PERCEIVED IMPACTS OF EDUCATIONAL TECHNOLOGIES ON LEARNING AMONG STUDENTS IN SELECTED SCHOOLS OF NURSING IN OGUN STATE

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ABSTRACT: *The rapid evolution of web-based information platforms and social media in particular, has made the internet the primary source of information for many health professional students. When thinking of how technology has changed nursing education, high-fidelity simulation and computerized testing are the two areas which immediately come to mind, though the technological revolution is actually much more comprehensive, with students (and instructors) using laptops, smart phones, and tablets in class to instantly access great stores of information on the internet. The study was designed to assess the perceived impacts of educational technologies for teaching and learning among students in selected schools of nursing in Ogun State. A quantitative descriptive research design was used to obtain information on the assessment of effects of educational technologies for teaching and learning in selected Schools of Nursing in Ogun State. A total of 198 students were used in the study; a simple random technique was used to select participants. A well-constructed questionnaire was used, data was collected and analysis was presented in tables and percentages. Results obtained from the study revealed that 80.3% agreed that technology in teaching breaks monotony/boredom and almost all respondents (94.9%) agreed that technology makes lessons interesting to comprehend. Also, 96.5% had previously heard about ICT and 58.1% agreed to have used it in their school. The study further revealed that 75% of the students believed there are only 25% availability of technological tools in the school for teaching and learning while 75% agreed that technological tools are not sufficiently available. Majority of the students also agreed that poor attitudes of both students and tutors toward ICT hinder its usage. Other barriers include lack of ICT infrastructures, lack of technical support,*

inadequate knowledge and poor accessibility to the internet which explains that there was no significant increase in the relationship for students' perception of ICT compared to availability of technological tools for learning and teaching in the schools. The p-value of 0.68 shows that there was a significant relationship between students' perception of ICT and availability of technological tools for learning and teaching in the school. Thus, the study recommends provision of required ICT tools and training of nurse educators to facilitate ICT utilization in nursing education.

KEYWORDS: Effectiveness, Educational Technology, Nursing, Teaching, Learning.

INTRODUCTION

The recent development and use of new training tools in healthcare education has influenced increase in the use of technology in health care and higher expectations on the part of patients (Ziv, Small & Wolpe, 2012). The technological revolution brought about by the internet has affected many aspects of modern life, and in particular, nursing education. Modern information and communication technologies (ICTs) have permeated classrooms, lecture halls, skills labs, libraries, etc. Their omnipresence in the world of education cannot be denied. Developed countries such as Australia, Canada, Denmark and the United States of America (USA) have taken significant steps in incorporating the use of technology into the undergraduate curriculum (Cummings, Borycki & Madsen, 2015). According to Jäger (2013), on one hand, technology offers nurse educators opportunities for creating new and enhanced educational experiences for their students; on the other hand, ICTs present nurse educators with many challenges that go above and beyond mere technical aspects. Wells (2011) stated that students in the health professions seem to access the internet daily, as part of which they are engaged in diverse online activities and focused mainly around social media platforms. The rapid evolution of web-based information platforms and social media in particular, has made the internet the primary source of information for many health profession students (Giordano, 2016).

In Africa, there is a growing need to integrate ICT in nursing education (Adeola & Evans, 2018; Asiri, 2016; Tchuitcheu, 2020). Furthermore, studies conducted in Ghana, Malawi, Nigeria, Rwanda and South Africa indicated that nursing educational institutions were progressively adopting nursing educational technologies into undergraduate nursing education (Achampong, 2017; Bhebe & de la Harpe, 2014; Harerimana & Mtshali, 2019; Harerimana & Mtshali, 2020; Nishimwe et al., 2016; O'Connor, 2016; Robinson- Bassey & Edet, 2015).

Furthermore, some of the claims made in favour of computer-based learning (CBL), such as reductions in staff workload and cost savings, are difficult to substantiate and are avoided by experienced computer-based learning (CBL) practitioners. Other proposed advantages are more credible, including an increase in students' knowledge and understanding of a particular subject, and allowing students to direct their own learning. There are also indirect benefits of using computer-based learning (CBL), such as the development of computer and information technology (IT) skills.

In approximately the last decade there has been a marked interest in investigating ways of teaching other than the traditional face-to-face. The incorporation of technological resources such as virtual platforms and hypermedia resources, combined with other innovative, methodological techniques such as project-based or problem-based learning, have revolutionized the teaching–learning process.

Okebukola (2012) studied that the Nigerian government enacted a policy on computer education in 1988. The plan was to diffuse computer education innovation to all schools. Unfortunately, the project did not really take off beyond the distribution and installation of personal computers. It was concluded that the computer is not part of classroom technology in countless Nigerian nursing schools. This implies that the board and textbook continue to dominate classroom activities in most Nigerian schools.

Notwithstanding, regarding the importance of technology in educating 21st century nursing students, a study reported the cost of technology equipment, poor computer knowledge, deficient technical support, and negative attitudes of students as some of the barriers to implementing technology in nursing education (O'Connor & Andrews, 2015).

When thinking of how technology has changed nursing education, high-fidelity simulation and computerized testing are the two areas which immediately come to mind, though the technological revolution is actually much more comprehensive, with students (and instructors) using laptops, smartphones, and tablets in class to instantly access great stores of information on the internet.

Application of technology for teaching and learning on nursing education in this part of the world have not been well studied; therefore, this study was conducted to assess the perceived impacts of educational technologies for teaching and learning among students in selected Schools of Nursing in Ogun State.

METHODOLOGY

Research Design

A quantitative descriptive research design was used to obtain information on the assessment of effects of educational technologies for teaching and learning in selected Schools of Nursing in Ogun State.

Target Population

The target populations for this study were the Year 2 and Year 3 student nurses attending selected schools of Nursing in Ogun State.

Sampling Technique

Simple random sampling technique was used to select 400 student nurses that participated in the study from the four schools. This ensured that each respondent had equal chances of participating in the study.

Instrument For Data Collection

A well-constructed questionnaire was used to collect data from the respondents. Questions were divided into five sections:

Section A: Demographic data.

Section B: Perceived impacts of technology on teaching and learning among nursing student learning outcomes (i.e., students' grades) in selected schools of nursing in Ogun State.

Section C: Nursing students' knowledge on the use of technology in nursing profession teaching and learning in selected schools of nursing in Ogun State.

Section D: Barriers that hinder use of technology in nursing profession teaching and learning in schools of nursing.

Section E: Factors responsible for utilization of technology for teaching and learning in schools of nursing.

Validity/ Reliability of Instrument

In order to ensure a valid research instrument, a structured questionnaire was constructed by the researcher and was given to the supervisor for corrections, and comments and the questionnaire was administered to the respondents for answering. To ensure the reliability of the questionnaire, Cronbach's Alpha model technique was employed. This involves administering the questionnaire once to about 10% equivalent of the study participants at the site chosen. The coefficient reliability was determined and a result showing correlation coefficient equal to or greater than 0.5 was said to be reliable.

Method of Data Collection

A self-structured, well-developed questionnaire was used to collect data from the participants. Respondents were allowed to make clarification on the questions and all questionnaires were collected back immediately after filling.

Method of Data Analysis

Data analysis involves the breaking down of data into representative constitutes in order to find answers to the research questions. The questionnaires were sorted out manually and analyzed using the statistical package for social science (SPSS). Descriptive statistics of frequencies and percentages were used to answer the research questions.

Ethical Considerations

A letter of permission was collected from the schools and was submitted to the Department for Planning Research and Statistics, Ministry of Health, Ogun State for approval. Approval was obtained from the principals of the selected schools of nursing in Ogun State to collect data. Participants' consent was gained before distributing questionnaires. All information from the participants was treated confidentially. All used materials were referenced and anonymity was ensured by not requesting for participants' names and addresses.

RESULTS

Table 1: Perceived Impacts of Technology on Teaching and Learning among Nursing Student Learning Outcomes (i.e., Students' Grades) in Selected Schools of Nursing in Ogun State
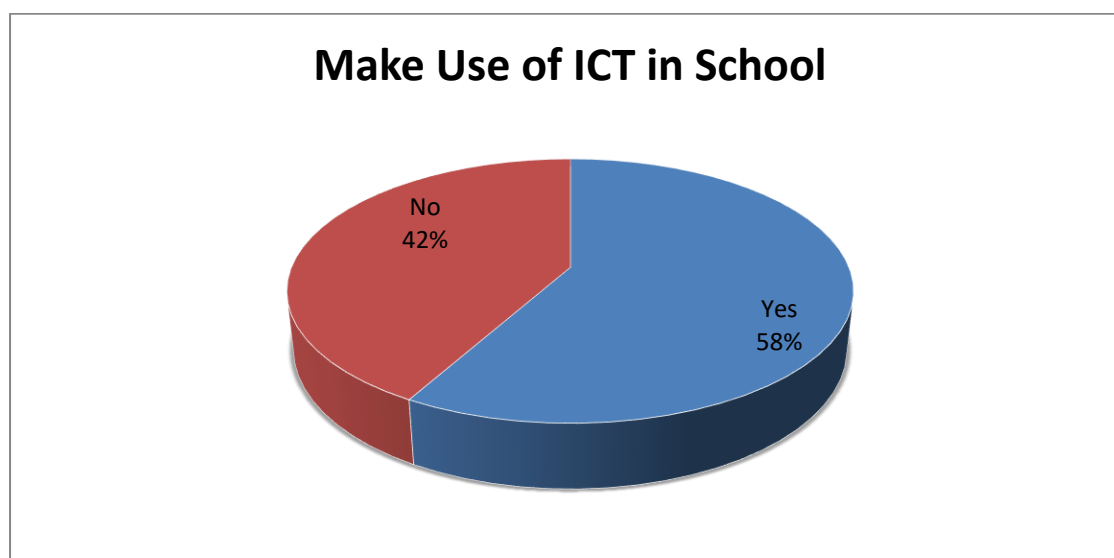
VARIABLES	YES %	NO %
It breaks monotony/boredom	159(80.3)	39(19.7)
It makes lessons interesting to comprehend	188(94.9)	10(5.1)
It enhances better understanding of lessons	168(84.8)	30(15.2)
It helps in proper management of time	148(74.7)	50(25.3)
It makes teaching more effective	168(84.8)	30(15.2)
Encourages students active class participation	141(71.2)	57(28.8)
Desire to take additional classes	115(58.1)	84(42.4)
Improves attendance and attentiveness in class	114(72.7)	54(27.3)
Encourages students to study for examinations and quizzes	144(72.7)	54(27.3)
Improves interaction with the instructor during and outside the class	143(72.2)	55(27.8)

The table above shows the perceived impact of teaching and learning among nursing students. 80.3% agreed that it breaks monotony/boredom and almost all respondents (94.9%) agreed that it makes lessons interesting to comprehend. Majority of the respondents agreed that it enhances better understanding of lessons, proper management of time and also makes teaching more effective. Most of the respondents also agreed that it encourages students' active class participation and improves interaction with instructors during and outside class.

Table 2: Technology Availability for Teaching and Learning in Selected Schools of Nursing in Ogun State

VARIABLES	YES %	NO %
Have you heard of ICT before?	191(96.5)	7(3.5)
If yes, do you make use of it in your school?	115(58.1)	83(41.9)

The table above reveals that the majority of the students (96.5%) have previously heard about ICT and 58.1% agreed to using it in their school.

Make Use of ICT in School

VARIABLES	YES %	NO %
Wireless network	73(36.9)	125(63.1)
Instructors' personal computers	131(66.2)	67(33.8)
Students' personal computers	73(36.9)	125(63.1)
Use of E-books	79(39.9)	119(60.1)
PowerPoint application	90(45.5)	108(54.5)
Projector	130(65.7)	68(34.3)
Printer	94(47.5)	104(52.5)
Virtual nursing laboratory	35(17.7)	163(82.3)
Human simulators	58(29.3)	140(70.7)

The table above shows that 63.1% of the students did not have wireless networks and 63.1% did not have students' personal computers while 60.1% did not make use of E-books. Also, 54.5% did not use powerpoint applications in their school. More than half of the respondents (52.5%) also disagreed that they have printer and 82.3% also disagreed that that they have virtual nursing laboratory while 70.7% said they did not have human simulators. 66.2% of the respondents agreed that they have instructors, personal computers and 65.7% agreed that they have projectors.

Table 3: Level of Technological Availability in Selected Schools

	FREQUENCY	PERCENTAGES
AVAILABLE	150	75.0
NOT AVAILABLE	50	25.0
TOTAL	200	100

The table above reveals that 75% of the students believed there are only 25% availability of technological tools in the school for teaching and learning while 75% agreed that technological tools are not sufficiently available.
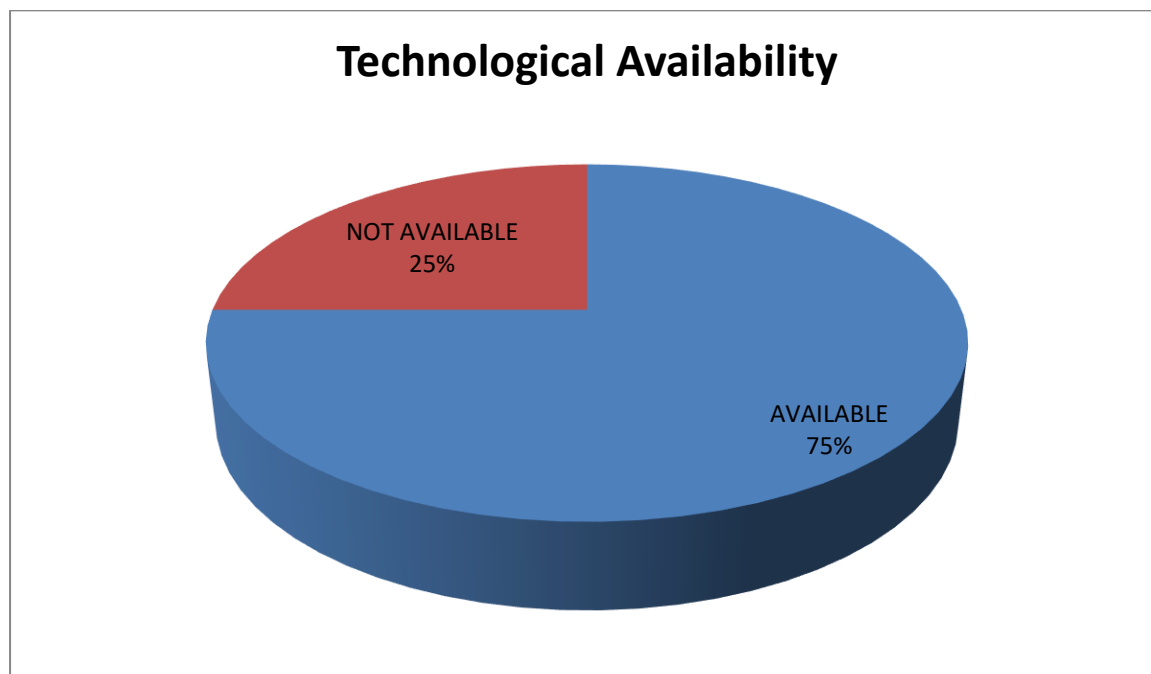

Technological Availability

Table 4: Barriers that Hinder the Use of Technology in Nursing Profession Teaching and Learning in Schools of Nursing

VARIABLES	SD	D	A	SA	Mean X
Absence of policies to guide the integration of Information and Communication Technology in teaching	9(4.5)	21(10.6)	87(43.9)	47(23.7)	2.9
Poor awareness to e-learning	11(5.6)	53(26.8)	87(43.9)	47(23.7)	2.8
Poor attitude of nursing tutors towards Information and Communication Technology	18(9.1)	38(19.2)	108(54.5)	34(17.2)	2.7
Poor attitude of nursing students towards Information and Communication Technology	(34)17.2	61(30.8)	82(41.4)	21(10.6)	2.4
Fear of perceived risk associated with the use of Information and Communication Technology	26(13.1)	62(31.3)	62(31.3)	48(24.2)	2.6
Lack of Information and Communication Technology infrastructures	12(6.1)	22(11.1)	96(48.5)	68(34.3)	3.0
Lack of technical support for Information and Communication Technology integration in teaching and learning	7(3.5)	32(16.2)	95(48.0)	64(32.3)	3.0

Inadequate knowledge about the use of Information and Communication Technology in learning	8(4.0)	38(19.2)	99(50.0)	53(26.8)	2.9
Poor accessibility to internet connectivity	14(7.1)	21(10.6)	76(38.4)	87(43.)	3.1
Teachers do not have enough time to integrate Information and Communication Technology into learning and teaching	25(12.5)	39(19.7)	86(43.4)	48(24.2)	2.7
Unreliable power supply	8(4.0)	25(12.6)	90(45.5)	75(37.9)	3.1
Unavailability of task-appropriate Information and Communication Technology tools	13(6.6)	12(6.1)	120(60.6)	53(26.8)	3.0
Financial constraints to purchase data	16(8.1)	18(9.1)	70(35.4)	94(47.5)	3.2

The table above shows the barriers hindering the use of technology in nursing profession teaching and learning in schools of Nursing. Majority of the respondents (67.6%) agreed that there is absence of a policy guide for the integration of ICT in the schools; majority (71.7%) also agreed that there is poor awareness of e-learning among the students and staff. Majority of the students also agreed that poor attitude of both students and tutors toward ICT hinder its usage. Other barriers include lack of ICT infrastructures, lack of technical support, inadequate knowledge and poor accessibility to the internet. Other barriers mentioned are unreliable power supply, financial constraints on data purchase and teachers' lack of time to integrate ICT into learning and teaching.

Table 5: Factors Responsible for Utilization of Technology for Teaching and Learning in Schools of Nursing

VARIABLES	SD	D	A	SA	Mean X
Provision of internet access	13(6.6)	4(2.0)	113(57.1)	68(34.3)	2.9
Establishment of computer access	15(7.6)	5(2.5)	93(47.0)	85(42.9)	2.8
Formation of expertise support	9(4.5)	19(9.6)	104(52.5)	66(33.3)	2.7
Setting up of adequate training	7(3.5)	15(7.6)	95(48.0)	81(40.9)	2.4
Delivery of utilization support	5(2.5)	16(8.1)	96(48.5)	81(40.9)	2.6
More exposure of nursing tutors and students to the technology	11(5.6)	17(8.6)	55(27.8)	115(58.1)	3.0
Providing adequate time to explore and prepare activities	8(4.0)	17(8.6)	77(38.9)	96(48.5)	3.0
Suitable supply of power	7(3.5)	18(9.1)	70(35.4)	103(52.0)	2.9
Expansion of tutors and students' knowledge on implementation	5(2.5)	16(8.1)	89(44.9)	88(44.4)	3.1

The table above explains factors responsible for utilization of ICT for teaching and learning in schools of nursing. Majority of the students agreed that provision of the internet (91.4%), establishment of computer access (89.9%), expertise support (85.5%), and adequate training (88.9%). Other factors mentioned include utilization support, exposure of nursing tutors, suitable power supply and knowledge implementation for students and tutors.

Hypotheses

Hypothesis One

Ho1: There is a significant relationship between students' perception of ICT and the availability of technological tools for learning and teaching in the school.

Table 6: Test of Difference Between

Students' perception of ICT and availability of technological tools for learning and teaching in the school.

Have you heard of ICT before * Availability Cross tabulation

Count

		Availability		Total	χ^2	P Value
		Not-Sufficiently Available	Sufficiently Available			
Have you heard of ICT Before	Yes	144	48	192		
	No	6	2	8	1.0	0.680
	Total	150	50	200		

The findings and analysis of the study fails to reject the null hypothesis. The difference in relationship between students' perception of ICT and availability of technological tools for learning and teaching in the school was not statistically significant. There was a significant increase in the relationship for students' perception of ICT compared to availability of technological tools for learning and teaching in the schools, because the p-value is 0.68 which is greater than the significance level of 0.05.

DISCUSSION OF FINDINGS

Different studies have considered the importance of technology for teaching and learning, but few studies have considered the perceived impact of educational technologies on teaching and learning especially in schools of nursing. By using technology in the classroom, both teachers and students can develop skills essential for teaching and learning in the 21st century.

The result from the study revealed the perceived impacts of technology on teaching and learning among nursing students. 80.3% agreed that it breaks monotony/boredom and almost all respondents (94.9%) agreed that it makes lessons interesting to comprehend. Majority of the respondents agreed that it enhances better understanding of lessons, proper management of time and also makes teaching more effective. Most of the respondents also agreed that it encourages students' active class participation and improves interaction with instructors during and outside class. Some of the results are in agreement with the study of Evoh and Nwanah (2017) in a research on the status of e-teaching in NOUN, Kwara State. Majority of the lecturers (61%) are comfortable with the use of e-teaching and they agreed that it enhances better understanding and encourages participation of students. Also, in a study conducted by Parvin (2016) on barriers in implementing e-teaching in Hormzgan University of medical students,

80% of the lecturers had knowledge of e-teaching and were comfortable teaching electronically.

The result from the study also revealed the technological availability for teaching and learning in the selected schools. 96.5% have previously heard about ICT and 58.1% agreed to using it in their school. 63.1% of the students did not have wireless networks and 63.1% did not have students' personal computers while 60.1% did not make use of E-books. Also, 54.5% don't use powerpoint applications in their school. More than half of the respondents (52.5%) also disagreed that they have printer and 82.3% also disagreed that that they have virtual nursing laboratory, while 70.7% said they did not have human simulators. 66.2% of the respondents agreed that they have instructors, personal computers and 65.7% agreed that they have projectors. The application of technology in nursing education has been demonstrated to be a potentially productive means of creating a good learning environment that can help tutors become more efficient in improving students.

Furthermore, the majority of the student nurses agreed that there is the absence of a policy guide for the integration of ICT in the schools. Majority (71.7%) also agreed that there is poor awareness of e-learning among the students and staff. Majority of the students also agreed that the poor attitude of both students and tutors toward ICT hinders its usage. Other barriers include lack of ICT infrastructures, lack of technical support, inadequate knowledge and poor accessibility to the internet. Other barriers mentioned are unreliable power supply, financial constraints on data purchase and teachers' lack of time to integrate ICT into learning and teaching.

The study further discussed factors responsible for utilization of ICT for teaching and learning in schools of nursing, majority of the students agreed that provision of internet (91.4%), establishment of computer access (89.9%), expertise support (85.5%), and adequate training (88.9%). Other factors mentioned include utilization support, exposure of nursing tutors, suitable power supply and knowledge implementation for students and tutors. Some of the results are also supported by Anene (2014) in a study. 76% of the teachers agreed that most of the above listed e-facilities are available for use while 24% of the teachers disagreed on the availability of most of the above listed e-facilities. Also, the major problems hindering the application of e-teaching were identified as follows: difficulties in the internet application and use (51%), the high cost of digital libraries (56%), majority (83%) of the teachers believed that cost of internet connection is also a major challenge in the application of e-teaching by teachers in schools. With an epileptic or inconsistent power supply, 79% of the teachers agreed that inconsistent power supply is the highest challenge in the application of e-teaching while 21% of the teachers disagreed.

SUMMARY

The study was conducted to assess the perceived impact of educational technologies for teaching and learning among students in selected schools of nursing, Ogun State. Four schools were used for the study: School of Nursing, Abeokuta; School of Nursing, Ilaro; and School of Nursing, Ijebu-Ode and Sacred Heart School of Nursing, Lantoro. A quantitative descriptive research design was used and an accidental sampling technique was used in selecting 94

respondents from the three schools. The data collected were analyzed using statistical packages for social sciences (SPSS v.20) and results were presented in the form of tables and charts.

CONCLUSION

The findings and analysis of the study revealed that the majority of the student nurses agreed that technology plays a big impact in teaching and learning. They believed technology enhances teaching and learning and stoke up the desire of students to learn. More than half of the students believed their schools lacked technological instruments to enhance teaching and learning.

Implication to Nursing Practice

Nursing education nowadays has changed from teaching to learning and therefore this paradigm shift challenges educators to design educational experiences that enhance cognitive mastery by integrating technology in the teaching and learning process. There are factors which can affect e-teaching performance despite its preference over other methods of teaching and learning. Despite the advantages of e-teaching, traditional approaches are not to be abandoned as they also provide benefits which may not be achieved by e-teaching, such as reducing students' isolation and situations which may require face-to-face interaction.

Suggestion for Further Studies

The scope of a research provides the need for further studies to examine areas that were not covered by the research study or take advantage of the limitations of a particular study in order to bring to light a better way of avoiding the limitation to early study. Hence, this study suggests the need for future research to be conducted on the importance of e-teaching to both the nurse educators and nursing students. Also, experimental studies on conventional methods of learning and e-teaching could be explored by future researchers.

RECOMMENDATION

Based on the literature reviewed and with the highlighted barriers to utilization of e-teaching, the following recommendations are proposed:

1) Every school of nursing should develop e-teaching pedagogy

2) There should be establishment of professional development programmes carefully designed to support nurse educators to transform their ICT knowledge

3) Government policies should encourage provision of ICT facilities and infrastructures in schools of nursing.

4) Clear e-Competences required for nurse educators should be established by the Government.

Conflict of Interest

There is no conflict of interest for the study.

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