

Challenges in ICT experienced by nurse educators in tertiary institutions in Edo State, Nigeria

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Abstract

Global acclamation of the benefits derived from the use of information and communication technology (ICT) in all facets of life has made its application in nursing education invaluable to both students and educators. This study explored challenges faced by nurse educators in the use of ICTs in tertiary institutions in Edo State, Nigeria. A descriptive survey design using a self-administered questionnaire was employed. The population and sample comprised all 36 nurse educators in the three universities that offer Bachelor's in Nursing Science degrees, but 34 participants completed and returned their questionnaires giving a response rate of 94.3%. Results of the study showed that although nurse educators are ICT literate, they are confronted with challenges such as erratic power supply and inadequate facilities which affect their use of technology for teaching and learning. The study recommends internet connectivity for the offices of nurse educators among other steps to enable the universities to reap the benefits to be gained from using ICTs in education.

Keywords: Nurse's challenges, Information and Communication Technology, nurse educators, tertiary institutions, Nigeria.

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Introduction

Information and communication technology (ICT) is defined as "technology used for information storage, retrieval, display and transmission through electronic means" (UNESCO, 2007). ICT has basically changed the way in which people learn, communicate and do business. It is one of the major factors shaping the global economy. The changes it has incurred have resulted in rapid growth and development in society (Ajuwon & Rhine, 2008). According to Adeosun (2010) and Dodani and LaPorte (2005), some other ways in which ICT assists developing countries can be in the area of provision of a permanent solution to problems associated with the 'brain drain', in the form of knowledge sharing, skills acquisition, exchange of ideas among scholars, and collaboration between developed and developing countries.

Watson (2006) posits that the use of ICT in education helps to create optimal benefits for both learners and educators, because it creates familiarity with ICT

tools which in turn enhances their usage. Students' curiosity is aroused and they are motivated, which in turn forces the lecturers to seek more knowledge to satisfy the students' needs. ICT is invaluable in preparing undergraduates for further education and future employment. It supports conventional classroom work, as well as design and development of learning materials. Teaching materials such as books, journals and virtual libraries are easily accessed as ICT provides a gateway to the world of resources, especially those in electronic form.

ICT plays a key role in educational administration, economics, communication, and travel (Adeosun, 2010; Ogbomo & Ogbomo, 2008). Consequently, ICT is expected to facilitate the eradication or reduction of poverty, and improve service delivery – especially in the education and health care sectors – by making government services more accessible. These provisions are enshrined in the 2012 global ICT report (World Economic Forum & INSEAD, 2012).

Nations around the world have formulated policies and invested massively in ICT. This is aimed at empowering the youth to develop 21st century skills (Rutkowski, Rutkowski & Sparks, 2011; Yusuf, 2005). The Nigerian government keyed into this expectation in 2001 and has kept faith in making ICT in education a reality since then (Federal Government of Nigeria, 2001; Yusuf, 2005).

UNESCO (2007) identified a variety of support and enabling mechanisms, such as political and financial commitment at both government and school levels that need to be implemented to optimise teachers' use of ICTs. This is irrespective of the levels or area of specialisation which the teacher provides. Teachers including nurse educators need to acquire effective and efficient information resources to perform these roles (Adeoye & Popoola, 2011). Similarly, Skiba, Connors and Jefferies (2008), Warren and Connors (2007) and Oblinger and Oblinger (2005) emphasised the need to understand and use the power of technologies to prepare the next generation of nurses to interact with technological tools to ensure patient safety. These technologies range from classical media such as audiovisuals, laptops, desktop computers and cell phones to more recent ones like social media, e.g. Facebook, Twitter and video conferencing. Exploring the challenges based on local context of ICT use is therefore apt at this period of the 21st century, when 2015 is a target set by the United Nations for ICT to be accessible and used worldwide (UNESCO, 1999).

In Nigeria as well as other African countries nursing is regarded as one of the key professions that play a significant role in the nation's health care delivery system (Agbedia, 2012). Competency in the use of information systems and patient care technology is invaluable in today's health care services. Nursing, being a core health profession, is not left out of this expectation; hence nurses are expected to be abreast of the trends in ICT usage. It is, however, unclear how the nurse educators have embraced this clarion call.

While the use of ICT forms part of the expectations in teaching, the major players (nurse educators) in Nigeria have not been properly investigated to determine the challenges they are facing in using ICT. Studies related to challenges in the use of ICT by nurse educators have not been adequately researched in Nigeria, especially in Edo State. This West African country, with an estimated population of 174,507,539 million (National Population Commission, 2013) is divided into 36 states, including Edo State. The Nigerian information technology (IT) policy has among its objectives and mission statement harped on the need to use IT in Nigeria for education, and stressed in addition that IT must be used to empower the youth and prepare them for global competitiveness (Federal Government of Nigeria, 2001; Yusuf, 2005).

The aim of this study therefore was to explore the challenges faced by nurse educators in Edo State universities in the use of ICT. In spite of the benefits derived from the use of ICT, a number of challenges are encountered by users. Identifying these challenges is important to development of teaching and learning environments in nursing education at Nigerian universities.

Methodology

The study used a quantitative approach. An exploratory descriptive survey research design was used to determine the challenges nurse educators face in the use of ICT in the three universities that offered Bachelor's degrees in Nursing Science in 2013. The population consisted of all 36 nurse educators in these three universities. This population equally constituted the researchers' sample. All participants had an equal chance of participating in the study without any form of discrimination in terms of gender, age, academic qualification, status, religion or social standing.

Instrumentation

A self-developed questionnaire was designed based on literature and the researchers' personal experiences (Adeoye & Popoola, 2011; Chaputula, 2012; Goyal, Purohit, & Bhagat, 2011). The questionnaires were written in English in simple formats that require a dichotomous answer. They were divided into three sections, based on the areas in which information was sought to satisfy the objectives of the study. These sections were demographic information, types of ICTs, and challenges experienced in ICT. The last section of the questionnaire had an open-ended question which was intended to get respondents' suggestions on how to solve the challenges they identified. The aim was to allow respondents to express themselves in their own words so as to obtain a deeper understanding of their ideas and concerns regarding the challenges.

In order to improve the instrument a pilot study was carried out among five nurse educators at Delta State University, Abraka (which neighbours Edo State).

This resulted in the outright removal of two ambiguous questions.

Reliability and validity

To ensure content and face validity, nursing and ICT experts at the University of the Western Cape in South Africa were consulted to assist in evaluation and rating of the questionnaire. Criterion validity was ensured by an extensive literature search, which provided a basis for each item on the instrument as it is in line with the research aims and objectives. The Cronbach alpha coefficient was used to evaluate the instrument reliability. Results for the types of ICTs and nurse challenges in ICT were 0.846 and 0.764 respectively, which is generally accepted as representing high validity.

Data analysis

Thirty four participants responded and returned their completed questionnaires, giving a response rate of 94.3%. Data were analysed quantitatively with the aid of SPSS (21) in the form of frequency tables. Responses to the open-ended question in the last segment of the questionnaire were coded and arranged into themes. Three major themes arose from this exercise. They were then organised into dichotomous type of questions into which the participants' responses were matched for ease of analysis.

Ethical considerations

Ethical clearance for the study was obtained from the University of the Western Cape's Senate Higher Degrees Committee, as well as from the three universities where the study was conducted. The various nursing departmental heads gave their permission for the study. Written informed consent was obtained after due explanation to the participants of their ability to choose to participate or withdraw at any time. Although no known or immediate risks was attached to the study, the researchers made sure anonymity was provided by not asking for personal information or names in the questionnaires, as well as provision of the contact addresses of the researchers.

Results

A summary of the demographics of the respondents is presented in Table 1. Thirty four of the 36 nurse educators responded (94.3%); one nurse educator was outside the country for further studies, while a second one declined to participate. Twenty-five (73.5%) of the respondents were females. Twenty-one of the nurse educators were in the age range of 50-59 years (61.8%), while only one respondent (2.9%) was within the age range of 20-29 years. The University of Benin had the highest number of nurse educators, with 19 (55.9%) respondents.

In terms of designation, most of the nurse educators, i.e. 16 (47.1%) were at the rank of Lecturers 1 and 2. Eleven of the nurse educators (32.2%) have spent 0–4 years and more in practice, with 10 (29.4%) having over 20 years in practice. Twelve (35.3%) respondents have a master’s degree in Nursing and other health-related fields such as Medicine, Public Health and Health Management, making the master’s degree the qualification held by most respondents.

Table 1: Demographic variables of nurse educators in Edo State universities (N=34)

Variables	n	%
Gender		
Male	9	26.5
Female	25	73.5
Age group (years)		
20-29	1	2.9
30-39	2	5.9
40-49	4	11.8
50-59	21	61.8
60 and above	6	17.6
Institution		
University of Benin	19	55.9
Ambrose Alli University	7	20.6
Igbinedion University	8	23.5
Designation		
Professor	1	2.9
Senior Lecturer	7	20.6
Lecturer 1 & 2	16	47.1
Assistant Lecturer	10	29.4
Years of practice		
Above 20	10	29.4
15-20	11	32.3
10-14	2	5.9
0-4	11	32.3
Highest qualification		
Bachelor of Nursing	7	20.6
Master’s in Nursing	12	35.3
PhD	10	29.4
Other	5	14.5

In Table 2 the number and percentages of the types of ICTs used by nurse educators for teaching and learning are presented in descending order. The laptop is a form of hardware used by all of the 34 respondents, followed by desktop computers in 32 (94.1%). Mobile technology such as cell phones were used by 26 (76.5%) respondents and audiovisual tools by 24 (70.6%). The fax machine enjoys the least patronage, with only 5 (14.7%) respondents using it, while the electronic white board was not used at all as it was not available in the universities under investigation.

Among the software, Word, spreadsheet and presentation software top the list, with 33 (97.1%) responses. E-mail follows with 35 (73.5%) responses and

thereafter audio-based and interactive lessons on CD-ROM, used by 21 (61.8%) respondents, respectively. A detailed breakdown of other ICTs is shown in the table. It should be noted that Chat, e.g. Microsoft Service Network (MSN) or Skype, video conferencing and video transmission are poorly applied because of non-availability in these institutions. The respondents who answered the questions here did so based on the fact that they have knowledge of how to use them.

Table 2: Types of ICT used by nurse educators in universities in Edo State for teaching and learning (N=34)

ICT Types		Yes n (%)	No n (%)
Hard-ware	Laptop	34 (100.00)	0 (0.00)
	Computers (desktop)	32 (94.1)	2 (5.9)
	Mobile technology, e.g. cell phones	26 (76.5)	8 (23.5)
	Audiovisual	24 (70.6)	10 (29.4)
	Fax machine	5 (14.7)	29 (85.3)
	Electronic whiteboard	0 (0.0)	34 (100.0)
Software	Word, spreadsheet and presentation software	33 (97.1)	1 (2.9)
	e-mail	25 (73.5)	9 (26.5)
	Audio based	21 (61.8)	13 (38.2)
	Interactive lessons on CD-ROM	21 (61.8)	13 (38.2)
	Course-related software	20 (58.8)	14 (41.2)
	Web 2.0 social networking	17 (50.0)	17 (50.0)
	Chat (Yahoo MSN, e.g. Skype)	11 (32.4)	23 (67.6)
	Video conferencing	10 (29.4)	24 (70.6)
	Video transmission	9 (26.5)	25 (73.5)

Table 3 shows the challenges which nurse educators face in the use of ICT in teaching and learning. The major challenge identified was erratic power supply, which was experienced by 29 (85.3%).

Table 3: Challenges faced by nurse educators in use of ICT (N=34)

Variable	Yes n (%)	No n (%)
Erratic power supply	29 (85.3)	5 (14.7)
Unstable connectivity	27 (79.4)	7 (20.6)
Inadequate ICT facilities (computer and accessories)	24 (70.6)	10 (29.4)
Lack of in-service training to improve skills	20 (58.8)	14 (41.2)
High cost of computers and their accessories	19 (55.9)	15 (44.1)
Lack of managerial or technical support	18 (52.9)	16 (47.1)
Exorbitant charges for airtime by network providers	17 (50.0)	17 (50.0)
Lack of skill	16 (47.1)	18 (52.9)
Outdated and old facilities	12 (35.3)	22 (66.7)

Unstable connectivity was experienced by 27 (79.4%), while inadequate ICT facilities were experienced by 24 (70.6%) of the respondents. Nineteen (55.9%) were hindered by the high cost of computers and their accessories. The others are as indicated in the table, which shows that each of these challenges affects more

than 50% of respondents, except lack of skill (16 – 47.1%) and outdated facilities (12 – 35.3%).

Discussion

Gender differences among nurse educators were quite high in the universities thus indicating that the field of nursing is still female dominated. This is in line with the history of the profession, and aligns with Solbraekke, Solvoll and Heggen's (2013) findings in Norway that male nurses constitute less than 10%. The University of Benin had the highest number of respondents, dominated by females. The only university where there was gender equity was Igbinedion University. Most of the nurse educators were in the age range of 50–59 years. This is a pointer that nursing is an aging profession, and nurses of the baby boom era are beginning to retire. Increased age has been shown to be associated with difficulty in processing complex stimuli and allocating attention to information about the job (Venkatesh, Morris, Davis & Davis, 2003). Moreover, the increased age of faculty members can impact negatively on the future of the profession, because the younger nurses are not taking up the nurse educator role, thereby resulting in a shortage (Agbedia, 2012).

In terms of ranking, most respondents were ranked at Lecturer 1 and 2 levels, followed by Assistant Lecturers. This agrees with Eiriemiokhale's (2013) findings that those with Lecturer 2 ranking constituted 72 (23%) out of 380 respondents in an investigation of level of satisfaction with available electronic information resources in universities in Edo State. The highest qualification attained by most respondents is the master's degree, which indicates that management of these universities are compliant in respect of the minimum qualification of academic staff in the nursing faculty (Agbedia, 2012; Skiba & Rizzolo, 2009). Evidence from this study showed that those respondents with the highest qualifications use ICT more.

All of the respondents indicated a preference for the laptop. This was followed by computers (desktop) and mobile technology such as cell phones. Among the software, Word, spreadsheet and presentation software ranked top (33 respondents, 97.1%); emails, audiobased and interactive lessons on CD-ROM followed in that order. The inference drawn from this finding is that the lecturers are technology compliant, and all have a preference for the laptop, which is a mobile personal computer with all the features of a desktop computer. This aligns with Lamanauskas, Siekienè and Ragulienè's (2010) findings in Lithuania about the ICTs commonly used by university students, as well as Oshinaike and Adekunmisi (2012), who identified computers and their accessories accounting for 95.0% and CD-ROMS for 75.0% of multimedia tools used by university lecturers.

The major hindrances faced by the nurse educators in this study were erratic power supply, unstable connectivity, inadequate ICT facilities, lack of in-service training as well as the high cost of computers. Only 12 (35.3%) of the respondents viewed outdated and old facilities as challenges. This could be attributed to the fact that the government is keeping faith with its pronouncement on ICT for nation building and development by provision of modern ICT facilities (Federal Government of Nigeria, 2001). The infrastructure and equipment is currently in place for this purpose, although technology keeps evolving on a daily basis.

Anekwe and Ifeakor (2011) and Chapatula (2012) identified cost as well as provision of a steady electricity supply as some of the challenges faced by educators in Nigeria. They also stressed technology obsolescence due to lack of infrastructure, instructional design and training as major factors which can frustrate the adoption of new technologies in Nigeria. Aguele (2007), Goyal et al. (2011) and Eseza, Isah and Emunemu (2010) also identified lack of policy and planning, staff resistance to changes in curricular and pedagogical approaches, and complaints of teaching staff regarding lack of incentives and rewards as factors responsible for lecturers' reluctance to implement ICT in teaching and learning.

The challenges identified in this study are in line with the Federal Republic of Nigeria pronouncement in 2001 regarding ICT. Reliable infrastructure, skilled human resources, open government, and other essential issues of capacity building are challenges which the government set out to address in order to reap the full benefits brought by this new technology (Federal Government of Nigeria, 2001). These challenges are in agreement with those found by Skiba et al. (2008), who noted that the problems faced are universal and focus on teaching with and about technology.

Recommendations

The use of technology in all facets of life is now the norm and not just a requirement globally, especially in education. The advantages are quite enormous and cannot be overemphasised. It is imperative that university management provide the enabling environment for this to occur. Suggestions were made by the respondents on ways to solve the problems they identified around the use of ICTs. Key among the solutions proffered was improvement of existing facilities, provision of new ICT facilities and back-up services, as well as improved connectivity by 25 (73.5%) respondents. In-service training for lecturers was suggested by 24 (70.6%) respondents, while only 4 (11.8%) expressed concern about high subscription fees and cost of software. Based on the findings of this study, the following recommendations are made:

Since the problem of power supply has become a national issue, the university management should go the extra mile to purchase new generators that have the capacity to serve the whole university community. Regular maintenance of the plants should be carried out to avoid frequent shutdown of power supply or power rationing. The current power-generation efforts can be enhanced by exploring the alternative of solar energy.

University management should increase their bandwidth in order to make internet facilities and e-libraries functional. This will enhance the speed of internet connectivity among the staff and students. Moreover, having an internet connection in the offices of the nurse educators can help to mediate the unstable connectivity identified as a challenge in this study.

Regular update courses and reorientation and training on how to use ICTs for teaching and learning should be organised for new employees and the older staff. This can be achieved through private partnerships with internet service providers (like MTN, GLOBACOM and AIRTEL). These telecommunication industries can provide and equip not only the main libraries with hardware and software, but should extend the same to the departmental libraries and sponsor training workshops on ICT use for teaching and learning.

ICT technicians and experts should be employed by the universities; their services should be readily available and accessible. A helpdesk where nurse educators can get ready assistance on any technical or personal issues regarding technology application could be created.

The government is urged to take a critical look at the current charges for subscription of network providers, which were said to be exorbitant. The same goes for the cost of software. The various regulatory organs of government should be empowered to carry out regular checks on these smart businessmen in order to reduce exploitation of the undiscerning public.

Conclusion

This study has shown that nurse educators in Edo State, Nigeria are ICT compliant as far as teaching and learning is concerned. Although the nurses have some knowledge on how to use technology in their teaching, they are faced with a number of challenges. Principal among these challenges are erratic power supply, unstable connectivity and inadequate ICT facilities. Lack of in-service training and the high cost of computers were also identified as challenges.

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