Online Learning in Higher Education: Faculty Readiness in Nigerian Universities

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Abstract

This paper assessed lecturers' readiness for online learning in Nigerian universities. Recent developments in the Information and Communication Technology (ICT) have impacted every sector of society, including education. Consequently, online learning is growing considerably worldwide as today's students, being digital natives, are looking for more effective, efficient ways of obtaining information and knowledge in formal and informal settings. Educators, especially faculty members, are expected to give serious consideration to how education should be provided and sustained if their institutions will continue to remain relevant in the face of these developments. In this study, 188 lecturers from six universities were surveyed. Faculty readiness was defined in terms of the level of access to the Internet; the level of application of instructional design principles in courseware development for online learning; the current level of technology usage for learning, teaching and research; and influence of gender on ICT skills. This research employed the concurrent mixed-methods survey in evaluating lecturers' readiness for online learning in Nigeria. The research results showed positive online learning features (situational and dispositional), as there is evidence that faculty possessed relatively good Internet access; good evidence of adoption of courseware development principles required for online learning; and a high degree of basic technology usage, skills and competences needed for online learning. However, no significant influence of gender on lecturers' ICT skills was established. It was concluded that faculty members in Nigeria were ready for online learning.

Keywords: online learning, ICT skills, readiness, higher education, Nigeria

Introduction

Today, higher education institutions are operating in a rapidly growing technology-enabled environment, where students' needs and demands are also changing simultaneously; in the face of these changes, the adoption of information and communication technology (ICT) for teaching and learning has become inevitable (Bates, 2000). Consequently, higher

education institutions that ignore newer educational technologies for teaching and learning, such as the Internet, may become less relevant in the development of human capital, therefore undermining national economic growth and development. Globally, the Internet is impacting learning in unprecedented ways (Alawattegama and Wattegama, 2008; Janda, Trocchia and Gwinner, 2002; Pew Research Center's Internet and American Life Project, 2012); consequently, online learning is providing unique opportunities for individuals who want to obtain higher education, regardless of where they work or live. In the face of rapid developments in technology, academic faculties and teaching departments must deploy newer, innovative and future-oriented methods for effective teaching and learning in higher education (Bates, 2000).

The use of ICT in education is at a particularly dynamic stage in Africa. The issues of Internet access, connectivity and users' Internet skills are dynamic and vary greatly from one locality to another (Thakrar, Zinn and Wolfenden, 2009). Moreover, the example of mobile phones illustrates how countries can sometimes skip over technologies (United Nations Educational, Scientific and Cultural Organisation [UNESCO], 2011), thereby enabling them to gain rapid strides in the adoption of newer technologies. Recently, there has been rapid growth in the telecommunication sector in Nigeria; it is the fastest growing on the African continent, with over 100 million mobile lines, according to the Nigerian Communications Commission [NCC] (2011).

New technologies are complex, and acceptance may be hindered by elements of uncertainty, determined by people's attitudes and the level of motivation towards usage. Thus, lecturer's perceptions of the usefulness and ease of technology usage would greatly affect the attitude of lecturers, which eventually would also influence behavioural intentions and actual usage (Davis, Bagozzi and Warshaw, 1989). Nevertheless, faculty members would change only if they could see the benefits of change and the disadvantages of not changing (Bates, 2000).

However, usage of technology for teaching requires more than just the transfer of face-to-face classroom teaching notes to an Internet platform (Bates, 2000). Online teaching usually would require changes in beliefs and philosophical orientations of faculty on one hand, and the acquisition of a new technical skill-set, changes in instructional design methods and

changes in attitudes, among others, on the other hand (Moore and Kearsley, 2008).

Recently, emphasis on global networking and collaboration influenced by effective, rich learning environments have been determining the scope of online learning processes in higher education (UNESCO, 2011). Hence, Moore's theory of transactional distance (Moore, 1989) emphasizes critical issues of relationships, effective dialogues, interactivities, and the need to bridge gaps in understanding and communications when teaching is mediated by technology. Therefore, the current level of basic technology usage of lecturers (faculty members) could determine how quickly newer technologies would be employed for teaching and learning, as this could greatly affect courseware design and development methods and changes in pedagogy, thereby leading to modifications of instructional materials, structures, dialogue and the communication platforms for online learning.

Furthermore, knowledge content alone does not make a course (Driscoll, 2005; Moore and Kearsley, 2008) because courses are learning materials organised carefully into structures that make for easy, meaningful and effective learning (Figure 1).
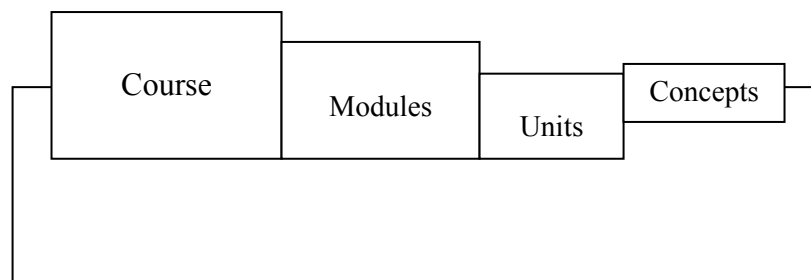

Figure 1: Courseware structure

Additionally, courses are organised around learning objectives, sets of learning activities and appropriate assessment or evaluation. Thus, course structures reflect course designs, which could be influenced largely by modes of communication or types of educational media expected to be employed. Therefore, for online course structures, efficiency and effective dialogue must be given serious consideration during the process of

instructional design. Furthermore, appropriate course designs for online learning must take into account students' diversity in terms of work experiences, socio-economic background, age, culture and international learning concerns. Consequently, online learning platforms that provide synchronous and asynchronous learning opportunities facilitate a high degree of dialogue between teachers and students.

Because higher education requires experienced faculty members with a specialised skills-set, it is imperative to determine the current level of basic technology usage of faculty. Although younger lecturers often have more computer skills than experienced professors, the emergence of newer technologies today has made it necessary for a greater emphasis to be placed on the level of technology skills, competencies and capabilities for appointment and promotion in higher education (Bates, 2000). Therefore, this study focused on the current level of basic ICT skills of faculty members for online learning.

Today, to improve teaching performance of faculty in higher education and online learning in particular, access to technology, expertise in courseware design and development, proficiencies in basic ICT skills, and investments in staff development schemes cannot be overlooked. It is important, therefore, for decision-makers in Nigeria (government agencies, higher education institutions, and other organisations in the education sector) to adopt administrative policies and structures that could reduce barriers to technology-mediated teaching and learning (Baggaley, 2008; Mbarika et al., 2003). Such barriers could include but are not limited to inadequate access, lack of expertise in instructional design and basic ICT skills necessary for online teaching and learning in higher education.

Existing literature showed that socio-demographic factors such as gender and age could influence users' participation in technology-mediated learning (Bullen, 1998; Kedia and Bhagat, 1988; Surry, Ensminger and Haab, 2005). Thus, it is generally accepted that gender is an issue in technology acceptance; that males are more enthusiastic and more positive than females; that men and women experience learning technologies differently (Burge, 1998; May, 1994); and that women often tend to lag behind in Internet adoption (Greenspan, 2004). However, developing countries in general, and Nigeria in particular, may not be exceptions;

hence, assessing the influence of gender on the level of ICT skills could not be overlooked.

This study evaluated faculty readiness for online learning in Nigerian universities based on the vital role of faculty in teaching, learning and research. Specifically, this research surveyed 188 lecturers from six universities in Nigeria, evaluating the level of Internet access, degree of deployment of instructional design principles, level of ICT skills, and influence of gender on ICT skills required for online learning in Nigeria.

Research Questions

The following four research questions were used to carry out the study:

1. What is the level of Internet access of lecturers?
2. What is the level of instructional/courseware design principles required for online learning?
3. What is the level of current ICT skills of lecturers?
4. What is the influence of gender on ICT skills of lecturers?

Research Hypothesis

This study also adopted one research hypothesis, to elucidate the influence of gender on ICT skills of lecturers required for online learning.

> $H0_1$: There is no significant difference between female and male lecturers in the level of ICT skills required for online learning.

Research Methodology

A descriptive concurrent mixed-method survey type was used for the evaluation of lecturer's readiness for online learning in Nigerian universities. A researcher-designed questionnaire, complemented with semi-structured open-ended questions, was used for data collection. The questionnaire was validated and tested for reliability using Cronbach's Alpha, and the reliability value of 0.84 was derived. The respondents were 188 lecturers from six universities in Nigeria (University of Lagos; Federal

University of Technology, Akure; Ekiti State University, Ado Ekiti; Bowen University, Iwo; Ladoke Akintola University, Ogbomosho; and Covenant University, Ota), thereby meeting the sampling criteria suggested by Creswell (2007) and by Onwuegbuzie and Leech (2007). In total, 220 questionnaires were administered to university lecturers at the six target sites, and 188 were returned, resulting in an 85% response rate. Quantitative analysis using percentages complemented by qualitative data analysis were used to address all research questions. Hypothesis 1 was tested using an Independent Sample t-Test.

Results

Research Question 1: What is the Level of Internet Access of Lecturers?

Question 1, which sought to determine the level of Internet access for online learning, was captured by the following: usage of university network; ownership of personal computer; usage of home internet; ownership of smart phones; and downloading information with smart phones.

The results showed that lecturers' access to the Internet was very high, with 97% computer ownership, 67% home Internet usage, 79% smart phone ownership and 76% downloading of information from the Internet. However, university network provision was the lowest, with 51% usage and as high as 46% who do not use a university network (Figure 2).
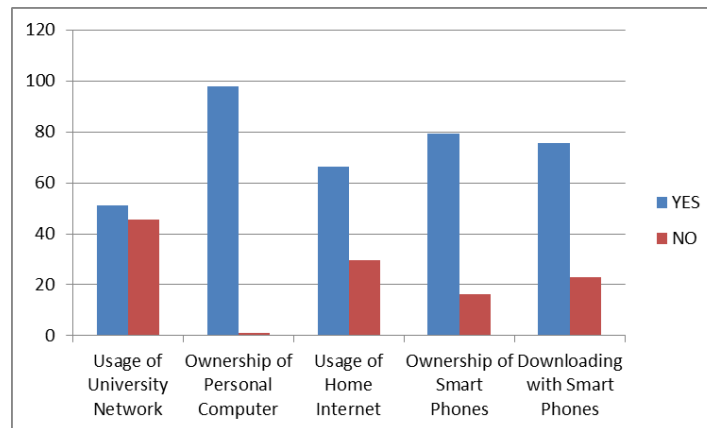

Figure 2: Lecturers' level of Internet access

Research Questions 2: What is the Level of Instructional/Courseware Design Principles Required for Online Learning?

This question sought to determine the extent of readiness for e-learning by the degree of courseware design and development, in terms of (1) the current use of online materials for teaching, (2) implementation of course goals and objectives, (3) breaking-up of courseware into modules (smaller chunks), and (4) level of professional training in the development of courseware for e-learning.

The results shown in Table 1 indicated that 86% of lecturers incorporated online learning resources in their courses; 85% of lecturers included course goals and objectives in their courses; and 55% divided their course materials into modules for effective learning. However, 80% indicated the need for further professional training in the development of course materials for e-learning.

Below are some significant statements of lecturers' perceptions and attitudes about technology usage for instruction:

1. Technology provides greater access to instructional materials even on mobile devices.
2. Through the use of the Internet, social media and multimedia, I have made a large amount of information available to students that would have been too cumbersome to access manually.
3. Technology promotes didactic teaching for large classes, without building expensive lecture theatres, and makes teaching more student-centred.

Additionally, lecturers have confirmed the need for further professional training in courseware development for e-learning, as presented in these statements:

1. There is the need to train lecturers on adapting their lecture notes to existing ICT facilities.
2. E-learning is progressive, and there should be constant update of knowledge.
3. Staff professional training will go a long way to help.

Table 1: Lecturers' attitudes about courseware design and development

	YES		NO		Do not know		Missing		Total	
	F	%	F	%	F	%	F	%	F	%
Are online materials used in your current courses?	162	86.2	10	5.3	12	6.4	4	2.1	188	100.0
Are course goals and objectives stated in your courses?	160	85.1	9	4.8	13	6.9	6	3.2	188	100.0
Are your course(s) divided into modules (smaller, granular portions) for effective learning?	104	55.3	25	13.3	45	23.9	14	7.4	188	100.0
Is there need for more professional training in the development of course materials?	151	80.3	16	8.5	12	6.4	9	4.8	188	100.0

Because e-learning is student-centred learning, responses from the lecturers have been triangulated with students' perceptions regarding the quality of course materials currently being deployed for learning. The results (Table 2) showed that 83% of students confirm that their courses have online learning materials; 74% indicated that course goals and objectives have been stated clearly in their course materials; and 36% agree their courses are in modules. However, a high percentage (56%) do not agree or do not know if their courses are in modules, which seems

worrisome and may have influenced students' perceptions (68%) that their lecturers would need further training in course content development.

Table 2: Students' perceptions of courseware design and development

	YES		NO		Do not know		Missing		Total	
	F	%	F	%	F	%	F	%	F	%
Are online materials used in your current courses?	714	83.0	60	7.0	50	5.8	36	4.2	860	100.0
Are course goals and objectives stated in your courses?	633	73.6	104	12.1	78	9.1	45	5.2	860	100.0
Are your course(s) divided into modules (smaller, granular portions) for effective learning?	310	36.2	254	29.5	238	27.6	58	6.7	860	100.0
Is there need for more professional training in the development of course materials?	582	67.7	92	10.7	130	15.1	56	6.5	860	100.0

Research Question 3: What is the Lecturer's Current Level of ICT Skills?

This research question sought to determine the current level of communication technology usage by lecturers in terms of their functional

skills and levels of computer literacy. The overall levels of lecturers' ICT skills based on the following skills were assessed: word processing, spreadsheets, browsers and Wikipedia.

The results show (Table 3) that 55% of lecturers consider themselves to be experts in an overall rating in ICT skills and competencies. A detailed analysis shows that 58% are at the expert level in word processing, 61% in Internet browsing, and 47% in Wikipedia, while 49% consider themselves to be intermediate in spreadsheet usage for learning.

Table 3: Lecturers' ICT skills and levels of expertise

	Overall Level		Word Processing		Spread Sheets		Browsers		Wikipedia	
	F	%	F	%	F	%	F	%	F	%
Beginner	12	6.4	4	2.1	29	15.9	6	3.2	17	9.0
Intermediate	70	37.2	70	37.2	89	48.9	59	31.4	73	38.8
Expert	104	55.3	109	58.0	64	35.2	114	60.6	88	46.8
Missing	2	1.1	5	2.7			9	4.8	10	5.3
TOTAL	188	100.0	188	100.0	188	100.0	188	100.0	188	100.0

Research Question 4: What is the Influence of Gender on ICT Skills?

This research question sought to examine the differences between female and male faculty members in their readiness for online learning. To address this research question, the level of ICT skills needed for online learning was analysed. The results show that 29% of lecturers surveyed were female, while 71% were male (Table 4).

Table 4: Gender distribution of lecturers

Gender	Frequency	%
Female	54	28.7
Male	134	71.3
Total	188	100.0

Further breakdown according to school type and institutions, presented in Figure 1 and Table 5, shows a relatively even distribution or spread, between 25% and 37%; however, there were more females (50%) from the

private universities. This result could be explained by greater willingness or availability to participate in the study. The table shows no gender gap in the readiness by lecturers in the study.

Table 5: Lecturers' level of ICT expertise by gender

	Females		Males	
	F	%	F	%
Beginner	1	1.9	11	8.2
Intermediate	18	34.0	52	38.8
Expert	34	64.2	69	51.5
Missing			2	1.5
Total	53	100.0	134	100.0

Research Hypothesis 1

$H0_1$: There is no significant difference between female and male faculty members in the degree of ICT skills required for online learning.

To address this research hypothesis, readiness for online learning was defined in terms of the current level of ICT usage, skills and competences. Statistical analysis for an independent sample t-test was used for testing the hypothesis. The results (Table 6) show that at 0.07, there is no significant difference between female and male faculty members in the level of readiness for online learning based on their ICT skills. Therefore, the null hypothesis is rejected.

Table 6: t-Test for Hypothesis 1

Respondents	F	Mean	SD	df	t	Sig.
Females	53	2.62	.527	183	1.836	0.07
Males	132	2.44	.645			

Discussion of Research Findings

The research findings on the extent of Internet access by lecturers shows that Internet access was generally high in terms of computer ownership

with home Internet, smart phone ownership and Internet browsing. However, Internet access provided by universities was low, with less than 50% patronage by lecturers. This finding is in support of the view that educational institutions are not paying adequate attention to the problems of Internet inaccessibility for teaching and learning (Baggaley, 2008). Nevertheless, the infrastructural problems facing higher education are not insurmountable; available resources could be efficiently and effectively utilised to achieve better results in the education sector.

Additionally, results on the level of courseware design and development principles show that a high number of lecturers are already adopting instructional design methods required for online learning. This finding is in agreement with Driscoll (2005), and Moore and Kearsley (2008), which state that lecturers should incorporate instructional design principles, such as course goals and objectives, and division of course materials into smaller modules for effective learning. However, there is a high indication by lecturers for further professional training in the development of course materials for online learning.

Furthermore, results on the level of ICT skills show that lecturers consider themselves highly computer literate in ICT proficiency in Word processing, spreadsheets, use of Internet browsers and Wikipedia for teaching and learning. Therefore, from the self-rated evidence, lecturers may have the needed ICT skills for online learning.

Lastly, this study showed no significant difference between female and male lecturers in the level of ICT skills required for online learning. However, existing studies show that men and women experience learning technologies differently (Burge, 1998; May, 1994), and women tend to lag behind in Internet adoption (Greenspan, 2004); therefore, it is generally accepted that gender is an issue in technology adoption, even in higher education, because of the economic gaps between males and females that still exist in many countries. Faculty members are expected to have the same income levels, educational background and professional expectations; therefore, this study has shown that gender was not an issue among faculty members in the adoption of technology for online learning in Nigerian universities.

Conclusion

The research findings seem to show positive situational and functional characteristics of faculty members for online learning, thereby providing evidence that supports online learning readiness among the faculty members surveyed. Furthermore, the research results show high levels of ICT skills that are appropriate for online learning by faculty members who participated in this study.

Implications of the Research

The research results and findings seem to show strong evidence that faculty members are prepared for technology adoption for online learning, especially because mobile devices–such as smart phones and tablets–are capable of overcoming the persistent challenges of inadequate electricity supply and Internet connectivity. Consequently, faculty should be challenged to get involved in the production of contextualized online teaching resources and courseware required for effective learning by Nigerian students. Additionally, decision makers at different levels, that is, Federal, State and Private institutions, should deploy adequate Internet access and provide suitable online learning environments for the effective delivery of higher education in Nigeria.

Limitations

This study investigated only 188 faculty members. This number could be viewed as limited; however, a concurrent mixed-method approach has provided for the triangulation of research results and therefore improved the acceptability and validity of the present research findings.

Suggestions for Further Research

Future research should involve many more participants and should include other issues, such as administrators' readiness, administrative support strategies, change management strategies, and financial management strategies. These issues are beyond the scope of this study but could make interesting topics for future research.

Acknowledgement

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