Degree Completion Nursing Students Readiness to Learn in the Online Environment in Uganda

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Abstract

The global call to improve the quality of healthcare, and the restructuring of job descriptions require nurses to return to school to attain the necessary qualifications. Some nursing degree completing programs available in Uganda provide blended learning which combines the traditional classroom and online learning. However, learning online requires students to be equipped with readiness competences which include computer/internet and online communication self-efficacy, self-directed learning, time management, study habits, and institutional support from peers and instructors. This quantitative arm of the study explored the self-efficacy of the readiness competences of the 226 nursing students in the degree completion programs and the predictors of readiness to learn online. Descriptive and inferential statistics were used to analyze the data. Slightly over half of the students (58%) were ready to learn online. The finding indicates a moderate level of readiness where to attain readiness category required at least 76% of the students to be ready to learn online. The students reported a high level of readiness in self-directed learning, time management, study habits, and institutional support but lower readiness levels in online communication and computer/internet self-efficacy. All competences were significantly correlated and predicted readiness, suggesting their interdependence in contributing to readiness to learn online. Computer and online communication self-efficacy were the strongest predictors of readiness to learn online, whereas self-directed learning and institutional support were the weakest. The Readiness to Learn Online Model (RLOM) predicted 88% of the readiness and therefore presumed to be very good in assessing online learning readiness. The findings necessitate the institutions to assess students before they enter the online programs and to provide resources, training and continuously persuade them to improve their self-efficacy.

Keywords: *Computer self-efficacy, Internet self-efficacy, Institutional support, Online communication self-efficacy, Online learning, Self-directed learning, Readiness, Study habits, Time management.*

Introduction

The global call to improve the quality of healthcare by The National League of Nursing [1], increasing acuity of patients, advances in technology, changing demographics, and globalization, are some of the drivers that require nurses to attain higher levels of education. In Uganda, the nursing profession is being restructured related to the qualifications, duties, competences, skills, and experiences for nursing positions in Public Service [2]. To take up the position, nurses are required to have attained the educational level specified in the job description. Those who do not meet the minimum requirements have the opportunity to pursue additional education to advance their professional level. Lower qualified nurses have fewer job opportunities and roles to improve healthcare. The Uganda Nurses and Midwives Council, a governing body, also requires a nurse to take additional credits of study to improve their competences and promote lifelong learning [3]. There is a gap in advanced levels of nursing

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education, practice, and leadership. This gap has an impact on overall patient healthcare outcomes.

Institutions of higher education have addressed this need by introducing both full and part-time blended BSN degree completion programs for nurses to advance their educational level. These blended programs include both synchronous (real-time) face-to-face instruction, as well as asynchronous online learning, in technology enhanced environments (TEE). The online learning is an innovative global educational trend following the advancement in technology which has been adopted by institutions of higher learning to offer full or part time programs for on-campus and distance education. Online learning is flexible and a form of instruction delivery in technology-enhanced environments and in the classroom through the use of computers and learning management systems [4, 5]. Online education provides benefits such as ease of access to learning resources and the convenience of using technologies [6]. In addition, it helps students manage their study time, improves study habits, and contributes to students taking responsibility for their own learning [7]. To be successful, the students need to be equipped with readiness competences that support the use of technologies in the online learning environment. Readiness is described as an individual's self-appraisal of ability to accomplish a task [8], or a person's, a system's, or an organization's preparedness to meet a situation and carry out a planned sequence of actions. In online learning, readiness pertains to an individual's ability to utilize online resources and multimedia technologies [9]. Readiness is considered as one of the most important factors influencing success in online learning environments [10]. It is directly influenced by the self-efficacy of technology competences, personal attributes, and institutional support that play a key role in online learning outcomes.

Technology competences are the knowledge and abilities a student needs to be successful in learning in the online environment and include self-efficacy of computer, internet, and online communication skills. Therefore, for students to be successful in the online environment, they must become familiar with technology skills that will enable them to use the online resources effectively [11]. Personal attributes are the characteristics of the individual that contribute to success in online learning, which include self-directedness [12], time management [13], and positive study habits [14]. Institutional support is the effective and consistent support from instructor, and other students, especially technology support, that contributes to the development of self-efficacy in the use of online learning technologies [15].

Despite the benefits, learning in the online environment presents challenges. These include readiness, lack of mastery of computer, internet, and online communication skills, and adapting to new tools such as computers and the platforms used for instruction. Students are also not prepared to study in the university e-Learning environment mediated by a learning management system [16]. Readiness for online learning directly affects attendance and dropout rates and predicts academic motivation and satisfaction [17, 18, 19]. In addition, gaps are revealed in personal attributes such as students' inability to take responsibility in their own learning and in institutional support required for effective learning outcomes online [10]. Therefore, it is necessary to assess readiness before students undertake a course that includes online learning to ensure the capability of using the technologies in the best way possible to enhance learning. In Uganda, online education is not common. No studies have yet been done in the degree completion nursing students in Uganda. This study proposes to fill this gap by exploring nursing students' self-efficacy of technology competences, personal attributes, and institutional support in order to determine their readiness to learn online.

Methods

Setting

The quantitative, cross-sectional, non-experimental study was carried out with nursing students enrolled in two private universities in Central Uganda that offer a three-year degree-completion nursing program. Both programs use a blended method of instruction that includes both face-to-face and online learning. The universities are located within the capital city and attract students from all over Uganda, which increases the diversity of learners.

Sampling

A purposive sampling method was employed to recruit 226 degree-completion nursing students to complete an online questionnaire. Participation was voluntary, and students' confidentiality was respected, and no harm, emotional or physical, was inflicted during the data collection process. Permission to conduct the study was obtained from the two host institutions where the data was collected and other institutions, which included the Research Ethical Committee (REC) at Mengo Hospital in Kampala, The Uganda National Council of Science and Technology (UNCST), as well as the individual students.

Questionnaire

The researcher designed and piloted a questionnaire that contained a comprehensive list of the competences necessary for students to learn in the technology-enhanced environment, developed, and tailored to the local needs of the students in relation to competences similar in other studies [10, 12-15]. The self-administered questionnaire was comprised of two sections. Section A contained 19 demographic characteristics that included age, gender, year of study, a course in basic computing, access to electricity, and internet, computer ownership, social media use, prior experience with an online course, and employment status. Section B had a total of 57 declarative statements constructed on a 4-point Likert scale to rate students'

confidence with readiness competences distributed in six subscales. The first three subscales measured technology competences and included computer self-efficacy (11 questions), internet self-efficacy (9 questions), and online communication self-efficacy (11 questions), respectively. The fourth and fifth subscale measured personal attributes, which included self-directed learning (9 questions), and time management, and study habits (10 questions). The last subscale measured the institutional support to students accorded by instructors and peers in seven statements. The level of confidence in the competence was reflected by the points scored in the subscale, where higher points indicated more readiness. The Content Validity Index (I-CVI) rating for individual items in the questionnaire ranged from .88 to 1.0, and the Cronbach alpha ranged from .87-.93.

Data Collection

The data collection period occurred over a period of six months, from September 2020 to March 2021. Due to the global pandemic disease outbreak at the time of data collection, there were restrictions of person-to-person contact, and institutions, where the data was to be collected were closed, therefore, both electronic, and paper and pen self-report questionnaire were planned to be used. The electronic questionnaire was administered first together with an electronic consent form shared via Google Drive to the student's emails obtained from their respective institutions. The questionnaire was left open for three months (September-December 2020), and weekly reminders were sent out. The respondents were given a choice to fill and return a consent form to the address provided in the email or to only fill the questionnaire as a sign of their consent to participate. Only 16% responded directly online, and responses were recorded in Google Drive. Due to the low response rate obtained online, when the institutions opened for face-to-face classes, the researcher approached the Deans of

the Nursing Departments to request an opportunity to collect more data using a 30-minute paper questionnaire. The researcher, together with the Deans of the nursing departments, identified the emails and removed the respondents who had filled the online questionnaire from the list generated in Google drive. The researcher reached out to the respondents left on the list in person, in the classrooms during break time, for a chance to participate. The purpose of the study and benefit of revisiting their readiness competences was explained, followed by an assurance of anonymity, confidentiality, voluntary participation, and freedom to withdraw at any time. The respondents were also given an opportunity to ask questions to clarify their role in the study and thereby filled and returned the consent form. The questionnaire was distributed to the students and requested them to rate their individual confidence in respect to their readiness and encouraged them to complete the questionnaire. The researcher stepped out of the classroom to allow students to fill the questionnaire, and later, the individual student returned the questionnaire to the researcher outside the classroom.

Data Analysis

Data from the online questionnaires were automatically entered into an Excel file and added to the data from the paper questionnaires before importing into SPSS software version 20 for analysis. Descriptive statistics were used to analyze the demographic characteristics, as well as the 4-point Likert rating options for each of the variables to determine students' readiness to learn online. A Pearson's r correlation coefficient was performed to explore relationships among the readiness competences. A hierarchical multiple linear regression was performed to determine the readiness competences that predicted readiness to learn online.

Results

The data was collected from 226 students in the two nursing institutions that offered a blended nursing degree completion program to answer the questions "what is the nursing students' self-efficacy of technical competences, personal attributes, and institutional support that contributes to their readiness to learn online?" and to find out whether readiness could be predicted from the competences. Table 1 shows that the respondents were evenly represented from the two institutions. The majority of respondents (82.3%) were female, and the largest age range was 33 to 42 years old. A majority (65.5%) were married. The students were evenly divided by years of study within 36.7% in their first year, 31.4% in their second year, and 31.9% a third year of study. The students resided from all regions of Uganda. However, the majority (73%) were from the central region where the two institutions are located. Most students (90.3%) reported paying for their own education, and 87.2% worked for an organization.

Table 1. Bio-Demographic Characteristics

Demographic characteristics	f	%
Institution		
Institution 1	114	50.4
Institution 2	112	49.6
Gender		
Male	40	17.7
Female	186	82.3
Age of respondents		
23-32 Years old	87	38.5

33-42 Years old	97	42.9
43-52 Years old	39	17.3
>53 Years old	3	1.3
Marital status		
Single	65	28.8
Married	148	65.5
Others	13	5.8
Academic year at university		
1st year	83	36.7
2nd year	71	31.4
3rd year	72	31.9
Regions of residence		
Central Region	165	73.0
Other regions (East, West, North, and South regions)	61	27.0
Scholarship type		
Self-sponsored	204	90.3
Sponsored by organization	12	5.3
Others	10	4.4
Employment status		
Self-employed	10	4.4
Employed by organization	197	87.2
Others	19	8.4

Table 2 shows that only 37.2% of students reported having previously taken a course in basic computing, and 18.6% had taken an online course prior. Most students (81%) found the internet readily available at the university, and 71.1% indicated a lack of internet availability when away from the university. When away from the university, only 27.9% of the students reported using a modem or router as an alternative source of internet connection if they did not have access to wireless or cable internet. Only 57.3% purchased a daily internet package, and 1.8% purchased a three-month uninterrupted data package. A majority (91.6%) reported having access to electricity. Of note, 8.4% reported no electricity when away from the university.

Table 2. Background Variables: Access to Computer, Internet, and Electricity

Variables	f	%
Course in basic computing prior to current study		
Yes	84	37.2
No	142	62.8
Did online course before joining current program		
Yes	42	18.6
No	184	81.4
Is internet readily available at the university		
Yes	183	81.0
No	43	19.0

Is internet while away from the university readily available?		
Yes	64	28.3
No	162	71.7
Internet plan when not at the university		
Daily bundle	130	57.5
Weekly bundle	40	17.7
Monthly bundle	52	23.0
Three-month bundle	4	1.8
Access to electricity away from university		
Yes	207	91.6
No	19	8.4

To learn online, it is a requisite for the student to use a computer, and Table 3 shows that in this study, 81.9% of students had a laptop/computer, but 18% did not. Almost all students (94.2%) reported to have a smartphone/gadget however, results from cross-tabulation show that 3 (1.3%) students neither had a laptop nor a smartphone or tablet. All students had prior experience with communicating in the online environment using WhatsApp. Only 54.9% had used Facebook.

Table 3. Background Variables: Electronic Resources

Variables	*f*	%
Owning a personal computer/laptop		
Yes	185	81.9
No	41	18.1
Own tablet/iPad/smartphone		
Yes	213	94.2
No	13	5.8
Ownership of modem/router to provide internet		
Yes	63	27.9
No	163	72.1
Use WhatsApp for online communication		
Yes	226	100.0
Use Facebook for online communication		
Yes	124	54.9
No	102	45.1

Readiness Competences

The readiness competences were measured on a 4-point Likert scale, and the means and standard deviations were determined. A higher mean indicated a higher level of confidence in the competence, and a lower mean indicated low confidence. The students were considered "ready" in the competence if they scored 76% or more, "somehow ready" if the score was between 51% and 75%, and "not ready" if the score was <50%.

Technology Competences

The technology competences included computer self-efficacy (CSE), internet self-efficacy (ISE), and online communication self-efficacy (OCSE). The students were asked how confident they felt to use the computer and

internet to accomplish tasks in the online environment and to communicate in the online environment. The means and standard deviations are presented in Table 4.

Table 4. Means and Standard Deviations of Items in Readiness Competences

Items	Technology competences						Personal attributes				Institutional support	
	CSE		ISE		OCSE		SDL		TMSH		IS	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Q1	3.36	.794	3.17	.823	3.02	.751	3.27	.607	3.21	.679	3.25	.762
Q2	2.65	.868	3.32	.776	2.85	.924	3.25	.576	3.11	.731	3.17	.744
Q3	3.24	.892	2.80	.796	3.41	.750	3.42	.670	3.14	.716	3.22	.722
Q4	2.81	.900	3.25	.766	2.84	.801	3.38	.600	3.20	.718	3.31	.727
Q5	2.95	.913	3.04	.834	2.84	.803	3.51	.591	3.00	.757	3.23	.785
Q6	3.47	.761	3.05	.910	2.82	.793	3.60	.597	3.11	.685	3.25	.720
Q7	3.27	.790	3.09	.919	3.08	.782	3.56	.602	3.04	.813	3.29	.733
Q8	2.37	.896	3.07	.897	3.28	.766	3.54	.619	3.00	.830	-	-
Q9	3.34	.807	2.82	.918	3.35	.717	3.34	.648	3.19	.642	-	-
Q10	2.83	.937	-	-	3.10	.715	-	-	3.40	.654	-	-
Q11	2.31	.889	-	-	2.34	.945	-	-	-	-	-	-

CSE Subscale

The subscale consisted of 11 items, and the average score ranged from 2.31 - 3.47 (Table 4). The students tended to feel more confident to save files on the computer and other storage devices (M=3.47, SD=.761), but less confidence to use help functions to troubleshoot computer technology problems (M=2.37, SD=.896) and create videos or podcasts (M=2.31, SD=.889). The scores for items were added and readiness levels determined (Table 5). The total average score for the subscale was 74% (Figure 1), which categorized the students in a moderate level of readiness. Less than half (49.6%) of the students met the acceptable level of readiness (76% - 100%) in the subscale.

ISE Subscale

The subscale consisted of 10 items, and the average score ranged from 2.80 - 3.32 (Table 4). The students tended to feel more confident to browse the internet using Internet Explorer, Google Chrome, Mozilla Firefox (M=3.32, SD=.776), and to use the search engines such as Google Scholar to look for literature (M=3.17, SD=.823) but were less confident in accessing online libraries, and other databases (M=2.80, SD=.796).

The sum of the competences was made, and readiness levels were determined (Table 5). The total average score was 76.7% (Figure 1). Slightly more than half (51.8%) of the students made the "ready" category in the ISE subscale.

OCSE Subscale

There were 11 items, and the average score range from 2.34 - 3.41 (Table 4). The students tended to be more confident sending an email with an attachment (M=3.41 SD=.750), and written online communication (M=3.35, SD=.717) but were less confident communicating using media like Skype (M=2.34 SD=.945), checking the emails everyday (M=2.84, SD=.924), participating in live chats in Moodle (M=2.82 SD=.801), participating in threaded discussions in Moodle (M=2.84), and responding to other people's posts in the discussion forum (M=2.84, SD=.803).

The scores for items were added and readiness levels determined (Table 5). The total average was 74.8% (Figure 1) which was slightly less than the cut-off point (76%) for the

"ready" category. Only 45.2% of the students obtained the "ready" category.

Personal Attributes

Self-directed Learning

The average score for items in the subscale ranged from 3.27-3.60 (Table 4). The students tended to agree to all competences in the subscale, but notably, they agreed to be disciplined (M=3.60 SD=.597), organized (M=3.56 SD=.602), and trusted to pursue their own learning (M=3.55 SD=.619) in the technology-enhanced environment. The average total score in the subscale was 85.7% (Figure 1), placing 73% (Table 5) of the students in the "ready" category.

Time Management and Study Habits

The average score for items in the subscale ranged from 3.00-3.40 (Table 4). The students tended to agree to learn from listening to lecturers/audio recordings or podcasts (M=3.4 SD=.654) and having good time management skills (M=3.21 SD=.679).

However, some students did not agree to study in a place where they can read and work on assignments without distractions (M=3.00 SD=.830) or staying on task when studying by avoiding distractions on social media (M=3.04 SD=.813). The total average score in the subscale was 78.77% (Figure 1), and only 52.7% (Table 5) of the students made the "ready" category.
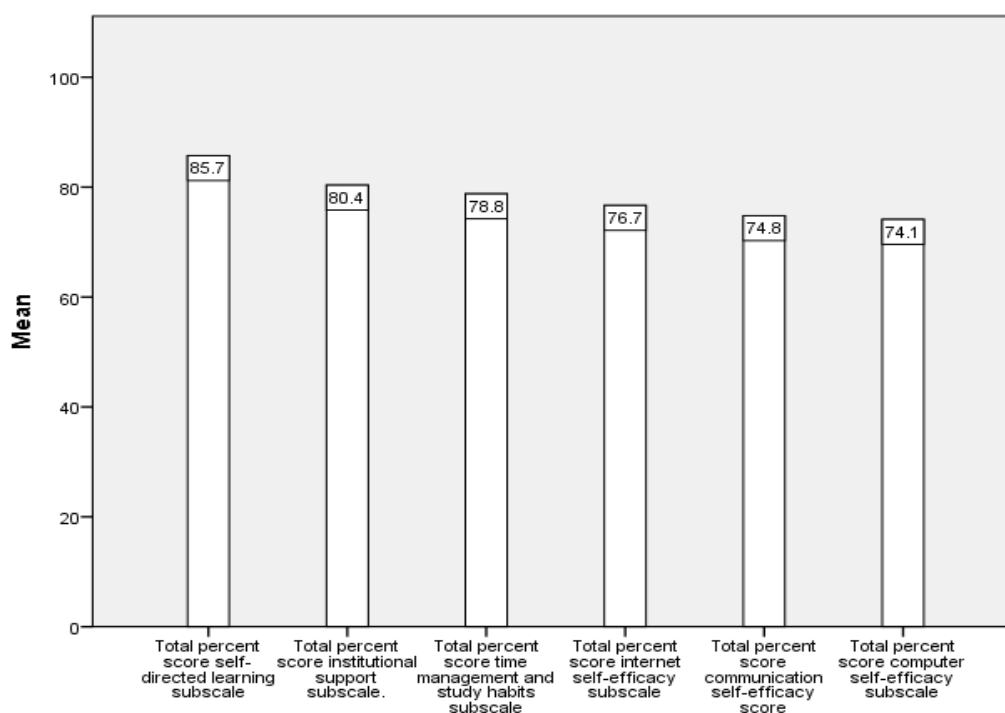

Figure 1. Average % Scores in the Readiness Scales

Institutional Support

The average score for items in the subscale ranged from 3.17-3.29 (Table 4). The students tended to agree to being guided and given the technology assistance they needed from instructors (M = 3.17 SD = .744) and peers (M=3.29 SD=.733). However, some students disagreed with being helped to keep engaged and

actively participating in course activities using the teaching and learning technologies (M = 3.22 SD =.722), and others did not agree to being comfortable asking instructors for help (M = .323 SD = .785). The average score (Figure 1) for the subscale was 80.4%, and only 58.8% (Table 5) students attained the "ready" category in the subscale.

Table 5. Readiness Levels in Subscales

Readiness levels	Technology competences						Personal attributes				Institutional support	
	CSE		ISE		OCSE		SDL		TMSH		IS	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%	*f*	%
<50 "Not ready"	16	7.0	14	6.2	8	3.5	3	1.3	7	3.1	12	5.4
51-75% "Somehow ready"	92	43.4	95	42.0	116	51.3	58	25.7	100	44.2	81	35.8
76-100% "Ready"	112	49.6	117	51.8	102	45.2	165	73.0	119	52.7	133	58.8

Overall Readiness

The scores from all the subscales and was summed to get the overall readiness level are presented in Figure 1. The more points the students obtained, the more prepared/ready to learn online they were. The score of 76% and above in the subscale was considered "ready" (high readiness level); 51% to 75% "somehow ready" (moderate readiness level); and less than 50% "not ready" (low readiness level). In the same way, the overall readiness of the group of students was determined by considering the percent of students in the level, where 76% and above indicated "overall readiness/high readiness"; 51-75% "somehow ready/ moderate readiness"; and <50% "not ready/low readiness". The data presented in Figure 2 show slightly over half of the students (58%) obtained a score of 76% and above and were therefore ready to learn online. These were followed by 39.3% who scored between 51% 1st 75.9% and were therefore somehow ready to learn online. Lastly, 2.7% scored <50% and were therefore not ready to learn online. The results suggest an overall moderate level of readiness to learn online as it required 76% of the nursing students in the study to be in the ready category.
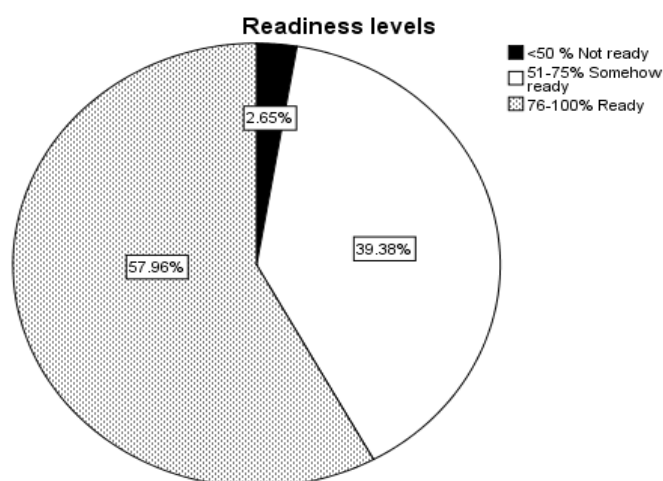
Figure 2. Students' Readiness Level

A Chi-square test of independence was performed to examine the relationship between the demographic characteristics and readiness levels to determine the likelihood of readiness in the categories of responses. In Table 6, the demographic characteristics and background variables that significantly correlated to readiness to learn online included age, region, a course in basic computing, access to the internet at the university, readily available internet at the university, internet plan, and use of Facebook. The students <36 years (36 was the mean age of

the group) were more likely than those aged 37 years and above to be ready to learn online (X^2(6, N =226) = 27.870, p = <.001). The students who resided within the central region where the institutions are located were more likely than those from other regions to be ready to learn online (X^2 (2, N =226) = 6.458, p = .040). The students who had done a basic computing course were more likely than those who hadn't to be ready (X^2 (2, N=226) = 12.011, p =.002). The students who found readily available and easy access to the internet at the university were more likely than those who found it difficult to be ready to learn online (X^2 (2, N=226) = 26.870, p < .001). The students who purchased larger internet bundles were more likely than those who purchased smaller bundles to be ready to learn online (X^2 (6, (N= 226) = 13.880, p = .031). Students who used Facebook for online communication were more likely than those who didn't to be ready to learn online (X^2 (2, N = 226) = 9.478, p = .009). It can be seen further that although readiness depended on the rest of the variables, the relationship was weak and not statistically significant.

Table 6. Significant Demographic and Background Variables Correlated to Readiness

Variables	Value	df	X^2
Age	22.902	2	.000
Region	6.458	2	.040
Course in basic computing skills	12.011	2	.002
Access to internet at the university	26.870	2	.000
Internet plan when not at university	13.880	6	.031
Facebook	9.478	2	.009

An independent t-test was conducted to compare the overall readiness to learn online with the demographic characteristics of the students. The results show differences in the readiness scores in all the demographic characteristics however only the significant findings are presented in Table 7. The findings were in favor of students aged <36 (t(224) = 3.690, p = <.001), students residing in the central region (t(224) = 2.256, p = .025), students who had done a basic computing course (t(224) = 3.451, p =.001), students who easily accessed internet at the university t(224) = 4.389, p = <.001, students who owned a modem/router (t(224) = 2.084, p = .038), students who communicated on Facebook ; t(224) = 3.093, p = .002, and students who were self-employed (t(224) = 2.631, p = .009).

Table 7. Readiness Differences Demographic and Background Variables

Demographic characteristics	Overall readiness		t	df	p
	M	**SD**			
Age of respondent					
<36	182.78	26.312	3.690	224	.000[*]
37 and above	169.71	24.692			
Region of residence					
Central	180.32	27.229	2.256	224	.025[*]
Others (North, West, East, South)	171.46	23.156			
Sex of respondent					
Male	183.05	19.814	1.354	224	.177
Female	176.82	27.575			
Marital status					

Single	183.20	27.405	2.026	224	.044
Married	175.29	25.720			
Basic computing course					
Yes	185.63	24.834	3.451	224	.001[*]
No	173.37	26.381			
Prior online course					
Yes	185.36	27.652	2.033	224	.043
No	176.23	25.932			
Access to internet at the university					
Easy	181.98	26.264	4.389	224	.000[*]
Difficult	164.35	22.347			
Access to electricity away from university					
Yes	178.54	26.140	1.158	224	.248
No	171.21	29.403			
Own personal computer					
Yes	179.11	26.413	1.433	224	.153
No	172.59	26.202			
Own modem/router					
Yes	183.78	22.521	2.084	224	.038[*]
No	175.66	27.535			
Use Facebook to communicate					
Yes	182.77	21.670	3.093	224	.002[*]
No	172.04	30.354			
Type of employment					
Self-employed	198.50	20.711	2.631	224	.009[*]
Employed by organization	176.30	26.246			

[*]$p < .05$

A multiple linear regression was carried out to investigate whether readiness to learn online could be predicted from computer self-efficacy related to use of the internet, online communication, self-directed learning, time management and study habits, and institutional support. Table 8 shows the correlation (r^2) of the readiness competences, which ranged from .311 to .788, and the data did not pose a risk for multicollinearity, which would undermine the statistical significance of the independent variables.

Table 8. Means, SDs, and Pearson Correlations among Readiness Competences

Model	M	SD	1	2	3	4	5	6	7
Readiness level	78.02	11.599	-	.740	.737	.788	.620	.639	.691
CSE	2.42	.623		-	.680	.586	.345	.337	.450
ISE	2.46	.611			-	.663	.396	.311	.449
OCSE	2.42	.561				-	.455	.430	.579
SDL	2.72	.480					-	.524	.469
TMSH	2.50	.560						-	.453
IS	2.54	.597							-

Sig. (1-tailed) ($p = <.001$ for all variables)

It can also be seen from the regression model in Table 10 that all the readiness competences had a positive and incremental influence on readiness to learn online. For example, computer self-efficacy (4.896): as computer self-efficacy increased by one unit on the scale, readiness to learn online went up by 4.896 units. Internet self-efficacy (3.647): as internet self-efficacy increased by one unit on the scale, readiness to learn online went up by 3.647 units. Online communication self-efficacy (4.971): as online communication self-efficacy increased by one unit on the scale, readiness to learn online went up by 4.971 units. Self-directed learning (3.312): as self-directed earning increased by one unit, readiness to earn online went up by 3.312 units. Time management and study habits (4.882): as time management and study habits increased by one unit, readiness to learn online went up by 4.882 units. Institutional support (3.420): as institutional support increased by one unit, readiness to learn online increased by 3.420 units.

Table 10. Readiness to Learn Online Model (RLOM)

Model	B	95% CI	β	t	p
Readiness (Constant)	15.332	[11.967,18.698]		8.979	.000*
CSE	4.896	[3.685,6.107]	.263	7.971	.000*
ISE	3.647	[2.319, 4.976]	.192	5.411	.000*
OCSE	4.971	[3.535, 6.408]	.241	6.820	.000*
SDL	3.312	[1.920, 4.705]	.137	4.687	.000*
TMSH	4.882	[3.710, 6.053]	.236	8.213	.000*
IS	3.420	[2.257, 4.582]	.176	5.796	.000*

Note: R_{adj}= .880 (N = 226, p = <.001). CI = confidence interval for B.
*p <.05.

The final predictive readiness to learn online model was:

Readiness = 15.332 + (4.896* Computer self-efficacy) + (3.647* Internet self-efficacy) + (4.971* Online communication self-efficacy) + (3.312* Self-directed learning) + (4.882* Time management and study habits) + (3.420* Institutional support).

The results of the regression analysis in Table 10 indicate that the RLOM explained 88% of the variance and that the model was a good predictor of student's readiness to learn online, F (6,219) = 274.772, p = <.001. All of the readiness competences contributed significantly to the model; online communication self-efficacy (β = .263, p = <.001), internet self-efficacy (β = .192, p = <.001), online communication self-efficacy (β = .241, p = <.001), and self-directed learning (β = .137, p = <.001), time management and study habits (β = .236, p = <.001), and institutional support (β =.176, p = <.001) respectively.

Among all the readiness competences, computer self-efficacy was the strongest predictor, followed by online communication self-efficacy, and time management, and study habits. The weakest predictor was self-directed learning, followed by institutional support and internet self-efficacy consecutively.

Discussion

This study explored the nursing students' self-efficacy of technology competences, personal attributes, and institutional support (readiness competences), and the predictors of readiness to learn online. The technology competences included computer self-efficacy, internet self-efficacy, and online communication self-efficacy. The personal attributes were self-directed learning, time management, and study habits. Institutional support included the support the students receive from instructors and peers. The findings highlight competences, both the student, faculty, and institutions must consider

as pertinent in online readiness. Findings from the study show that 97% of the students reported a moderate to the high level of readiness, and 3% who reported a lack of readiness to learn online.

Seven of the 12 demographic and background variables measured appeared to be good indicators of readiness to learn online. The age of the student, region of residence, a previous basic computing course, type of internet plan used, owning a modem/router, experience communicating via Facebook, and self-employment were all found to be significantly correlated with the students' readiness to learn online, for example, students who were younger than 36 years old had higher mean scores. This finding highlights the need to support older students through remedial strategies to enhance the competences required to learn online. The students who resided within the central region were more ready to learn online than those from the eastern, western, northern, and southern regions. The finding reveals that the opportunity to upgrade nursing education benefits those residing within the central region. This is likely that some suburban areas further away from the city and rural areas likely have limited resources such as electricity and internet access. Nurses who live in these areas may wish to pursue further studies. However, they are likely to be disadvantaged by the lack of resources such as the internet and electricity that are important to supporting online learning. For example, 8.4% of the students did not have access to electricity necessary to charge their devices, and 71.7% did not have a readily available internet needed to access course content. In addition, some students reported not having devices such as a computer, laptop, tablet, or smartphone to use to access course material. This raises questions about how the students accomplish learning online. Another was that when the students were not on campus, they reported finding alternative sources of internet connections. Twenty-seven percent of those students who did not use cable internet reported accessing their online courses by means of a modem or router. In addition, most students

(57.5%) purchased a daily internet bundle. These factors highlight the challenges students experience, such as insufficient internet connections and small data packages that may not last through the day to allow students to accomplish and submit assignments in time. This, therefore, directly affects the outcomes of their studying online.

Communicating in the online environment via WhatsApp and Facebook were found to increase readiness to learn online. This is not a surprise finding, as all the students used WhatsApp as a mode of communication, particularly for class activities, and slightly over half of them communicated via Facebook. However, online learning communication includes the exchange of information between instructor and student using online technologies like the learning management system (LMS). In this study, the students were more confident with written communication and responding to feedback in a timely manner but not confident participating in activities in the LMS. Perhaps interacting in social media contributes more to online communication self-efficacy and should be encouraged to enhance the competence.

Amongst the readiness competences in this study, the students recorded high confidence in self-directed learning and low confidence in computer, internet, and online communication self-efficacy. This finding is similar to that of Dorsah, in which pre-service student teachers from Gambaga College of Education in Ghana recorded high means in self-directed learning and low means in computer, internet, and online self-efficacy [20]. The self-directed learning attribute was mostly reflected by students' reports of being disciplined, organized, and adept at taking responsibility for their own learning, which gave them the confidence to pursue their own learning in an online environment. Self-directed learning was also found to be a significant predictor of readiness to learn online. This finding is similar to other studies that found self-directed learning was a significant predictor of readiness, besides

satisfaction and academic achievement/success in online learning [21–27]. Surprisingly, a majority of students (73%) rated their self-directed learning ability very high, yet this factor in the study was found to be the least predictor of online learning. The finding suggests that students may overate their abilities in this area, though it may not necessarily be a good predictor of readiness to learn online.

Low readiness ratings in computer, internet and online communication may be explained by a lack of taking a basic computing course. The majority of students in this study (62.8%) had not done the basic computing course before enrolling in the program to equip them with the necessary technology competences. In addition, when the students enrolled in the courses, they were not prepared for the unexpected migration to continue education online, resulting from the closure of schools during the COVID-19 pandemic lockdown. Lack of technology skills can lead to frustration [17], therefore, there is a need for instructors to support the students to improve the competences through constant use of online technologies. Furthermore, students can be helped to get familiar with the competences by equipping them with the skills to manage technical difficulties and by incorporating those competences in the teaching and learning activities to promote mastery [10, 28]. Surprisingly, computer self-efficacy, in this study, was found to be the biggest predictor of readiness to learn online, followed by online communication self-efficacy. The finding suggests that computer self-efficacy and online communication play a key role in online learning.

Another important finding was the strong positive correlation among all of the readiness competences listed in the survey. This finding indicates the interdependency of the competences in predicting readiness to learn online, thereby suggesting the need to consider all of them when enrolling students to learn online. Notably, a strong relationship existed between readiness to learn online and online communication self-efficacy and computer self-efficacy. Therefore, institutions that offer online learning would benefit by paying attention to the students' abilities to communicate online and to use the computer effectively before enrolling for online learning. The RLOM model developed in this study from the readiness competences described 88% of the variance in predicting readiness to learn online, suggesting a very strong model that can be used by institutions of higher learning in Uganda to assess nursing students' readiness to learn online.

The personal attributes of time management and study habits were third in line in predicting readiness to learn online. This included how students studied and managed their time in order to support online learning. The students reported to have time management skills, which was expressed through their high scores in being able to set aside time to study and do assignments. Time management is important in online learning; however, some students reported a lack of putting aside at least five to eight hours a week to study. This is not a surprising finding as a majority of the students in this reported to be studying and working at the same time, a factor likely to contribute to their lack of time to devote to study. The environment in which the student learns matters. In this study, the students agreed to learn from a variety of settings. However, some found it difficult to find a place to study that did not have distractions. This finding has implications to studying online, where it requires concentration and at least as much time to study as in the conventional classes. Students learning online are expected to have control over their own learning by setting aside time to study, or go through the lessons, and participate in other learning activities on their own. time management and study habits were found to have a predictive power of readiness to learn online and, therefore a key competence for online learning. The instructors need to know that low self-efficacy in time management and study habits is associated with poor academic achievement [13] and therefore need to help

enhance these competences in order to help students' success in online learning.

Institutional support is another important factor in predicting readiness to learn online. A majority (58.8%) of the students reported high levels of institutional support. Students need support from instructors and peers in order to facilitate their active interaction and to address their individual needs in online learning, such as solving technology issues. Institutional support was found to be significantly correlated with readiness to learn online in this study. The students reported feeling supported by instructors and colleagues who gave them technical assistance whenever they needed it. This finding is congruent with a study in which engineering students from Qatar University who received technical support from their peers and instructors whenever they needed it, positively influenced their online learning [29]. Students feel supported by instructors and peers if they feel connected and participate actively in the course activities. Online learning is often assumed to disconnect learners from their colleagues. However, in this study, the students reported to be connected and supported by their colleagues, which enhanced their views of institutional support. This finding is supported by the students' self-report of being comfortable to ask instructors and classmates' questions via email, thereby by promoting online communication. However, some of the students in this study reported receiving little or no institutional support from their instructors and peers. This is not a surprise finding as some students might have been overwhelmed by the technical skills so as not to perceive technical support, or the instructors may not have demonstrated technical expertise themselves, leading to anxiety in the students [30]. To improve the readiness in the institutional support subscale, Dorsah advises students to seek peer and instructor assistance whenever facing problems online [20]. Current research in this area is limited, and this study was the first at the two institutions to explore the support the instructors and peers give to online students that promoted their readiness to learn online.

Limitations

The study was carried out in only two institutions that are located within a large metropolitan city in Uganda, therefore not representative of the universities in other regions in the country, although students enrolled in these two universities were from all over the country. The data was collected using a self-report questionnaire, the findings of which could have been triangulated by reports from instructors who could have shared their experiences with students learning online. Data was also collected during the global pandemic disease outbreak when the institutions were closed, and students were not readily available therefore prolonging the duration of the study. In addition, the students' responses could have been affected by the stress and uncertainty they faced regarding the sudden introduction of online learning. Also, the findings from the self-report were subjective therefore risking response and social desirability bias as opposed to objective reporting.

Conclusion

The study has provided an account of the competences that contribute to the nursing students' readiness to learn online in the selected institutions in Uganda. It highlights nursing students' strengths and weaknesses in the competences required to be ready to learn online and insights in what the educators need to look out for to provide the desired support. The findings of this study reveal a gap in students' readiness to learn online, whereby it provides useful information to universities to support the transition. Learning online will likely provide a flexible and acceptable learning environment for the degree completion nursing students in Uganda if the gaps identified are addressed.

Recommendations

The findings from this study are recommended to the institutions to inform

prospective students of the competences to attain before enrolling for online courses. There's needed to increase institutional support by instructors to orient the students in the use of technologies in online learning. The guidance provided will enhance and build students confidence in the use of the technologies. There is a need for institutions and instructors to consider the role resources like computers, the internet, and electricity play in online learning and, therefore, be able to provide flexibility and resources to facilitate success in online learning. Furthermore, the students are recommended to build their confidence by getting acquainted with the technology skills through continued practice. The students are also required to improve on their readiness to learn online by increasing their responsibility in self-directed learning, time management, and study habits attributes. This being the first study of its kind for the degree

completion nursing students in Uganda, there's needed to explore other dimensions of readiness such as attitudes and perceptions of nursing students' readiness to learn online. In addition, the nursing instructors too suddenly adopted inline learning during the pandemic and therefore a need to study their readiness to teach in the online environment.

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Conflict of Interest

The authors declare they have no conflict of interest.

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