Awareness and Utilization of Moodle among Students at Nursing Schools in North-Western Nigeria

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ABSTRACT

Background: E-learning has been observed to enhance and support the teaching and learning processes, ranging from the way students use educational materials on the web or server and accessing course work online while following a course on campus to programs offered entirely online. Again e-learning allows for efficient transfer of knowledge anywhere and anytime, regardless of subject matter. It opens up a world of learning unavailable in most corners of the world, while at the same time empowering learners with the information technology awareness and skills crucial to succeed in today's global knowledge economy. **Aim:** The study aimed at assessing the awareness and utilization of moodle among students at nursing schools in North-Western Nigeria. **Methodology:** A cross-sectional analytic design was used for this study. Multistage sampling technique was used to select three schools; school of nursing Birnin Kudu, Jigawa state, school of nursing Katsina, Katsina state and school of nursing Gusau, Zamfara state which forms the setting for the study. A total of 307 nursing students were selected and recruited for the study. A structured Self-Administered Questionnaire was used for data collection. Descriptive statistics and the Bonferroni Post Hoc test were used in data analysis which. **Results:** The findings of the study revealed that most of the students (245 out of 305) have an excellent levels of awareness of e-learning with a percentage of 80.4%. The study also found out that most of the students have a high level of utilization of e-learning with 62%. The study also showed a statistically significant relationship between awareness and utilization of e-learning among students at nursing schools in North-Western Nigeria with P-values of 0.001. **Conclusion:** Based on the findings, it was concluded from the results of the study that the students have an excellent level of awareness of e-learning and have a high level of utilization of e-learning.

Keywords*: Information and Communication Technology (ICT), E-learning, Awareness, Utilization.*

DOI: https://dx.doi.org/10.4314/bjnhc.v3i2.3

Introduction

In the context of this study, moodle means the Moodle platform by which the nursing students access and utilize for academic purposes. While Information and Communication Technologies (ICT) include computers and mobile phones and their accessories which are used in the teaching and learning process.

According to Brockett & Roger (2014), learning is a personal act of an individual to make full use of his/her potential. They suggest that it is a process of self-actualization to its maximum level.

The rapid growth in Information and Communication Technologies (ICT) has brought remarkable changes in the twenty-first century globally, as well as affected the demands of modern societies (Charles, 2012). There is also growing demand for educational institutions to use ICT to teach the skills and knowledge to students in need for the 21st century (Charles, 2012). The information and communication technology (ICT) revolution

is sweeping through the world and the gale has even caught up with developing countries like Nigeria and Ghana. ICTs have introduced new methods of teaching and conducting research and have been brought into education facilities for online learning, teaching, and research collaboration (citation needed). Teachers in the developing world have to change their teaching styles and acquire internet skills as new technologies transform classrooms over the next 20 years (citation needed). Teachers will need to learn new skills to teach students how to search for and use information from the Internet safety issues (Nwezeh, 2010).

E-learning has been observed to enhance and support the teaching and learning process, ranging from the way students use educational materials on the web or server and accessing course work online while following a course on campus to programs offered entirely online. Also, e-learning allows for efficient transfer of knowledge anywhere and anytime, regardless of subject matter. It opens up a world of learning unavailable in most corners of the world, while at the same time empowering learners with the information technology awareness and skills crucial to succeed in today's global knowledge economy. Mazleena & Noorminsha, (2011) stated that the term e-learning refers to computer-enhanced training as opposed to the computer-based training of the 1980s.

It is usually delivered on a personal computer and includes learning delivered by other communications technologies. According to them, e-learning is an approach to facilitate and enhance learning through both computer and communication technologies. The devices that are used for this purpose include personal computers, CD ROMs, television, personal digital assistants (PDAs), MP3 players, and mobile phones. **Moodle** is a free and open-source learning management system (LMS) written in PHP and distributed under the GNU General Public License With customizable management features, Moodle is used to create private websites with online courses for educators and trainers to achieve learning goals. Moodle allows for extending and tailoring learning environments using community-sourced plugins

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Moodle is used for blended learning, distance education, flipped classrooms and other e-learning projects in schools, universities, workplaces, and other sectors. With customizable management features, it is used to create private websites with online courses for educators and trainers to achieve learning goals.

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Globally, e-learning has been introduced to nursing curricula in a number of Western countries including Australia, Canada, Greece, Ireland, New Zealand, the United Kingdom, and America. In African countries such as Nigeria, the use of e-learning is rapidly increasing in nursing education. However, the effectiveness of moodle is still inconsistent, and a lack of evidence about the implementation of e-learning methods in nursing education (Ahmad, 2012).

Methods and Materials

An analytical cross-sectional descriptive design was adopted for this study. Analytic study tests hypotheses about exposure-outcome relationship.

The setting of the study is made up of three Nursing Schools in Northwestern Nigeria. These are:

1. School of Nursing Birnin Kudu Jigawa State
2. School of Nursing Katsina, Katsina State and
3. School of Nursing Gusau, Zamfara State.
4.

The target population of the study comprises all students in nursing schools of northwestern Nigeria.

A total of 307 nursing students were recruited for the study. The sample size was determined using Yamene's (1967) formula for calculating sample size; this is because the

population size was known. A multi-stage sampling technique was used to select the three schools of nursing for the study

Stage One
Northwestern Nigeria was grouped into three clusters according to old states in the region. Cluster One includes the Old Kano State (comprising Kano and Jigawa States), Cluster Two includes the Old Kaduna State (comprising Kaduna and Katsina States) and Cluster three includes the Old Sokoto State (comprising Sokoto, Kebbi, and Zamfara States).

Stage Two
One state was selected randomly from each cluster using the lottery method where Jigawa, Katsina, and Zamfara States were selected randomly for the study.

Stage Three
In each state selected, a school of nursing with at least 3 years' accreditation status was selected. Therefore, School of Nursing Birnin Kudu in Jigawa state, School of Nursing Katsina in Katsina State, and School of Nursing Gusau in Zamfara state were selected based on this criterion.

Stage four
The proportionate sampling method was used in distributing the sample size for each school according to their respective population. Then systematic random sampling technique was applied at an interval of 3 to select the required samples for the study in each school. To get the first sample, a computer-generated simple random sampling technique was used to ensure randomization.

The main tool for the study was a structured self-administered questionnaire. It was designed by the researcher after an intensive review of various works of literature and research papers that carried out similar investigations. A pre-testing was carried out on 10% of the samples at the School of Nursing Kano. An average reliability index of 0.72 showed that the instrument was reliable for the study.

The instrument was subjected to a supervisory team and a 5-member panel of juries for vetting for face validity. Content validity was done by experts in e-learning.

Ethical approvals were collected from the Research and Ethics Committees in Ahmadu Bello University, Zaria, and each state was selected for the study. (No. SON/KT/S.30/VII/166, MOH/SEC.3/S/812/1) Access and permission for the conduct of the study were asked from the Heads of the three Schools of Nursing. Informed consent was obtained from the participants prior to the commencement of the study. The participants were also made to understand that participation in the study was fully voluntary and at any point in time a participant had the right to withdraw from the study. Strict confidentiality was maintained throughout.

After collecting the data from the respondents, it was collated, coded, cleaned, and then analyzed using SPSS version 20. Descriptive and analytic statistics such as frequency, percentages, mean, and ANOVA were used in the analysis.

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Results
Table 1: *Sociodemographic characteristics of the respondents (N = 305).*

Variables	Frequency	Percent (%)	
Age In Years			Mean
• 15-19	13	4.3	
• 20-24	223	73.1	
• 25-30	59	19.3	24
• Above 30	10	3.3	
Gender			
• Male	113	37	
• Female	192	63	
Marital Status			
• Single	255	83.6	
• Married	48	15.7	
• Widowed/widower	2	0.7	
Religion			
• Islam	285	93.4	
• Christianity	20	6.6	
Previous Educational Background			
• SSCE	201	65.9	
• Diploma	72	23.6	
• NCE	13	4.3	
• Others	19	6.2	
Formal Computer Training			
• Yes	130	42.6	
• No	175	57.4	

Table 1 on the distribution of the respondents according to sociodemographic characteristics (N = 305) above indicates that most of the respondents (73.1%) were within the age range of 20 – 24 years and the mean age was 25, while 63% of them were female. 255 of the respondents (83.6%) were single and 93.4% were practicing Islam as their religion. The majority of the respondents (65.9%) hold SSCE before coming to the School of Nursing while most of them (57.4%) did not attend any formal computer training.

Table 2: *Respondents' level of awareness of e-learning (N = 305).*

Variables	2		1		0		X
	F	%	F	%	F	%	
Meaning							
• E-learning means learning conducted via electronic media	296	97	8	2.6	1	0.3	1.97
• E-learning is learning utilizing electronic technologies to access educational curricula outside of a traditional classroom	254	83.3	42	13.8	9	3	1.80
• E-learning is also called Web-based learning, online learning, distributed learning, computer-assisted instruction	276	90.5	27	8.9	2	0.7	1.90
Types/Categories							
• Moodle is a free online management system	255	83.6	44	14.4	6	2	1.82
• Moodle system can be installed on laptop, desk top and mobile phones	290	95.1	13	4.3	1	0.3	1.95
• Course contents can be uploaded on Moodle platform	281	92.1	22	7.2	2	0.7	2.00
Resources							
• Multimedia resources can be uploaded on Moodle the platform	196	64.3	91	29.8	16	5.2	1.60
• Moodle is flexible, open-source, and free to download learning materials	246	80.7	48	15.7	11	3.6	1.77
• Moodle is available online and on the local server accessible to teachers, librarians, and students within the school.	274	89.8	21	6.9	7	2.3	1.96
• Techniques in moodle include;, Multimedia teaching, submitting assignments, live discussions.	244	80	53	17.4	7	2.3	1.78
Advantage							
• Moodle platform can be accessed in the office, at home, on the road, 24 hours a day, seven days a week	148	48.5	87	28.5	69	22.6	1.29
• Moodle has measurable assessments which can be used on both the teachers and students	273	89.5	29	9.5	1	0.3	1.91
• Students can modify the contents of Moodle	135	44.3	99	32.5	69	22.6	1.23
• Aggregate mean %	**80.3%**		**14.4%**		**5.3%**		
• Aggregate mean score			1.77				

(2 = Correct, 1 = not sure and 0 = incorrect. Poor level of awareness < 50%, Good level of awareness = 50 to 69% and Excellent level of awareness = 70% and above)

Table 2 above on distribution of the respondents according to the level of awareness on e-learning (N = 305) expresses that, under the meaning of e-learning, respondents were more aware of and have an excellent level of awareness on 'e-learning means learning conducted via electronic media' with 97% correct. This is followed by 'Moodle system can be installed on the laptop, desktop, and mobile phones' under types/categories of e-learning, with a percentage of 95.1%. It also shows that; respondents were very much aware that 'course contents can be uploaded on Moodle platform' with 92.1% which means the excellent level of awareness). However, the

respondents demonstrated a poor level of awareness on the 'Moodle platform can be accessed in the office, at home, on the road, 24 hours a day, seven days a week' with 48.5%).

Table 3: *Summary of distribution of the respondents according to the level of awareness on Moodle (N = 305).*

Category Variables	2		1		0		X
	F	%	F	%	F	%	
Meaning	277	90.8	24	7.9	4	1.3	1.89
Types/categories	276	90.4	26	8.6	3	1	1.92
Resources	241	79	53	17.6	11	3.7	1.78
Advantage	187	61.1	72	23.6	46	15.3	1.48
Aggregate mean %	80.3%		14.4%		5.3%		
Aggregate mean score			1.77				

(2 = Correct, 1 = not sure and 0 = incorrect. Poor level of awareness < 50%, Good level of awareness = 50 to 69% and Excellent level of awareness = 70% and above).

Table 3 above on summary of the distribution of the respondents according to the level of awareness on moodle (N = 305) shows that respondents expressed excellent level of awareness on meaning, types, and resources of e-learning with 90.8%, 90.4%, and 79% respectively. While on the advantage of e-learning, 187 respondents i.e. 61.1% were correct which means a good level of awareness on e-learning. The aggregate mean percent of the respondents who ticked the correct options was 80.3%, which denotes the excellent level of awareness.

Table 4: *Respondents' level of utilization of Moodle (N = 305)*

Variables	3		2		1		0		X
	F	%	F	%	F	%	F	%	
I log into Moodle for study purposes	47	15.4	225	73.8	27	8.9	6	2.0	2.03
I use Moodle to read uploaded materials by teachers	83	27.2	175	57.4	26	8.5	21	6.9	2.05
I use Moodle to submit assignments	60	19.7	182	59.7	15	4.9	47	15.4	1.85
I use the Moodle to view educational multimedia	63	20.7	154	50.5	43	14.1	45	14.8	1.77
Most of students around me use e-learning	88	28.9	169	55.4	38	12.5	10	3.3	2.10
I use the moodle to communicate with my colleagues	157	51.5	115	37.7	19	6.2	12	3.9	2.39
I use the moodle to communicate with my teachers	127	41.6	121	39.7	39	12.8	17	5.6	2.25
I use the moodle throughout the week	166	54.4	103	33.8	25	8.2	9	3.0	2.42
I use the moodle to view social media	126	41.3	120	39.3	26	8.5	31	10.2	2.14
I use the moodle in my	139	45.6	127	41.6	21	6.9	17	5.6	2.28

leisure time									
I save money of purchasing books by using moodle.	87	28.5	93	30.5	34	11.1	89	29.2	1.62
Even if not monitored, I would trust using the moodle.	127	41.6	120	39.3	37	12.1	20	6.6	2.17
I intend to continue using the moodle in my studies	144	47.2	116	38.0	24	7.9	20	6.6	2.27
I will keep using the moodle as regularly as I do now.	144	47.2	116	38.0	35	11.5	9	3.0	2.31
I will strongly recommend that others use the moodle	150	49.2	112	36.7	27	8.9	16	5.2	2.30
Aggregate mean %	37.3%		44.8%		9.5%		8.1%		
Aggregate mean score					2.13				

(3 = Always, 2 = Sometimes, 1 = Seldom and 0 = Never. (High level of utilization = 68 - 100%, Moderate level of utilization = 34 – 67 and Low level of utilization = 0 – 33%).

Table 4 above on distribution of the respondents according to the level of utilization of e-learning (N = 305) shows that the majority of the respondents mentioned that they sometimes log into e-learning Moodle for study purposes with a percentage of 73.8%. The respondents then said that they sometimes use e-learning Moodle to submit assignments with 59.7%. It also revealed that 57.4% of the respondents use e-learning Moodle to read uploaded materials by teachers. It was also revealed that only 6 (2.0%) of the respondents said that they never log in to e-learning for study purposes.

Table 5: *Summary of distribution of respondents based on level of utilization of Moodle (N = 305)*

Categories	*Frequency*	*Percent (%)*
Always	114	37.3%
Sometimes	137	44.8%
Seldom	29	9.5%
Never	25	8.1%

Table 5 above on summary of the distribution of respondents based on level of utilization of e-learning (N = 305) indicates that the aggregate mean shows that majority of the students utilize e-learning sometimes with 44.8% and only 8.1% never utilize e-learning in their period of stay as students in the nursing schools of North-western Nigeria.

Table 6: Chi-Square for testing the relationship between nursing students' level of awareness and utilization of the moodle at nursing schools in North-Western Nigeria.' at 95% confidence level (N = 305)

		Level of Utilization			Chi-square Test		
		High	Moderate	Low	$\chi 2$	df	P-value
	Poor	5	2	0			
		71.4%	28.6%	0.0%			
		2.6%	1.9%	0.0%			
	Good	8	20	2			
Level of awareness		26.7%	66.7%	6.7%			
		4.2%	19.2%	16.7%			
	Excellent	176	82	10			
		65.7%	30.6%	3.7%			
		93.1%	78.8%	83.3%			
					17.63	4	.001*

(p< 0.05, * indicates significant relationship)
Table 4.6 above is the Chi-Square result for testing the relationship between nursing students' level of awareness and utilization of e-learning at nursing schools in North-Western Nigeria.' The test shows that $X^2 = 17.63$, P = 0.01. This means there was a significant relationship between awareness and utilization since P-value (0.001) is less than the P-value (0.05). Therefore, it is concluded that there is the relationship between nursing students' level of awareness and utilization of e-learning in the nursing schools of North-Western Nigeria.

Discussion of Findings
Sociodemographic characteristics
The findings of the results show that most of the respondents (73.1%) were within the age range of 20 – 24 years and the mean age of the whole distribution was 23 years, while 63% of them were female and 255 of the respondents (83.6%) were single. This is obvious as most of the students were fresh from secondary schools. It was also as a result of the influence of Women for Health (W4H) in Schools of Nursing of Northwestern Nigeria made it that majority of the students were female by gender.

It was revealed that 93.4% were practicing Islam as their religion. This is because the study area is Northern Nigeria where Islam predominates as religion. The majority of the respondents (65.9%) hold SSCE before coming to the School of Nursing while most of them (57.4%) did not attend any formal computer training.

Level of students' awareness of e-learning
The result indicates that most of the students have an excellent level of awareness on the moodle with a percentage of 87.9%, 30 respondents (9.8%) had a good level of awareness and only 7 of the students (2.3%) had a poor level of awareness on e-learning. The result is in line with the finding by Ibrahim et. al. (2015) in their research on ICT knowledge, perception, and utilization among health care providers in Abuja that the majority of the respondents possess considerably average knowledge and skills in the use of word processors i.e. Microsoft Word (111, 42.9%). It is also in consonance with another study conducted at the College of Medicine and Health Sciences, the University of Gondar, Ethiopia on Knowledge and utilization of information communication technology (ICT) among health science

students by Woreta, Kebede, & Zegeye, (2013). This finding may strongly be related to the huge investment made by Women for Health in the training and retraining of teachers and students in the nursing schools of Northwestern Nigeria. Results indicated that half of the respondents (51%) had ICT knowledge. This finding might be so because…is obvious as ICT knowledge is increasing on a daily basis as a result students are becoming more and more aware of what is happening in their environment.

Level of students' utilization of Moodle
Findings express that most of the students have a high level of utilization of e-learning with 62%, 34% have a moderate level of utilization of e-learning and only 12 of the students (3.9%) had a low level of utilization of e-learning. This finding is in contrast with a study by Eze, Chinedu-Eze, & Bello (2018) in their study 'the utilization of e-learning facilities in the educational delivery system of Nigeria: a study of M-University, discovered that majority of lecturers in M-University indicated that e-learning facilities were not fully utilized which might be as a result some factors such as the attitude of the users, 'not functional' e-learning facilities, poor internet access and people not wanting to change.

Also, this finding contrasted the one conducted by Gambari & Chike-Okoli (2014), on the availability and utilization of Information and Communication Technology (ICT) in tertiary institutions in Niger State which revealed that there was inadequate ICT facility and there was no significant difference between the availability and extent of effective use of ICT facilities and equipment for teaching and research purposes. This implies that when e-learning facilities are adequate in a school, there is a high expectation that the students will utilize them. Jumoke (2014) states that in Nigeria, many schools that do not have computers still do not have access to the internet, which is an important requirement for supporting networking for learners and teachers, as well as for collaborative learning. It is not

surprising as this result shows the high level of e-learning utilization as we are in a technology era where everyone is using ICT in one way or the other.

Conclusion
Based on the findings, it was concluded as follows: The students have excellent level of awareness on e-learning and they have high level of utilization of e-learning. The study also concluded there was a statistically significant relationship between nursing students' level of awareness and utilization of e-learning in the nursing schools of North-Western Nigeria.

Recommendations
Based on the research findings, the following recommendations were made:

1. Students' awareness of the use of information technology especially e-learning should be improved and maintained by the school management in each school through introducing module mobile.
2. State governments and Non-governmental Organizations should provide adequate ICT resources in the nursing schools to enhance accessibility and utilization by the students.

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