Faculty Perception for Technology Integration in Nigeria University System: Implication for faculty quality curriculum design

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Abstract

Many Nigerian faculties are failing to effectively incorporate technology into their classroom instruction. Researchers have reported a general failure in this regard; however, minimal study is available on the role of faculty perception of self-efficacy in incorporating technology into pedagogy. This sequential, mixed-method study sought to discover whether a significant correlation exists between faculty perception of self-efficacy and technology adoption among Teacher Education faculty in Nigerian universities. The conceptual framework for the research is grounded in Bandura's theory of self-efficacy. A sample of faculty members completed a 59-item Likert- type survey designed to measure self-efficacy as it relates to technology competence and integration within the classroom. Quantitative data were analyzed using a Pearson product-moment correlation to identify relationships between self-efficacy and technology adoption. In the qualitative phase of the study, 10 participants were interviewed. Constant comparison was performed to analyze the transcribed interview data. The findings indicated a positive correlation between teacher self-efficacy and the integration of technology. The results provide valuable information needed to address the concerns and fears of Teacher Education faculty as they integrate technology into their classroom instruction. Implications for social change include providing educators and administrators with the needed data to develop the skills required to teach technology to their students. Acquiring technical skills will prepare students to become more competitive in a technology based society and for further educational endeavors.

Key Words: faculty, faculty quality, self-efficacy, technology, social change

1. Introduction

Research has shown that the appropriate use of Information Communication Technologies (ICTs) can catalyze the paradigmatic shift in both content and pedagogy that is at the heart of education reform in the 21st century (Branson) If designed and implemented properly, ICT-supported education can promote the acquisition of the knowledge and skills that will empower students for lifelong learning. Faculty technology competence and integration into classroom instruction has been the focus of research. If teacher education faculties are expected to develop their students as citizens for the knowledge society as against the industrial era that produced them, they have to be equipped for this responsibility, through out their career and also through pre-service teacher education programmes. We can promote an educational system with highly skilled teachers, capable of generating ingenuity and creativity in children, provided they experience creativity and flexibility and are themselves developed as knowledge society professionals (Hargreaves, 2003).

Faculty in teacher education, many of whom were educated before technology became a prominent feature of the learning process, are not comfortable or skilled in integrating technology into teaching and learning. This problem can spread throughout the classroom experience of teacher education faculty thereby making it a somewhat frustrating experience for faculty and student. According to Archambault (2010) students will not develop 21st century skills without the use of technology, however, and making sense of the importance of integrating these skills and developing appropriate uses of tools in the content present great challenges for teacher educators. When used appropriately, different ICTs are said to help expand access to education, strengthen the relevance of education to the increasingly dig- ital workplace, and raise educational quality by, among others, helping make teaching and learning into an engaging, active process connected to real life (Tinio, 2003).The Nigeria higher education system exacerbates the existing global concerns for faculty technology integration in the classroom.

In most institutions, technology development issues are discussed after technology infrastructure and funding are addressed and in most cases the issue remains unsolved because of the lacking of adequate funding faced by Nigerian universities. Achimugu, Oluwagbemi and Oluwaranti (2011) posed their study that focused on evaluation of the impact of ICT diffusion in Nigeria posed three questions: (1) What does the Nigerian national policy for information technology tells us about education? (2) How adequate is the policy for the integration of ICT in the Nigerian education system? (3)What implications are there for the Nigerian education system? They insisted that the answers to these questions were intended to provide a basis for redefining and re-development of the Nigerian national policy on information technology (Federal Republic of Nigeria, 2001). First, the document mission statement recognized the need 'To Use IT for Education' (p. iii). In addition, the general objectives in three (xv, xvi and xxiv) of the 31 stated objectives stressed that information technology must be used to:

a. Empower the youth with IT skills and prepare them for global competitiveness.
b. Integrate IT into the mainstream of education and training.
c. Establish new multifaceted IT institutions as centers of excellence to ensure Nigeria's competitiveness in international markets (pp. iv – v).

In addition to the national technology policy thrust, another compelling reason for faculty technology integration is that students are today adept in using ICT. Indeed most of the students enter the university with a higher level of technology proficiency that some of their instructors. Also, computer based educational technologies are being increasingly resorted to in educational institutions because they can create an engaging learning environment that provides content of high educational value (Goldman, Digiano & Chorost , 2009). Another reason for encouraging faculty to integrate technology in the classroom is the wealth of knowledge available on the World Wide Web and easily accessible to students. With technology tools teacher education faculty, or indeed any faculty, can easily connect with colleagues globally while sharing sources of teaching materials that will student academic proficiency in their content focus. Therefore, with information more readily available, learners are not dependent on lecturers and traditional librarians for information. Review of literature on faculty perception of technology competence and integration in teachings shows that successful integration of ICT in the school system depends largely on the competence and on the attitude of teachers towards the role of modern technologies in teaching and learning. Thus, experienced teachers, newly qualified, and student-teachers need to be confident in using ICT effectively in their teaching (Kyriakidou, Chrisostomou, & Bank, 2000). Therefore Yusuf and Balogun (2011) reiterates that "recognising the impact of new technologies on the workplace and everyday life, teacher education institutions should try to restructure their education programmes and classroom facilities, in order to husband the potentials of ICT in improving the content of teacher education."

1.1 Self Efficacy

The successful use of technologies in the classroom depends on several factors such as funding, dynamic lesson plans, decisions concerning hardware, software, and so forth (Bitner & Bitner, 2002: 95). Yet, whether all these factors will yield the wanted learning outcomes or not is usually determined by one individual, the teacher since it is the teacher's skills, beliefs, attitudes, perceptions, opinions, personality, knowledge, among many other factors, that affect the choices she makes about what, when, and how to teach through using computer technologies (Nespor, 1987; Bitner & Bitner, 2002; Butler & Sellborn, 2002).

Existing literature that examined the role of faculty perception of self-efficacy with regard to technology adoption and integration into curriculum design and delivery in Nigeria does not provide a clear connection between the adoption of technology and pedagogy (Achimugu, Oluwagbemi & Oluwaranti , 2011; Yusf & Balogun, 2011). Conflicting views of teacher access to and use of instructional technology suggest the need for closer analysis of the manner in which such educational tools are integrated into the context of the classroom (Britt, Brasher, & Davenport, 2007). Self-efficacy, a psychological construct first proposed by Bandura in 1977 (Topkaya, 2010), can be described as "a belief about one's own capability to organize and complete a course of action required to accomplish a specific task" (Eggen & Kauchak, 2007: 310). As can be understood from the definition, self-efficacy "is concerned ... with judgments of what one can do with whatever skills they possess" (Bandura, 1986: 391). A person's perceived self-efficacy regarding an activity or experience contributes to the choices of activities and attention the activities receive (Brouwer & Tomic, 2000). The level of success in that activity is also because of perceived self-efficacy. Ultimately, people's success level at completion of activities will influence their self-efficacy positively or negatively and further impact future endeavors and behaviors pattern (Bandura, 1977).

Teacher efficacy describes attitudes regarding feelings of success or failure that teachers bring to their work as they approach a particular task. In teaching, the feelings will include ability to make a difference in students' achievement (Johnston, 2003). An efficacious person is able to lean toward success by embracing challenges and working to overcome them (Lewandoski, 2005). Desired outcomes are not brought about only by the strength of one's beliefs. Zimmerman as cited in Klassen (2010) explains that in academic settings, specific skills are needed to master difficult tasks, and important factors like educational opportunities, quality of teaching, and learning ability influence student success. In order to be successful, students must exercise control over their learning by activating and regulating behaviors, thoughts, and emotions, and they must learn to manage their learning environment in a planful way.

1.2 Professional Development

The National Staff Development Council released a status report on teacher development in the United States and abroad. Researchers (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009) from Stanford University conducted a multi-year study that provided the most comprehensive picture and extensive analysis of professional learning that has ever been conducted in the United States (Darling –Hammond et al., 2009). This groundbreaking study indicated that sustained and focused professional development for teachers using collaborative approaches has positive implication on school success and student learning; however, this is derived from a limited pool of rigorous studies that considered specific kinds of professional development (Darling-Hammond, Wei, Andree, Richardson, & Orphanos, 2009). As Harris, Mishra, and Koehler (2009) as cited in Archambault, Wetzel, Foulger, and Williams (2010) articulate:

> ... typical approaches to technology-related professional development are based on the assumptions that it may be enough to just expose teachers to particular educational technologies and possible curriculum-based uses of those tools and resources. Approaches that teach only skills (technology or otherwise) are insufficient. Learning about technology is different than learning what to do with it instructionally. (p. 402)

During the past several years, the need for teacher training in technology across
all subject areas has been increasingly discussed (Cuban, 2001; Jones, 2000). In a review of educational technology research from 1987-1993, Zuga (1994) indicated that instructional methods and strategies for using technology effectively have been given little, if any, real attention. This increased need for technology training and the lack of study regarding the most effective instructional strategies in actual use by teachers continues to be an important issue in professional development.

2.0 Purpose

The main purpose of this study was to investigate the perception of competence and attitude of teacher education faculty towards information and communication technology. Specifically, the present study examined:

a. The perception of faculty towards the use of Information Communication Technology in teaching.
b. The *extent* to which these teachers are using ICT in learning and teaching,
c. *How* they are using it
d. Whether they are making much use of professional development opportunities focused on enhancing their technology skills.

The three research questions below guided the study:

1. To what degree are faculties confident in their current use of technology for instructional purposes? Descriptive statistics were calculated on the responses to survey items pertaining to adoption/integration (Section B, Items 1-18).
2. Is there a relationship between the perception of technology self- efficacy and use for instructional purposes?
3. Is there a statistically significant correlation between faculty attitude towards computers and their adoption and integration of technology into their classroom instruction (Section , Items 1-11)

3.0 Methodology

A mixed- method sequential approach was chosen that includes the collection and analysis of both quantitative and qualitative data. This approach to data collection is designed to combine the elements of one method, such as quantitative data collection and analysis, with the elements of another method such as semistructured interviews, observation, and/or focus groups, in a simulation or sequential fashion (Caracelli & Greene, 1997; Creswell, 2003, 2007).

This not only combines the strengths of multiple methods, but also provides a counterbalance for weaknesses (Axinn & Pearce, 2006). A sequential mixed-method design incorporates two distinct stages of data collection-first the quantitative data is collected and then the collection of qualitative data (Creswell, 2003). A survey study was carried out in 2009 for identifying needs in relation with integration of the technology into teacher education programs. The questionnaire "Technology Use Survey in Teacher Education Programs" was developed on how prospective faculty in teacher education programs perceives their efficacy about education technologies.

3.1. Instruments

The survey instrument used for this research was developed by the researchers based on established procedures in literature. The researchers worked with a faculty leadership team from one of the teacher education faculty in South Eastern Nigeria scheduled to host an international conference. The decision to use the international conference participants was supposed to facilitate data collection from teacher education faculty across the various institutions in Nigeria. We elicited expert feedback and used it to develop and refine survey questions. We also developed an interview protocol for the qualitative aspect allowing us to delve deeper into issues relating to faculty perception of efficacy and integration into classroom practice. Finally, we pilot-tested the protocol and submitted it to colleagues for critical review.

The survey instrument contained four sections. Section A included ten questions and it focused on demographic information of faculty: department, course, rank, graduate supervision, academic rank, and gender. Section B focused on level of current use for instructional purposes. The section contained 18 items and the Likert response mode of Very Often (VO), Often (O), Sometimes (S), Rarely (R), and Never (N) were used. Section C of the questionnaire, which contained 29 items, addressed the issue of Level of expertise to use for instructional purposes, while Section D was designed to know faculty's attitudes toward computers as tools for instructional purposes. This section contained 22 items and also used a different Likert response mode of Strongly Agree (SA), Agree (A), Neutral (N), Disagree (D), and Strongly Disagree (SD). The auhors reported a Cronbach Coefficient Alpha of 0.78 for session A to D and 0.91 for section E that is the quantitative section (Kelly, 2003).

Both of the qualitative and quantitative sections of the questionnaires focused on gathering data for meeting the purpose of the study. The qualitative aspect of the study in E asked two questions: (1) How would you describe your preparation and ability to incorporate the 21st Century technology learning tools in the learning expectations of your students? and (2) Identify three technological skills that will support your instructional abilities.

3.2 Data Collection

Participants in this study were 60 (males 23 = 38%; females 37 = 62%) full time teacher education faculty from Nigerian universities. The faculties who participated in the study were registered for an international conference hosted by the Faculty of Education, University of Nigeria Nsukka. A purposive sampling was used to select respondents for the open qualitative aspect of the study in Section E. purposive sampling is best used with small numbers of individuals/groups which may well be sufficient for understanding human perceptions, problems, needs, behaviors and contexts, which are the main justification for a qualitative audience research.

4.0 Results

The demographic information of the participants is given in Table 1. The table indicates that 38% were male students while female students were 62%; this shows those both male and female faculties were fairly represented. With regards to academic ranking, the table shows that lecturers/senior lecturers comprised of 80% of participants, assistant professor 7%, associate professors 5%, while 7% were professors. Departmental demographic representation shown in the table is as follows: Computer and Instructional Technologies (CIS) 2%, Social Sciences Education (SSE) 16%, Art Education (AE) 20%, Primary Education (PE) 4%, Science and Math Education (SME) 16%, Education Leadership and Policy Studies (ELPS) 6%; while 37% (E) of participants were from other education fields; this demographic indicates that all departments were fairly represented.

Table 1- Demographic information

Variables		N	%
Gender	Male	23	38
	Female	37	62
Academic Ranking	Lecturers/Senior lecturers	44	80
	Assistant Professors	4	7
	Associate Professors	3	5
	Professors	4	7
Departments	CIS	1	2
	SSE	8	16
	AE	10	20
	PE	2	4
	SME	8	16
	ELPS	3	6
	E	19	37

Item 8 on the demographic section asks, including the current year, how many years have you been using computers in general?

Table 2: Years of Teaching

Year	N	%
1-5	36	65
6-10	14	25
11-15	1	2
16-20	2	4
Over 20	2	4

Research Question One: *To what degree is faculty's confidence in their use of information communication technology (ICT)? Descriptive statistics were calculated on the responses to survey items pertaining to adoption/integration (Items 15 and 19–22).*

Table 3: Analysis of Results on the Confidence of Respondents towards the Use of ICT

	Never	Rarely	Sometimes	Often	Very Often	SD	Confidence interval@ 95%
1. Word processing (i.e. creating, storing, retrieving, and printing electronic text)	11%	23%	22%	22%	22%	1.32	2.88-3.53
2. Spreadsheets (i.e. manipulating/organizing numbers)	32%	39%	14%	8%	7%	1.18	1.88-2.49
3. Database management (i.e. creating, designing, updating, and querying data)	44%	20%	25%	8%	2%	1.1	1.75-2.31
4. Classroom management (i.e. grade books, Google Apps, Blackboard, WebCT)	45%	17%	15%	3%	20%	1.56	1.97-2.76
5. Graphics (i.e. storing/manipulating pictures, diagrams, graphs, or symbols)	36%	23%	20%	17%	3%	1.21	1.98-2.58
6. Presentation (i.e. PowerPoint)	36%	25%	23%	8%	2%	1.27	1.96-2.60
7. Authoring (i.e. creating interactive multimedia programs or CAI)	50%	22%	19%	8%	2%	1.07	1.63-2.15

8. CD-ROM, DVD, and/or Web-based Interactive content (i.e. maps, dictionaries, simulation softwares)	44%	16%	23%	13%	3%	1.22	1.84-2.45
9. Website Design Software (i.e. FrontPage, Dream Weaver)	60%	15%	8%	15%	3%	1.25	1.56-2.18
10. E-mail (i.e. sending and receiving electronic messages)	6%	16%	25%	19%	33%	1.28	3.26-3.89
11. Internet content 9i.e browsing/searching the World Wide Web)	13%	10%	23%	23%	31%	1.37	3.15-3.84
12. Data Analysis Software (i.e. SPSS, SAS or JMP)	52%	15%	13%	16%	5%	1.32	1.75-2.41
13. Simulations and Games (i.e. reproducing the characteristics of a system or process)	47%	22%	12%	8%	10%	1.37	1.77-2.47
14. Drill and practice (i.e. using software for repetitive practice)	44%	23%	20%	8%	5%	1.2	1.77-2.37
15. Tutorials (i.e. providing instruction that uses exercise and practice)	36%	17%	15%	19%	14%	1.48	2.20-2.95
16. Discipline-specific programs (i.e. your academic subject)	39%	15%	24%	8%	14%	1.43	2.06-2.79
17. Windows Operating System	37%	22%	22%	8%	10%	1.33	1.96-2.66
18. Macintosh Operating System	61%	11%	13%	10%	5%	1.25	1.54-2.17

Based on the results in Table 3, there is every indication that responses to the positive statements (items 1-18) show that perception of efficacy as it relates to technology use varied with the application in question. For instance, 66% of respondents were confident with basic word application while 29% felt confident about using spreadsheet. 64% of respondents rarely or never used data management (i.e. creating, designing, updating, and querying data). 62% of respondents were not confident in applying technology as a tool for classroom management (i.e. grade books, Google Apps, Blackboard, WebCT). 41% of responders felt confident about the Graphics skills (i.e. storing/manipulating pictures, diagrams, graphs, or symbols). Only 33% of respondents felt confident in using PowerPoint for presentation. In relation to using multimedia, 77% of respondents did not feel indicated never or rarely. In addition, 60% and 75% of respondents did not feel confident about items 8 and 9 on the survey instrument. However, 77% of respondents felt confident about their E-Mail skills and Internet content use (i.e browsing/searching the World Wide Web). Respondents' confidence in software use seemed consistent with 68% of respondents indicating rarely of never. Furthermore drill and kill software response was slightly different with 67% and 53% of respondents indicating never or rarely to items 14 and 15. Respondents' confidence to the different operating systems was measured in items 17 and 18. 40% of teacher education faculty respondents felt confident using Windows operating system, while 28% felt confident using Macintosh operating system. As seen from the analysis in Table 3, teacher education faculty's confidence level to technology used is not consistent across the different applications mentioned in section B of the instrument.

Research Question Two: Is there a relationship between the perception of technology self- efficacy and use for instructional purposes?

The results in Table 4 are on faculty's level of technology self efficacy to use for instructional purposes (lesson preparation, lesson delivery, evaluation, communication and administrative record keeping.) (No Experience: no experience; Beginner: learning basic functions of software; Intermediate: confident with basic functions of software; Advanced: using most of the functions of software; Expert: knowing most functions of software and being able to teach them to others).

Table 4**.** Analysis of Results on faculty's level of technology self efficacy to use for instructional purposes (lesson preparation, lesson delivery, evaluation, communication and administrative record keeping.)

	No experience	Beginner	Intermediate	Advanced	Expert	SD	Confidence interval@ 95%
1. Word processing (i.e. creating, storing, retrieving, and printing electronic text)	9%	30%	30%	16%	0%	1.22	2.64-3.36
2. Spreadsheets (i.e. manipulating/organizing numbers)	34%	32%	20%	11%	0%	1.1	1.83-2.48
3. Database management (i.e. creating, designing, updating, and querying data)	45%	17%	31%	5%	0%	1.09	1.69-2.35
4. Classroom management (i.e. grade books, Google Apps, Blackboard, WebCT)	45%	26%	8%	11%	0%	1.39	1.72-2.60
5. Graphics (i.e. storing/manipulating pictures, diagrams, graphs, or symbols)	32%	27%	32%	7%	0%	1.06	1.87-2.54
6. Presentation (i.e. PowerPoint)	39%	14%	27%	11%	0%	1.35	1.99-2.79
7. Authoring (i.e. creating interactive multimedia programs or CAI)	43%	27%	20%	5%	0%	1.12	1.67-2.33
8. CD-ROM, DVD, and/or Web-based Interactive content (i.e. maps, dictionaries, simulation softwares)	38%	22%	27%	9%	0%	1.18	1.86-2.54
9. Website Design Software (i.e. FrontPage, Dream Weaver)	65%	12%	12%	8%	0%	1.11	1.35-2.05
10. E-mail (i.e. sending and receiving electronic messages)	7%	29%	22%	20%	0%	1.28	2.85-3.60
11. Internet content i.e browsing/searching the World Wide Web)	9%	27%	20%	24%	0%	1.29	2.82-3.58
12. Data Analysis Software (i.e. SPSS, SAS or JMP)	49%	22%	16%	2%	0%	1.14	1.60-2.27
13. Simulations and Games (i.e. reproducing the characteristics of a system or process)	49%	22%	20%	4%	0%	1.33	1.66-2.43
14. Drill and practice (i.e. using software for repetitive practice)	40%	23%	19%	12%	0%	1.29	1.85-2.62
15. Tutorials (i.e. providing instruction that uses exercise and practice)	39%	12%	15%	20%	0%	1.53	2.12-3.05
16. Discipline-specific programs (i.e. your academic subject)	38%	14%	26%	7%	0%	1.43	2.02-2.89
17. Windows Operating System	28%	23%	26%	13%	0%	1.31	2.13-2.95
18. Macintosh Operating System	60%	10%	12%	15%	0%	1.26	1.15-2.29

Most of the respondents indicated that they had no experience or are beginners in integrating the measured technology applications into instruction. For items 1 to 9, over 50 percent of respondents indicated that they either no experience or a beginner in integrating the technology tools that had indicated confidence in use in the table 3. Even, for items 10 and 11, about 65% of the respondents earlier indicated confidence in use, only 43% of respondents indicated that they were at intermediate or advanced stage in integrating this skill into instruction.
Analysis of items 12 to 16, which focused on software integration into instruction indicated that 68% of teacher education faculty felt that they had no experience or beginners. Items 17 and 18 which focused on their ability to use two operating system, specifically Microsoft windows and Apple Macintosh indicated that 39% of the respondents were intermediate or advanced in windows operating system as against 27% for Macintosh. This pattern was consistent in the response in these items in Table 3 which addressed perception of expertise in using both operating systems.

Research Question Three: Is there a statistically significant correlation between faculty attitude towards computers and their adoption and integration of technology into their classroom instruction.
The results in Table 4 are faculty attitude towards technology and their adoption and integration into classroom instruction.

Table 4. Analysis of results on the attitude of faculty towards technology and their adoption and integration in the classroom

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	SD	Confidence interval@ 95%
1. I think that using technology improves the quality of teaching I do.	8%	2%	2%	14%	75%	1.16	4.17-4.75
2. I think that using computers fits well with the way I like to teach.	3%	6%	8%	35%	48%	1.04	3.92-4.43
3. I think that learning to use technology is easy for me	3%	16%	13%	44%	24%	1.1	3.43-3.97
4. I feel comfortable using technology	2%	13%	10%	44%	32%	1.04	3.66-3.97
5.Technology makes learning easier and more efficient	5%	3%	3%	31%	58%	1.04	4.08-4.60
6. I prefer to deliver lessons using technology	20%	17%	3%	32%	28%	1.53	2.93-3.71
7.The use of e-mail gives me easier access to colleagues, administration, and students.	2%	12%	12%	38%	37%	1.06	3.70-4.23
8. I am fearful about technology use	47%	28%	8%	5%	12%	1.35	1.72-2.41
9. I expect all faculty in the Faculty of Education to use technology in instruction	8%	8%	10%	27%	47%	1.29	3.62-4.28
10. Technology use increases my usual work load	27%	25%	18%	14%	16%	1.43	2.30-3.05
11. My students expect me to use technology for my instruction	20%	17%	13%	32%	18%	1.43	2.76-3.48

As reflected in the responses to items 1-7 in table 4, a majority of the teacher education faculty had a good attitude towards technology use. Over 85 percent of respondents agree that using technology increases the quality of their instruction, however, 30 percent of the respondents felt that technology use increases their usual workload.

Item 11 shows that 50 percent of faculty respondents indicate that students except technology to be used for instruction. Yet more than 50% of the faculty respondents indicate they are not experienced or at the beginner level in using technology applications such as Microsoft, spreadsheet and data management software.

Qualitative questions. Ten faculty leaders from the sample population were selected using a nonprobability purposive sampling methodology.

Item 1 of asked respondents "how would you describe your preparation and ability to incorporate the 21st Century technology learning tools in the learning expectations of your students?"

Respondent 1: I will find it difficult to integrate technology because by educational training did not prepare me for this skills. In addition, the institution I work at do not have the administrative support for me to provide such training to my staff. Of course at no cost to them.

Respondent 2: Teacher education colleges should be innovative, I mean forward looking, in their curriculum design. I would describe my preparation as novice at best considering that all the skills I have so far is for personal use and not for instructional bases.

Respondent 3: Being a head of department requires that I support the vision of my university to integrating technology. However, my personal training and present abilities does not prepare me to effectively integrate 21st century technology tools in the learning expectations of my students.

Respondent 4: When I went to school, there were no computers in the classroom. Therefore, what I am able to do at the moment is to keep up with some of these changes. I cannot say that I mastered the skills necessary to meet my students' learning expectation. I am willing if the institution will fund such skill acquisition trainings.

Respondent 5: I will say that I am at an intermediate stage. I currently try to use PowerPoint presentations in my classroom but the issues of power (electricity) supply and minimal Internet bandwidth makes it difficult to actually plan.

Respondent 6: If this a trick question? We are still trying to find adequate lecture halls and you are asking about 21st century technology skills. I will say that its not on my top ten priorities. We have bigger basic issues to deal with.

Respondent 7: I am at an advanced stage but the infrastructure in the university I teach at does not allow for effective integration. The situation was different in my former institution where we had to use blackboard and other instructional tools for student teaching and communication.

Respondent 8: I will honestly say that am not even at a beginners stage. I just got my email account set up and trying to learn the complex web. I plan to acquire new skills but at a gradual stage so I don't confuse myself and make my students uneasy.

Respondent 9: I am at a novice stage and my students are benefiting from my skills. However, basic infrastructure to do this at a consistent basis is a huge concern in my institution.

Respondent 10: I am at an intermediate stage but my institution is at a 'no-experience' stage. The administration seemed to pay lip service to this global trend yet we have students that have been immersed in this new approach all their lives. The disconnection is amazing.

An analysis of the result shows 60 percent of the teacher education leadership respondents indicate that they have no skills to integrate technology into their instruction. The remaining 40 percent claimed that their skills range from beginners to advanced but mentioned that their institutions do not have the technological infrastructure to consistent allow for integration into instruction. Furthermore, all respondents imply that their institutions do not have the infrastructure to encourage a transition from traditional classrooms to the 21st century smart classrooms.

Analysis of item 2 of Section E of the survey instrument asked respondents to "Identify three technological skills that will support your instructional abilities."

50 percent of the respondents identified basic Microsoft applications such as word, excel and PowerPoint for instructional and classroom management purposes as top on their knowledge needs. 40 percent indicated that content/discipline specific software knowledge will support their instructional abilities. 10 percent of the respondents indicated course management systems such as Moodle and cloud work as a skill that will support their instructional abilities. In addition, respondents included graphic skills, web creation skills, Google document skills, file sharing, internet surfing, file merging, and using social networks such as facebook, twitter,

5.0 Discussion

The potentials of information and communication technology (ICT) as an educational tool in teacher education had been well established by several studies. This study investigated the perception of competence and attitude of teacher education faculty in Nigerian universities towards information and communication technology. Specifically, the study examined: (a) The perception of faculty towards the use of Information Communication Technology in teaching; (b) The *extent* to which these teachers are using ICT in learning and teaching,

The quantitative data collected in this study revealed a strong correlation between the perception of self-efficacy and attitude towards technology use in instruction of the participating faculty. Those faculties who were optimistic toward their self-belief to perform a variety of technology related tasks were also optimistic in their self-belief to integrate it into their instruction. The qualitative results supported the quantitative findings, broadened understanding of the data, and exposed additional information on faculty adoption of technology. Past research found a variety of reasons for teacher avoidance of technology integration into classroom instruction, which included problems with equipment, time constraints, scheduling difficulties, training needs, and software availability (Abbitt & Klett, 2007).

Faculty perception of self-efficacy in technology was evidenced in their response to Section B of the survey instrument. Researchers and theorists, such as Piaget (1997), Vygotsky (1978), Skinner (1961), and others, have studied education and the manner in which individuals learn (Moore, 2000). Yet, teacher beliefs and the impact they have on technology adoption is much less understood (Ertmer, 2005). The analysis from faculty perception of technology and its integration into instruction is consistent with a similar study conducted by the Consortium for School Networking (2004). The study stated, "problem of low technology adoption within U.S. classrooms continues to plague the education system within this country. This is not to say technology is nonexistent within U.S. schools; however, teachers have incorporated technology primarily with low-level tasks (e.g., e-mail, word processing, and Internet research). Higher-level use (e.g., spreadsheets, database searches, and image enhancement) remains minimal (Ertmer, 2005).The findings also align with other studies that conclude that availability and placement of computer hardware and other technology within classrooms does not guarantee its implementation by educators (Poole et al., 2004). In recent years, emphasis has been placed on the need for faculty to integrate technology in their instruction, thereby requiring teacher education faculty to acquire the prerequisite skills necessary for this transition. (Graham et al., 2004).

One of the problems facing the effective integration of technology in teacher education colleges include the fact that there is limited infrastructural facilities, difficulties in integrating technological learning tools such as Internet use into their curriculum design which will be aligned to student expectation for faculty. In order for Nigerian universities to meet the global expectations for faculty technology proficiency and integration into classroom instruction, it is critical that the issues of competence, access, adoption and integration are addressed by providing basic technology infrastructure such as technology enabled classrooms, smartboards, discipline software, and ubiquitous computing system. Also, administration should include in their strategic objectives professional development opportunities focused directly on enhancing faculty technology competence and ability to integrate into classroom practice.

6.0 Implication

This study revealed several possibilities for social change especially as it relates to Nigeria's quest to produce globally competitive graduate. By exposing faculty perception of technology use, as well as an explanation of the current process of technology adoption and integration, the findings provide beneficial information toward addressing the concerns and fears of teachers, as they relate to technology integration into their classroom instruction. Transforming the use of technology requires many changes. As more technology is incorporated into the Nigerian teacher education classrooms, and as more faculty become comfortable to the technology use, new methods for teaching and effectively using the technology will need to prevail in order to meet the expectations of students. Technology literacy modeled in a constructivist classroom methodology will afford faculty and students the opportunity to become part of the global community of learners. Greater reliance on technology to maintain a global presence and connection reinforces the belief that new technological literacy will be necessary if teacher education faculty indeed all higher education faculties are to be active contributors in the global economy. Therefore, it is incumbent on higher education faculty to integrate 21st century skills into their instruction preparing students for a future in an increasingly technology- dependent society (Coiro, Knobel, Lankshear, & Lue 2008).

In addition, research findings cited in Abolade and Yusuf (2005) indicated that the extent to which teachers integrate ICTs in their teaching and students' learning is related to several factors, among which are the teachers' knowledge and competence. Furthermore, teachers' ability and willingness to integrate ICTs into their teaching will largely be dependent on the professional training and development which they receive (Watson, 2001; Williams, 2003; Selinger & Austin, 2003).

6.1 Recommendations

1. Higher education administration and policy makers should allocate sufficient funds for technology related infrastructure development especially in this knowledge based era where science, technology, and innovation is the focus of most nations.
2. Higher education institutions and their teacher education faculty should adopt a model of professional development curriculum that is evidence based and designed to help educators integrate technology into teaching and learning. In addition an evaluation component should be included to measure performance benchmarks for both faculty and students.
3. Further studies should be done to incorporate other variables such as levels of access, financial support, professional development model, and administrative support. This will assist administration and teacher education college faculty to gain knowledge into teacher education programme needs for the next generation.
4. University management should make training in information communication technology (ICT) mandatory for all academic staff, as this will propel the uninterested or unwilling ones to undertake the training.
5. Faculty integration of technology in their classroom instruction should be supported by university administration by providing functional infrastructure that will ensure the ease of academic staff access to it within the campuses.
6. Academic staff should rethink their attitude towards ICT training and make time to improve their competences irrespective of their workload.

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