1%)**	**1 (0.2%)**

Table 3: Mean and standard deviation of E-learning acceptance among the nursing students (N = 401).

E-learning acceptance	Mean ± SD	Agree No. (%)	Neutral No. (%)	Disagree No. (%)
Performance expectancy	2.11 ± 0.65	204 (50.9%)	158 (39.4%)	39 (9.7%)
Effort expectancy	2.08 ± 0.71	154 (38.4%)	169 (42.1%)	78 (19.5%)
Attitude toward E-learning	2.10 ± 0.67	184 (45.9%)	167 (41.6%)	50 (12.5%)
Constructs of image	1.99 ± 0.67	138 (34.4%)	195 (48.6%)	68 (17.0%)
Compatibility	1.95 ± 0.69	120 (29.9%)	196 (48.9%)	85 (21.2%)
Total	**2.04 ± 0.59**	**194 (48.4%)**	**185 (46.1%)**	**22 (5.5%)**

Table 4: Association between E-learning readiness score and the nursing students' socio-demographic characteristics (N = 401).

Students' characteristics	(N = 401)	Readiness for E-learning Mean ± SD	Test of significance	*P*-value
Age (years)				
≤ 19	223	2.02 ± 0.41	t = 0.348	0.728
> 19	178	2.01 ± 0.44		
Gender				
Male	117	2.14 ± 0.42	t = 3.87	≤0.001**
Female	284	1.96 ± 0.41		
Residence				
Rural	265	1.99 ± 0.42	t = 1.39	0.163
Urban	136	2.05 ± 0.43		
Academic level				
First	189	2.00 ± 0.42		
Second	124	2.00 ± 0.44	F = 15.17	≤0.001**
Third	40	1.99 ± 0.43		
Fourth	48	2.09 ± 0.40		
Income				
Enough	252	2.05 ± 0.42	F = 0.657	0.579
Not enough	106	1.84 ± 0.39		
Enough and save	43	2.20 ± 0.39		
Laptop				
Yes	76	2.20 ± 0.33	t = 4.33	≤0.001**
No	325	1.97 ± 0.43		
Phone				
Yes	385	2.01 ± 0.43	t = 0.673	0.501
No	16	2.08 ± 0.28		
Internet access				
Yes	113	2.17 ± 0.39	t = 4.67	≤0.001**
No	288	1.95 ± 0.42		

*****Highly Statistical Significant at P≤0.001***

Table 5: Association between E-learning acceptance score and the nursing students' socio-demographic characteristics.

Students' characteristics	(N = 401)	Acceptance of E-learning Mean ± SD	Test of significance	*P*-value
Age (years)				
≤ 19	223	2.0443 ± 0.5683	t = 0.150	0.881
> 19	178	2.0533 ± 0.63250		
Gender				
Male	117	2.2310 ± 0.53815	t = 4.007	≤0.001**
Female	284	1.9730 ± 0.60451		
Residence				
Rural	265	2.0290 ± 0.58846	t = 0.90	0.369
Urban	136	2.0857 ± 0.61351		
Academic level				
First	189	2.0286 ± 0.55935		
Second	124	2.0335 ± 0.62362	F = 11.02	≤0.001**
Third	40	2.0411 ± 0.66849		
Fourth	48	2.1697 ± 0.61245		
Income				
Enough	252	2.0928 ± 0.5961	F = 0.757	0.519
Not enough	106	1.8437 ± 0.5563		
Enough and save	43	2.2914 ± 0.56395		
Laptop				
Yes	76	2.1670 ± 0.49545	t = 1.93	0.054*
No	325	2.0205 ± 0.61562		
Phone				
Yes	385	2.047 ± 0.60550	t = 0.074	0.941
No	16	2.0591 ± 0.34018		
Internet access				
Yes	113	2.2256 ± 0.57202	t = 3.78	≤0.001**
No	288	1.9787 ± 0.59302		

**** Statistical Significant at P≤0.05***

*****Highly Statistical Significant at P≤0.001***

Discussion

This study aimed to assess the readiness and acceptance of maternity and community undergraduate nursing students for adopting E-learning during COVID-19 pandemic. This aim was achieved through the findings of this study, which revealed that more than half of the maternity and community nursing students at Mansoura University were ready for adopting E-learning. Additionally, less than half of them accepted adopting E-learning. These study findings may be attributed to the decreased number of undergraduate nursing students who had a laptop and Internet access and had no previous training. Therefore, the study question "Are maternity and community undergraduate nursing students ready and accept for adopting E-learning during COVID-19 pandemic?" was answered.

Regarding E-learning readiness of undergraduate nursing students, the present study revealed that, more than half of them were ready for adopting E-learning. In the same line, a non-experimental qualitative study involving 260 students indicated that the level of students' learning readiness is still lacking **(Widodo, Nursaptini, Novitasari, Sutisna, & Umar, 2020).** Additionally, **Meladina and Zaswita, (2020)** reported the same finding. These similarities may be due to the lack of training among students to use technology in education. Conversely, **Sulistyohati, (2020)** has found that engineering students at Cikarang University were ready for E-learning. This contradiction may be due to the university readiness and prior training of the students.

In terms of readiness with the technological facilities, this study revealed that a few students disagreed that they had the technology needed for E-learning, and half of them have used technology and were confident in using the technology. In contrast, **Neupane, Sharma & Joshi, (2020)** evaluated the student's readiness for E-learning during the COVID-19 pandemic and found that majority students were ready. Additionally, **Kalman, Esparza & Weston, (2020)** have concluded that students were ready to use E- learning. This discrepancy can be explained by organizational readiness and students' sufficient technological facilities and skills in using these computer-mediated tools in their learning process.

Concerning the student's self-directed learning, this study revealed that nearly two-thirds of the nursing students under study were ready for a self-directed learning. However, a qualitative survey involving 340 students in Pakistan during the COVID-19 pandemic by **Rafique et al, (2021)** has concluded that students were ready to interact and engage in E-learning and were professional users of online tools. Another study by **Hsu, Wang, and Levesque-Bristol, (2019)** has reported that students managed and used different types of E-learning software and the Internet. Similarly, **Almekhlafy, (2020)** has reported that students have control over their E-learning environment. All these similar findings reflect the overall readiness of students for self-directed learning.

Another element of the readiness of students for E-learning is students' intrinsic or extrinsic motivation. Intrinsic motivation is the students' part to develop cognitive, physical and social learning abilities, whereas extrinsic motivation is the academic institution's part where the attainment of academic grades is a motivational reward. This study revealed that nearly one-fifth of the students disagreed that they were motivated to use E-learning. This finding is congruent with those of **Shawaqfeh et al, (2020)** study that have investigated the online distance learning experience of students in the Kingdom of Saudi Arabia during the outbreak of COVID-19 and have reported that students had lack of motivation for E-learning.

Regarding the acceptance of the nursing students under study for adopting E-learning, this study revealed that less than half of the undergraduate nursing students accepted E-learning. This study finding may be due to the lack of readiness of the students to adopt E-learning, which positively affects their acceptance.

Congruent with the findings of this study, the results of a review analysis of 120 published studies had indicated that the Internet system quality and students' computer self-efficacy have vital roles in the acceptance of adopting E-learning **(Afrianti & Aditia, 2020).** Additionally, a study by **Biswas and Roy, (2020)** has investigated the acceptance of students for adopting E-learning and revealed that the acceptance of the students for E-learning had been on the surge. Furthermore, the National Center for Education Statistics has reported the growing requirement of E-learning due to its recently increasing acceptance **(Salloum, Emran, Shaalan, & Tarhini, 2019).**

Finally, the findings of this study revealed statistically significant associations between E-learning readiness, acceptance, and the students' gender, academic level, ownership of laptop, and Internet access. These findings may be because, first, males are more motivated and interested with E-learning to save their time for job seeking than females. Second, higher academic levels also represent higher experience with E-learning. Lastly, the ownership of a laptop positively affects the readiness and acceptance of E-learning as laptops facilitate learning during this strategy. The findings of this study were partially supported by **Al Kurdi, Alshurideh, and Salloum, (2020)** study that investigated a theoretical framework for E-learning technology acceptance. **Alkurdi et al, (2020)** have found that age and gender are vital predictors of students' acceptance of E-learning.

In this pandemic, the application of E-learning is inevitable; hence, enhancing a student's readiness and acceptance to engage in E-learning is of a great importance.

Conclusion

Based on the present study results, the study question was answered where, approximately half of the maternity and community undergraduate nursing students were either ready or accepted to adopt E-learning during COVID-19 pandemic.

Recommendations

Organization investment toward technology (either software, hardware, or license) is essential to increase the acceptance and readiness rate of students at universities. The development of training workshops to increase students' skills in using educational technology is of great importance.

References

Adesope R & Ahiakwo R, (2016). Attitude of Educators towards using Modular Object Oriented Dynamic Learning Environment (MOODLE) for Teaching. *International Journal of Academic Research and Reflection*, 4 (3). 46–52.

Afrianti N & Aditia R, (2020). Online Learning Readiness in Facing the Covid-19 Pandemic at MTS Manunggal Sagara Ilmi, Deli Serdang, Indonesia. *Journal of International Conference Proceeding,* 3 (2). 59–66.

Al Kurdi B, Alshurideh M, & Salloum S, (2020). Investigating a Theoretical Framework for e-learning Technology Acceptance. *International Journal of Electronic Computer Engineering*, 10 (6). 6484–6496.

Alem F, Plaisent M, C Zuccaro C, & Bernard P, (2016). Measuring e-Learning Readiness Concept: Scale Development and Validation using Structural Equation Modeling. *International Journal of e-Education, e-Business, e-Management, and e-Learning*, 6 (4). 193.

Al-Emran M, Mezhuyev V, and Kamaludin A, (2018). Technology acceptance model in m-learning context: A systematic review," *Comput. Educ*, 125. 389_412.

Almekhlafy A S S, (2020). Online learning of English language courses via blackboard at Saudi universities in the era of COVID-19: perception and use. PSU Research Review Vol. 5 No. 1, 2021 pp. 16-32 Emerald Publishing Limited 2399-1747 DOI 10.1108/PRR-08-2020-0026

Al-Rahmi N, Alias M, Othman A, Alzahrani O, Alfarraj A, Saged A & Rahman N, (2018). Use of E-learning by University Students in Malaysian Higher Educational Institutions: A case in University Technology Malaysia. IEEE Access, 6. 14268–14276.

Biswas B, Roy S, & Roy F, (2020). Students Perception of Mobile Learning during COVID-19 in Bangladesh: University Student Perspective. A quademia, 4, ep20023.

Bovermann K , Weidlich J & Bastiaens T.(2018). Online learning readiness and attitudes towards gaming in gamified online learning – a mixed methods case study. *International Journal of Educational Technology in Higher Education*. 15:27.

Caliskan S, & Bicen H, (2016). Determining the Attitudes of Lecturer Candidates on the Effectiveness of MOODLE used in Flipped Education. Procedia Computer Science, 102. 654–658.

Callo C, & Yazon D, (2020). Exploring the Factors Influencing the Readiness of Faculty and Students on Online Teaching and Learning as an Alternative Delivery Mode for the New Normal. *Universal Journal of Educational Research*, 8 (8). 3509–3518.

Chung E, Noor N, & Vloreen M. (2020). Are You Ready? An Assessment of Online Learning Readiness among University Students. *International Journal of Academic Research in Progressive Education and Development*, 9 (1). 301–317.

Doculan J, (2016). E-Learning Readiness Assessment Tool for Philippine Higher Education Institutions. *International Journal on Integrating Technology in Education*, 5 (2). 33–43.

Ewiss Z, & Mohammed A, (2020). Empowering Egyptian's Education in the

Era of Covid 19. *Journal of Research in Humanities and Social Science*, 8 (11). 43–56.

Fadel E, Elbilgahy A, Ibrahim A, & Elmashad H, (2019). Undergraduate Nursing Students' and Lecturers' Attitudes towards Modular Object-Oriented Dynamic Learning Environment: A Quasi-Experimental Study. *American Journal of Nursing Research*, 7 (1). 24–30.

Hsu H, Wang C, & Levesque-Bristol C, (2019). Reexamining the Impact of Self-Determination Theory on Learning Outcomes in the Online Learning Environment. *Education and Information Technologies*, 24 (3). 2159–2174.

Hung M, Chou C, Chen C, & Own Z, (2010). Learner Readiness for Online Learning: Scale Development and Student Perception. *Computers & Education*, 55 (3). 1080–1090.

Kalman R, Macias Esparza M, & Weston C, (2020). Student Views of the Online Learning Process during the COVID-19 Pandemic: A Comparison of Upper-Level and Entry-Level Undergraduate Perspectives. *Journal of Chemical Education*, 97 (9). 3353–3357.

Khan M, Vivek, Nabi M, Khojah M, & Tahir, (2020). Students' Perception towards E-Learning during COVID-19 Pandemic in India: An Empirical Study. Sustainability, 13 (1). 57.

Meladina M & Zaswita H, (2020). Shedding Light of EFL Students' Readiness and Problems to Face Online Learning in the Pandemic Era. *Tamaddun Life Journal Bahasa, Sastra Dan Budaya*, 19 (1). 8.

Mousa A, Aldeen Z, Nasir I, & Hamdi R, (2020). Measuring Readiness of Higher Education Institutes towards Adopting E-Learning Using the Technology Acceptance Model. ICIC Express Letters. 14 (7). 731–740.

Naji K., Du X, Tarlochan F, Ebead U, Hasan M, & Al-Ali A, (2020). Engineering Students' Readiness to Transition to Emergency Online Learning in Response to COVID-19: Case of Qatar. EURASIA *Journal of Mathematics, Science and Technology Education*, 16 (10). 1–17.

Neupane H, Sharma K, & Joshi A, (2020). Readiness for the Online Classes during COVID-19 Pandemic among Students of Chitwan Medical College. *Journal of Nepal Health Research Council*, 18 (2). 316–319.

Ngampornchai A & Adams J, (2016). Students' Acceptance and Readiness for E-learning in Northeastern Thailand. *International Journal of Educational Technology in Higher Education*, 13 (1). 34.

Rafique G, Mahmood K, Warraich N, & Rehman S, (2021). Readiness for Online Learning during COVID-19 Pandemic: A survey of Pakistani LIS students. *The Journal of Academic Librarianship*, 47 (3). 102346.

Raheem R & Khan A, (2020). The Role of E-Learning in Covid-19 Crisis. *International Journal of Creative Research Thoughts*, 8 (3). 3135

Rieley J, (2020). Corona Virus and its Impact on Higher Education. Research Gate.

Salloum A, Alhamad M, Al-emran M, Monem A, & Shaalan K, (2019). Exploring Students' Acceptance of E-Learning through the Development of a Comprehensive Technology Acceptance Model. IEEE. Access, 7. 128445–12846.

Salloum S, Al-Emran M, Shaalan K, Tarhini A, (2019). Factors Affecting the E-learning Acceptance: A Case Study from UAE. *Education and Information Technologies*, 24 (1). 509–530.

Seah I & Agrawal R, (2020). Can the Coronavirus Disease 2019 (COVID-19) Affect the Eyes? A Review of Coronaviruses and Ocular Implications in Humans and Animals. Ocular Immunology and Inflammation, 28 (3). 391–395.

Shawaqfeh M, Al Bekairy A, Al-Azayzih A, Alkatheri A, Qandil A, Obaidat A, & Muflih S, (2020). Pharmacy Students' Perceptions of their Distance Online Learning Experience During the COVID-19 Pandemic: A Cross-Sectional Survey Study. Journal of Medical Education and Curricular Development, 7. 1–9.

Sulistyohati A, (2020). Pengukuran E-learning Readiness pada Mahasiswa Sebagai Upaya Penerapan Pembelajaran Jarak Jauh Masa Pandemi COVID-19. Edumatic: *Journal Pendidikan Informatika*, 4 (2). 136–145.

Tanis C, (2020). The Seven Principles of Online Learning: Feedback from Faculty and Alumni on its Importance for Teaching and Learning. Research in Learning Technology, 28.

Ünal Y, Alır G, & Soydal I, (2014). Students Readiness for E-Learning: An Assessment on Hacettepe University Department of Information Management. Communications in Computer and Information Science Challenges of Information Management beyond the Cloud, 23. 137–147.

Widodo A, Ursaptini N, Novitasari S, Sutisna D, & Umar U, (2020). From Face-to-Face Learning to Web Base Learning: How are Student Readiness? *Premiere Education Journal Pendidikan Dasar Dan Pembelajaran*, 10 (2). 149–160.

Yeh Y & Chu L, (2018). The Mediating Role of Self-Regulation on Harmonious Passion, Obsessive Passion, and Knowledge Management in E-learning, Educational Technology Research and Development, 66 (3). 615–637.