ORIGINAL ARTICLE

Embracing Online Learning: The Readiness and Perceived Challenges among Health Sciences Distance Learners

Siti Khuzaimah Ahmad Sharoni¹, Nordianna Seman¹, Nurhazirah Razali², Zufazlizan Zamri³

¹ Centre of Nursing Studies, Faculty of Health Science, Universiti Teknologi MARA, 42300 Puncak Alam, Selangor, Malaysia

³ Nursing Unit, Medical Respiratory Institute, Jalan Pahang, 50590 Kuala Lumpur, Malaysia

⁴ Nursing Unit, Institute Kajisaraf Tunku Abdul Rahman, Jalan Pahang, 50586 Kuala Lumpur, Malaysia

ABSTRACT

Introduction: The shifting of conventional to online learning is prominent in our millennial era. The online pedagogy is dynamic in creating knowledge and simultaneously engaging learners with experts beyond boundaries. Our study aims to determine the readiness of distance learners in embracing online learning and their perceived challenge in accomplishing their academic journey. **Methods:** We employed the quantitative study design with a cross-sectional survey and this study was conducted in a public university. The health sciences learners who are currently undertaking their distance learning program were recruited by convenience sampling (N=128). The Online Learning Readiness Scale (OLRS) was adopted with its internal consistency ranging from 0.77 to 0.95 for five dimensions of measure. **Results:** Our results indicate a high level of online learning readiness. In addition, the highest level of readiness in the dimension of computer/internet self-efficacy whereas the least level was the learners' control. Sixty-eight percent of learners reported poor internet connectivity as the main challenge in online learning. Moreover, we found that gender, age, and the learners' program were not the significant factors affecting learners' online learning readiness that display constructive embracing of current educational technology. Nevertheless, considering the poor internet connection, communication infrastructure needs to be further developed to bridge the gap between millennial learners ere and the Internet of Things (IoT).

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Corresponding Author:

Nordianna Seman, MSc (Nursing) Email: nordianna@uitm.edu.my Tel: +603-32584300

INTRODUCTION

The ideology of learning without boundaries has led to the exponential growth of online learning pedagogy. It was evident globally, particularly in the era of the millennium. Online learning is dynamic with the delivery of comprehensive, individualized, dynamic learning material in real-time, in creating knowledge and simultaneously engaging learners with experts beyond limits. Online learning offers a wide range of solutions that augment knowledge and performance by using internet technologies and flexibility to both teachers and learners (1,2).

The notion of online learning is virtual teaching and learning activities that are conducted and available for all learners without the need of attending physical classrooms. Registering and completing courses can be made throughout the online platform and engaging teaching approaches i.e. online forum, teleconference, interactive audio-video, etc (3). The Online Learning Management System is common in higher institutions in which learners can attain learning materials, and actively engage with various learning activities (4,5). This online learning pedagogy is very different compared to conventional face-to-face learning since learners need to be well-versed in using basic technology, including computers, digital devices, and the internet for learning to take place (5,6). Moreover, good internet access and literacy, self-directed learning efficacy, and high-level learning motivation are known as the crucial factors in embracing online learning (6,7).

Similar to the global transition in online learning, our Malaysian higher learning institutions are having the same, with some offering Massive Open Online Course (MOOC). Nevertheless, it is considered much slower in pace as compared to those in Korea, Taiwan, or, Singapore (4, 6). The perception of learners towards online learning is somehow related to online learning efficacy. From the distance learners context where most are adult learners, online learning can be a completely new experience. They are required to attain digital tools literacy which ended in less interest in online lessons, reduced enthusiasm resulting in an inability to adapt to online teaching (4,7). A study in a Malaysia public university indicates a relatively low value of self-efficacy competency in online learning among adult students (8). In addition, lack of learners' control, self-directed learning, and online communication efficacy proved that some students at Malaysian universities were not ready for online learning (4). Interestingly, internet connectivity was the main challenge faced by Malaysian students. Poor internet connectivity and limited broadband data especially for those living in rural areas were reported to reduce the efficiency of online learning (4,9). This has eventually led to stress in the long run and affects their education journey (9).

We believed that the discovery of online learning readiness among distance learners is crucial as it has been indicated as the relevant predictor for online learning effectiveness. Our study aims to determine the readiness and challenges regarding online learning among distance learners of the Health Sciences Program in a public university. As compared to any other programs, the clinical skills component in health sciences program may further complicate the online learning adaptation among distance learners. For clinical learning to take place, most students prefer to have blended learning strategies with face-to-face interaction with some elements of teacher-centred learning (4,10). Therefore, our results may play an integral role in determining a learners' readiness to embrace digital education and provide information on learners' challenges as well. We hope that our findings could assist the higher institutions in engaging learners for their online learning to improve the quality of education.

MATERIALS AND METHODS

We employed the quantitative design that provides quantifiable measurement, the extent of certainty on the variable relationship, and calculated effects of error (11) with a cross-sectional survey. The study was conducted in a public university offering the distance learning program (E-Pengajian Jarak Jauh; E-PJJ) in Selangor at the end of the year 2020. The institution was chosen as it is a leading higher education institution in Malaysia with online learning pedagogy and offers various massive online courses including multiple health sciences programs. Approximately, a hundred and eighty-nine learners enrolled for October 2020 intake from four different programs of Health Sciences; Bachelor of Nursing (Hons), Bachelor of Medical Imaging (Hons), Bachelor of Environmental Health and Safety (Hons), and Bachelor of Occupational Therapy (Hons). They were recruited by the convenience sampling approach which is suitable for our online data collection because of their homogeneity as distance learners and they were

readily accessible (12). Data were collected via the online platform using the Google form and a link was provided to the identified samples.

Measures

This study utilizes a self-administered questionnaire form consisting of three sections:

Part A: Demographic details

This part entails the information of sample characteristics that include gender, age, and enrolled program.

Part B: Online Learning Readiness Scale (OLRS)

This part consists of a set of items adopted from the Online Learning Readiness Scale (OLRS) (Hung et al. 2010; Chung et al. 2020). The scale focus on online learning readiness, consisting of 18 items in five different dimensions, namely computer/internet self-efficacy (three items), self-directed learning (five items), learner control (three items), motivation for learning (four items), online communication self-efficacy (three items). All these items were measured using a Likert Scale that divides into six categories (1) strongly disagree, (2) disagree, (3) slightly disagree, (4) slightly agree, (5) agree, and (6) strongly agree with the minimum score of 1 and the highest score of 6. The higher mean score reflects a higher level of online learning readiness (Hung et al., 2010). The reliability value tested for our current study indicates reliable construct for all five dimensions with the range of alpha of 0.765 to 0.951.

Part C: Challenges faced in Online Learning

This part consists of items with multiple selections for challenges in online learning adopted from Chung et al. (2020) with some modifications to fit the character of distance learners in our study. It is a checkbox question and respondents may choose more than one answer that includes; 1) internet connectivity, 2) limited internet data due to financial constraints, 3) no personal computer/ tablet, 4) lack of technical skill and knowledge to take part in online learning, 5) too many different methods used by different lecturers, and this can be confusing 6) slow personal computer/tablet/smartphone, and 7) sometimes it is difficult to understand the content.

Statistical Analysis

All data were cleaned, arranged, and computed using SPSS Version 25. Descriptive statistics were performed on all variables and values for measurements were presented as mean score, standard deviation, median, and interquartile range (IQR) to determine the level of online learning readiness. The higher the mean score indicates a higher level of online learning readiness. Descriptive statistics including frequency and percentage were performed to identify the online learning challenge(s) faced by learners. The nonparametric test was chosen to execute the inferential analysis as data were not normally distributed. To determine the relationship between online readiness with the demographic attributes, Spearman's correlation was used. The Mann-Whitney test was then executed to measure the difference in online learning readiness between gender and the Kruskal-Wallis test for analysis of differences across the enrolled program. The statistical significance value was determined at $p \le 0.05$ for all tests.

Ethical concerns

This study was approved by the Research Ethics Committee (REC) of Universiti Teknologi MARA (UiTM) REC/12/2020(UG/MR/290). All participants were given the information on the study, consented with fully autonomous, and being kept anonymous. Hence, any conflict of interest within all parties involved has been avoided.

RESULTS

The descriptive analysis was employed to describe the demographic characteristics (N=128). The majority of participants were female (78.1%) and the mean age of the participants was 30 years (SD+3.10). 74 participants (57.8%) were from the Bachelor of Nursing (Hons) Program, 21 (16.4%) from the program of Bachelor of Environmental Health and Safety, 18 (14.1%) were from the Bachelor Of Occupational Therapy (Hons) Program, and the least was from Bachelor Of Medical Imaging (Hons.) program with 15 participants (11.7%) (Table I).

Table I: Demographic profile of the distance learners

Attributes	Frequency (n)	Percentage (%)	Mean <u>+</u> SD	Min	Max
Gender Female	100 28	78.1 21.9			
Male Age			30.04+3.10	23	38
Program			_		
Nursing	74	57.8			
Environmental Health & Safety	21	16.4			
Occupational ['] Therapy	18	14.1			
Medical Imaging	15	11.7			

The Online Learning Readiness

Table II presents a descriptive analysis indicating the level of online learning readiness in five different dimensions respectively. The overall online learning readiness was found to be high with a mean of 4.52+0.78. In between those dimensions, computer/internet self-efficacy is the highest mean of 4.67+2.54 whereas learner's control is the least mean with M=4.26+2.78. the interesting finding is that participants reported "I feel confident in using the Internet to find information as the highest mean of 4.94+0.95 in the computer/internet selfefficacy dimension. They were motivated for online learning with a mean of 4.66+3.60 and this study indicates that they are open to new ideas when learning online (M=4.77+0.94). Under the dimension of online Table II: The online learning readiness

Variable	Mean <u>+</u> SD	(Min,Max)	Median	IQR	
Overall Online Learning	4.54 <u>+</u> 0.78	(2.00,6.00)	4.00	4.00	
Readiness					
Dimension: Computer/	4.67 <u>+</u> 2.54	(6.00,18.00)	14.00	4.00	
internet self-efficacy					
I feel confident in per- forming basic functions of Microsoft Office programs (MSWord, MS Excel, MS Power Point)	4.71 <u>+</u> 0.95	(2.00,6.00)	5.00	2.00	
I feel confident in my knowledge and skills of how to manage software for online learning	4.37 <u>+</u> 1.01	(1.00,6.00)	4.00	1.00	
I feel confident in using the Internet to find information	4.94 <u>+</u> 0.95	(2.00,6.00)	5.00	2.00	
Dimension: Self-directed learning	4.52 <u>+</u> 3.96	(12.00, 30.00)	23.00	5.00	
l carry out my own study plan while learning online	4.42 <u>+</u> 1.04	(2.00,6.00)	4.00	1.00	
l seek assistance when facing learning problems	4.69 <u>+</u> 1.16	(1.00,6.00)	5.00	2.00	
l manage my time well while learning online	4.38 <u>+</u> 1.11	(1.00,6.00)	4.00	1.00	
l set up my online learning goals	4.45 <u>+</u> 0.97	(2.00,6.00)	4.00	1.00	
I have a high expectation for my learning perfor- mance	4.65 <u>+</u> 1.00	(1.00,6.00)	5.00	1.00	
Dimension: Learner control	4.26 <u>+</u> 2.78	(6.00, 18.00)	13.00	3.00	
I can direct my own learn- ing progress while learning online	4.39 <u>+</u> 1.04	(2.00,6.00)	4.00	1.00	
I am not distracted by other online activities (WhatsApp, Insta, FB) while learning online	3.79 <u>+</u> 1.40	(1.00,6.00)	4.00	2.00	
I repeated the online learning materials based on my needs	4.60 <u>+</u> 1.17	(1.00,6.00)	5.00	2.00	
Dimension: Motivation for learning	4.66 <u>+</u> 3.40	(10.00, 24.00)	19.00	5.00	
l am open to new ideas when learning online	4.77 <u>+</u> 0.94	(2.00,6.00)	5.00	2.00	
I have motivation to do online learning	4.54 <u>+</u> 0.99	(2.00,6.00)	5.00	1.00	
While learning online, I improve from my previous mistakes	4.67 <u>+</u> 0.99	(2.00,6.00)	5.00	2.00	
I like to share my ideas with ideas others while learning online	4.67 <u>+</u> 1.07	(2.00,6.00)	5.00	2.00	
Dimension: Online com- munication self-efficacy	4.59 <u>+</u> 3.02	(3.00, 18.00)	14.00	3.00	
I feel confident in using online tools to communi- cate with others	4.59 <u>+</u> 1.07	(1.00,6.00)	5.00	1.00	
I express my thoughts through online text mes- sages/ posting comments	4.64 <u>+</u> 1.08	(1.00,6.00)	5.00	1.00	
l post questions in online discussion	4.55 <u>+</u> 1.12	(1.00,6.00)	5.00	1.00	

communication self-efficacy, the highest mean was "I express my thoughts through online text messages/ posting comments" with a mean of 4.64 \pm 1.08 and the lowest was "I post questions in online discussion" (M=4.55 \pm 1.12). "I seek assistance when facing learning problems" was found as the highest mean for the dimension of self-directed leaning (M=4.69 \pm 1.16) and the lowest was "I manage my time well while learning online" (M=4.38 \pm 1.11).

Challenges Faced in Online Learning

We identified the challenges faced by learners in online learning that are summarized in Table III. Poor internet connectivity was reported as the main challenge by the majority of participants (68%). On the other hand, only seven participants (5.5%) have no personal computer/ tablet. Meanwhile, "too many different methods used by different lecturers and this can be confusing" and "sometimes it is difficult to understand the content" were among the challenges reported with a similar percentage (62%). Lack of technical skills and knowledge to take part in online learning was also found to be commonly reported as one of the challenges faced (31.3%). Interestingly, four of the participants (4%) reported the other related challenge that comprises working as a front liner, feeling shy to ask a question, limited privacy, and limited sources of data.

Table III: The challenges faced by distance learners with online learning

Challenges	n (%)				
	Yes	No			
Poor internet connectivity	87 (68.0)	41 (32.0)			
Limited internet data due to financial constraint	28 (21.9)	100 (78.1)			
No personal computer/tablet	7 (5.5)	121 (94.5)			
Lack of technical skills and knowledge to take part in online learning	40 (31.3)	88 (68.8)			
Too many different methods used by different lecturers, this can be confusing	62 (48.4)	66 (51.6)			
Slow personal computer / tablet / Smartphone.	25 (19.5)	103 (80.5)			
Sometimes it is difficult to understand the content	62 (48.4)	65 (50.8)			
Others (Have jobscope as a frontliner, shy to ask a question, No privacy, Lim- ited sources of data)	4 (3.1)	124 (96.9)			

Factors Affecting Online Learning Readiness

Our study further examined the factors affecting the participant's online learning readiness (Table IV). We found that there is no significant relationship between readiness and the participants' age (p>.05). Additionally, there was no significant difference between the online learning readiness with gender (Table V) and across enrolled programs (p>.05) (Table VI).

Table IV: Age and the online learning readiness

Dimensions	r _s	р
Computer/Internet Self-Efficacy	-0.155	0.081
Self-Directed Learning	-0.124	0.164
Learner Control	-0.087	0.331
Motivation For Learning	-0.022	0.808
Online Communication Self-Efficacy	-0.015	0.864

*p>0.05.

Table VI: The analysis of difference between online learning readiness with enrolled program

		n	Mean rank	χ^2	df	р
Computer/internet self-effic	acy			4.425	3	.219
Nursing	,	74	66.06			
Environmental Health Safety	&	21	63.37			
Occupational Therapy		18	73.71			
Medical Imaging		15	46.93			
Self-directed learning				2.642	3	.450
Nursing		74	65.52			
Environmental Health	&	21	66.78			
Safety						
Occupational Therapy		18	69.12			
Medical Imaging		15	49.75			
Learner control				3 782	3	286
Nursing		74	67.40	5.702	5	.200
Environmental Health	&	21	59.04			
Safety	C.	21	55.01			
Occupational Therapy		18	71.35			
Medical Imaging		15	49.82			
				E () (2	101
Motivation for learning		74	(7.01	5.634	3	.131
Nursing	0	/4	67.01			
Safety	α	21	65.04			
Occupational Therapy		18	70.65			
Medical Imaging		15	42.86			
				1000	2	4 = 0
Online communication				4.988	3	.1/3
sell-ellicacy		74	66.90			
Environmental Health	0	21	60.09			
Safety	a	21	02.20			
Occupational Therapy		18	72.71			
Medical Imaging		15	45.54			
*p>0.05.						

Table V: The analysis of difference between online learning readiness with gender

	Computer/Internet Self-Ef- ficacy		Self-Directed Learning		Learner Control		Motivation For Learning			Online Communication Self-Efficacy					
	M Rank	Z	р	M Rank	Z	р	M Rank	Z	p	M Rank	Z	p	M Rank	Z	p
Male	65.89	-0.81	0.42	63.59	-0.53	0.60	65.32	-0.47	0.64	64.00	-0.29	0.77	64.37	-0.08	0.94
Female	59.54			67.77			61.59			66.29			64.98		

*p>0.05.

DISCUSSION

Distance learners are expected to embrace online learning for them to optimally create a fruitful learning experience. The virtue of the digital world offers great flexibility that assists this group of learners in acquiring knowledge (14). The exponential progression of webbased technologies and the Internet of Things (IoT) had made the process of teaching and learning through the Internet more feasible in recent years. Our primary aim in this study was to determine the online learning readiness among distance learners of the Health Sciences program and the challenges that they might be facing. The study findings on this issue of interest are comparable to previous work among similar populations. Additionally, our studied participants that come from different health sciences programs may add to a novel discovery of a specified group of distance learners. Five dimensions of online learning readiness were explored namely the computer/internet self-efficacy, motivation for learning, online communication self-efficacy, self-directed learning, and learner's control.

In our study, female participants were the majority compared to the male. This may be due to the higher proportion of participants that mostly enrolled in the Bachelor of Nursing (Hons) program. In parallel to the study by Chung et al (2020) which was conducted in a similar setting, a higher proportion of females was also found. However, they focused on four different faculties and the samples were slightly smaller compared to ours. The variation of enrolled programs might affect the readiness level as the different approaches to teaching might be used depending on the need of the program. Our study participants which come from the Faculty of Health Science share the homogenous character in the sense of clinical component. Nevertheless, we consider the number of samples of 128 students is adequate and able to represent the targeted population from health sciences programs. The variation in age was not significant as the participants were more likely in a similar age group. A diverse age group might contribute to different findings because the generation gap display the different perception of online learning (15).

Online learning readiness is defined as the development of learners' maturity that students in the virtual learning environment for knowledge retrieval. It reflects selfrecognition, learning techniques formulation, gaining technical skills, digital label adaptation, and the ability to seek support (4). Our findings suggest that the distance learners in the study setting possess a high degree of online learning readiness. The nature of distance learners may contribute to his findings. As distance learners, their motivation in pursuing a higher level of education leads to increased self-awareness and learning independence (16). In particular, the computer/internet self-efficacy dimension was the highest, followed by motivation for learning, online communication selfefficacy, and self-directed learning, with learner control being the least. This result indicates that these learners were self-assured in utilizing digital gadgets and internet connectivity in embracing online learning. Similarly, university students were found to have an average to a high level of online learning readiness in numerous studies (17,18). Student's readiness for online learning was defined by their competency, accessibility to ICT tools, preparedness, confidence in their ability to use technology, and exposure to e-learning materials (18). In addition, computer/internet self-efficacy was also reported as the most important characteristic influencing learners' readiness for online learning (17). This can be further defined as their competency in using digital tools, as well as the exposure to e-learning materials aided by the advancement of internet technology (17,19). Educational institutions and teaching pedagogies were affected by technological innovations in which the advancement of internet technology, in particular, had aided the development of online learning technologies and contributed to the formation of mainstream virtual classroom platforms (20). We believe that learners may perceive these challenges as an opportunity to improve their aptitudes. They positively embark on this new learning approach to fulfill their educational needs. Having a good motivation level shows that learners in our study were open to new ideas in online learning. Motivated learners were more likely to engage in demanding activities, appreciate and adopt a deep approach to learning, demonstrate improved performance, and have perseverance. The reciprocal relationship between motivation and learning is no doubt and had been studied extensively in various educational contexts (4). The lower mean score for online communication self-efficacy was found in our study. A probable explanation may be supported by the idea that these learners are still adapting to the new technology and not being familiar with the virtual learning environment, digital materials, and handling of online tools as compared to simple social media. Nevertheless, the expression, sharing of information, and concern about the subject of knowledge are crucial to promoting interactive online teaching and learning sessions. Lack of visual and audio stimuli and cold and impersonal communication may eventually lead to unexciting online learning experiences affecting their academic performance. High-performing learners perceived the usefulness of online communication in a virtual learning environment whereas the typical learners had more difficulty with succeeding in online courses than in face-to-face courses (21,22).

The mean score for self-control was the lowest of all five dimensions of online learning readiness. They agreed that they repeated online learning material based on their needs, but they couldn't control their learning progress while doing it so. The most interesting matter is that frequent distractions from other online activities may further impair the benefits of online learning. they were frequently distracted when learning online by other online activities. Furthermore, learning in their own space and pace, especially while at home can be ineffective because of many distractions, and with an inadequate learning environment (23). This was possibly the most difficult aspect of online learning for students (13). Time management might be the major problem among distance learners in both their academic and social lives.

Despite having a high level of online learning readiness, learners in this study admit some challenges that they are facing. They reported poor internet connectivity as the major challenge, according to this study. This finding is parallel to a local study that highlighted poor internet connection and limited broadband data in both on-campus and dormitories (4). Mobile data plans were found to be not affordable for some learners and poor internet connection was the top challenge that learners are facing in some developed countries (20). Internet connectivity has always been an issue in our country which requires immediate attention. Unless upgrading this communication infrastructure is solved, the internet connectivity problem will remain the major barrier to online learning in the long run. Another reported challenge was related to the lecturer factor which include diverse methods of content delivery that led to confusion and limit their understanding. Looking into the minor challenge that was no personal computer/ tablet, we believe that this is due to the characteristic of distance learners in this study. It is because they are all working adults who can afford to have their gadgets.

Factors affecting the learner's online readiness were investigated in our study. The finding indicates that there is no significant relationship between readiness and age. Regardless of age, all learners in our study had a similar level of all five different dimensions measured using the online learning readiness scale. The probable explanation may be related to the similar range of age among the studied population which was found to be comparable with similar studies (19) Furthermore, no significant differences were found between the online learning readiness with gender and across enrolled programs. These findings were comparable to a local study in Sarawak (4). Nevertheless, studies found that gender had a significant effect on learners' online learning readiness. The impact of gender suggests female learners were more motivated to learn than male learners. Female learners had higher learning motivation with the increased level of online learning readiness compared to males and eventually leave a major impact on their academic achievement (15,25,26). Females had higher mean scores than males across the board when it came to all contributing aspects to students' readiness for live online learning and they were more ready in embracing the online learning (4, 15). We discovered that there were no significant differences in the learners' readiness for online learning across the enrolled program. This

finding was similar to a study that found no significant differences between the three groups of learners (13). Program category may affect their readiness and their self-efficacy such as those who currently undertake computer and technology-related programs (15). We suggest that even though, the learners in our study come from non-related computer/technology programs, they possess a high level of online learning readiness because of their self-motivation and the nature of their work that promotes self-independence and perseverance.

The limitations of this study include our study was confined to a public university. This may lead to the inability for finding generalizations to the overall population of distance learners. Furthermore, the demographic attributes which consist of only gender, age, and enrolled program did not allow further investigation on the information such as marital status, annual income, and year of study that perhaps resulted in significant differences between online learning readiness with the measured attributes.

Future research on a bigger scale with learners from various faculties and geographical regions is suggested to allow generalization. Besides, considering similar interests with an extension to lecturers' perspectives and academic achievement may find the relationship between learner's readiness and the suggested variables. A comparative approach may be beneficial as it can evaluate the difference of academic achievement with online learning and conventional face-to-face learning.

CONCLUSION

This study aimed to investigate the online learning readiness among distance learners of the Health Sciences program. We found a high degree of readiness with the major reported challenge being poor internet connectivity. There is no significant relationship between their readiness and age, and no significant difference with gender across the programs. We, therefore, conclude that the online learning readiness of learners in our study was not influenced by their demographic attributes. We hope that the finding can become one of the sources of evidence for related stakeholders to promote effective online learning pedagogy and eventually enhance the quality of digital education.

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