

THE IMPACT OF ICT ACCESSIBILITY AND UTILIZATION ON TEACHING EFFECTIVENESS IN FEDERAL COLLEGES OF EDUCATION IN SOUTHWESTERN NIGERIA

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Abstract

The performance of graduates from Colleges of Education (CoEs) in job interviews for teaching positions has been consistently disappointing, raising concerns about the quality of teacher training. Furthermore, there seems to be a lack of commitment and dedication among CoE lecturers to effective teaching practices. This study posits that the observed deficiencies in teaching effectiveness within CoEs may be linked to the unavailability, poor accessibility, and inadequate utilization of ICT resources. While previous research has explored variables such as institutional ownership, job satisfaction, and work environment, there has been limited focus on the role of ICT in enhancing teaching effectiveness. This study, therefore, investigates the impact of ICT factors on teaching effectiveness in Federal Colleges of Education (FCEs) in Southwestern Nigeria. Employing a survey design, the study's population comprised 2,800 lecturers and 6,311 third-year students from five FCEs in Southwestern Nigeria. A simple random sampling technique was used to select three federal colleges—Federal College of Education (Special), Oyo; Federal College of Education (Technical), Akoka; and Federal College of Education, Osiele, Abeokuta. From these institutions, 70% of lecturers and 10% of students were purposively selected, based on their willingness to participate. The final sample included 782 lecturers and 1,343 students. Data were collected using the ICT Factors Questionnaire ($r=0.80$) and the Teaching Effectiveness Questionnaire ($r=0.88$) and analyzed through descriptive statistics. The findings reveal that the perceived level of teaching effectiveness among lecturers in FCEs in Southwestern Nigeria is relatively moderately high ($\bar{x}=2.73$). However, the study also found that the level of ICT utilization among lecturers was notably low ($\bar{x}=1.97$). It is recommended that college management take proactive steps to sustain and enhance teaching effectiveness. Additionally, continuous evaluation of ICT factors should be prioritized to ensure that ICT resources are available, accessible, and effectively utilized by lecturers in Colleges of Education.

Keywords: Teaching effectiveness, ICT factors, ICT availability, accessibility, utilisation

Introduction

Colleges of Education (CoEs) in Nigeria were established to teach, conduct research and primarily produce qualified teachers who will teach at the pre-tertiary levels of the Nigerian education system. They are also expected to provide community services towards the growth and advancement of the country starting from the local to the national level. However, it seems that lecturers in the CoEs have not met the

expectations of the societal needs due to their poor performance in teaching. (Jaiyeoba and Atanda (2014) reported that the operation of CoEs have failed to bring about the practical achievement of the stated objectives because of the low teaching effectiveness. Adeyemo (2020) observed that, teaching practice and supervision of examination is lacking in many of Nigerian colleges of education.

Teaching effectiveness refers to the extent to which a teacher successfully facilitates student learning and achieves educational objectives. It can be operationally defined as the degree to which teaching practices lead to measurable improvements in student knowledge, skills, and attitudes, as well as the ability to engage and motivate students in the learning process. Specific aspects being evaluated in this study are student learning outcomes, instructional quality, classroom environment, feedback and assessment, adaptability and responsiveness and professionalism and relationships. These aspects provide a comprehensive evaluation of teaching effectiveness by focusing on both the outcomes of teaching and the processes involved in delivering instruction.

Teaching effectiveness in CoEs seems to be poor especially when lecturers are engaged in other activities that seem as disturbances, for instance selling course materials to students and heavy engagement of teaching sandwich students in order to survive economically (Abiodun-Oyebanji and Oyediji, 2018). If care is not taken, it could be detrimental to effective teaching. An effective teaching is considered to be concerned with students' goal. The ultimate aim of effective teaching is to achieve excellent teaching and learning in the higher institution of learning particularly CoEs. Therefore, a teaching process that does not result in learning is of no use. Without effective teaching, products of Nigerian colleges of education will be poorly trained

Teaching effectiveness of lecturers has been concerned to policymakers, educational managers, and the society at large at colleges of education. Continuous discourse as regards the teaching effectiveness in colleges of education is informed by the need to improve the quality of teachers being produced for educational planning and development. The goal of the colleges of education is to turn out highly qualified teachers for pre-tertiary education in Nigeria. The fundamental aim of every organisation is to improve its overall performance, and this can only be attained through effective teaching. The decline in the quality of graduates from colleges of education may be traceable to teaching effectiveness of lecturers. Thus, this paper shall focus on teaching.

Teaching is the primary responsibility of lecturers. Good teaching is dependent, among other factors, on the quality of training which the teachers have hitherto received. Similarly, good teachers are expected to reproduce themselves. In the past, graduates from the colleges of education previously engaged in National Youth Service Corps scheme, and some of them were posted to teach in secondary schools. The discontinuation of this practice seems to say a lot about the declining teaching effectiveness in Nigerian colleges of education. Akinwumi and Adeyanju (2011) affirmed that the products of the CoEs have failed to perform as expected in interviews while competing for the available teaching jobs. This may be partly due to the quality of teaching received from the various institutions of higher learning, particularly the colleges of education. The resultant effect of this is that both the public and private employers of labour may lose confidence in these teachers.

For instance, in 2012, the Ekiti State government attempted to run competency tests for teachers, due to series of poor performances of students in external examinations but met some resistance as the state's branch of the Nigerian Union of Teachers declared an indefinite strike (Ariyibi, 2012) which resulted in the cancellation of the planned assessment test. In the same vein, in 2017, out of the 33,000 primary school teachers in Kaduna State who took an assessment test meant for primary 4 pupils, 21,780, that is, about 66% of them, failed to score 75% (Sa'ad, 2017).

Such performances by teachers are enough to cast aspersions on their quality and also affect the confidence of parents in sending their children to public schools across the nation. This is because the quality of such teachers will determine the quality of students produced at the pre-tertiary levels of education. Adesope, Oke and Odekunle (2018) attributed the poor performance of graduates of colleges of education to shallow teaching, inadequate monitoring of lecturers in terms of teaching, lack of practical demonstration, poor subject mastery and poor supervision.

Many factors appear to have contributed to the low teaching effectiveness among lecturers in CoEs, and these include poor organisational cohesiveness, lack of teamwork on the part of lecturers, and inadequate Information and Communication Technology

(ICT) adaptability (Banwo, Du and Onokala, 2015; Fashiku, 2016; Nafei, 2015 and Taiwo, 2014). Teaching effectiveness can be enhanced through ICT factors.

ICT factors is independent variable that seem to influence teaching effectiveness in CoEs. In this era of technological advancement, ICTs have infiltrated every area of life, and education is not excluded. Akinwumi and Etomi (2015) observed that ICT greatly improves teaching and learning, in terms of quantity and quality, by virtue of its content which is engaging, interactive and dynamic. ICT, as a construct, lays emphasis on the place of communication coupled with the integration of telecommunications and computers in addition to essential software, storage, middleware and audio-visual systems.

By taking advantage of this integration, lecturers can access, process, store, transmit and manipulate information which is useful for teaching and research in CoE (Ejilibe, 2013). Adedeji, Babalola and Odekunle (2004) gave two main benefits of incorporating ICT into this process. One, it has the potential of putting students in a position where they will become conversant with ICT utilisation because, today, ICT is pervasive in virtually every job in the labour market. Two, utilising ICT resources in teaching could enhance the quality of graduates, and make them more effective in the work environment.

ICT is known to have improved the quality of teaching and learning. However, the quantity and quality of ICT resources available will greatly help in achieving effectiveness in teaching and learning in colleges of Education. Aristovnik (2012) opined that the adaptability of ICT in college of education holds great potentials for improving teaching effectiveness and can result in the effectiveness of teaching among lecturers. For lecturers in the colleges to effectively carry out their jobs, especially as globalisation is making giant strides in the knowledge economy, the use of ICT cannot be neglected. ICT factors are variable which relate to the ICT availability, accessibility and utilisation (Aleke, Ojiako and Wainwright, 2011). Soneye (2017) and Soetan and Coker (2018) identified utilization of online technologies, availability of ICT and adequacy of use of digital technologies as ICT factors that are capable to determine teaching effectiveness in Nigerian CoEs.

ICT availability involves the acquisition of relevant technologies including internet developments, mobile technologies, cloud computing as well as open education resources with the goal of addressing existing challenges and shaping the future of education. ICT exposes openings for enhanced delivery of instruction since it aids instructors in accessing, extending, transforming and sharing information and ideas in multi-modal communication formats and styles (Ben, 2015). ICT availability provides an extensive array of tools for the purpose of supporting and facilitating the professional competence of teachers. It is for this reason that the significance of ICT availability in improving the teaching effectiveness of lecturers in colleges of education cannot be overemphasised. Ugwoke et al. (2012) reported that some ICT facilities were not available. Ejilibe (2013) reported that the quality of ICT resources which are available to teach and learn Biology in college of education is low. Akuegwu et al. (2011) reported a significantly low availability of ICT tools for instruction delivery. Lawyer (2019) stated that, there was a stark lack of rudimentary facilities like projectors, e-library access and interactive white boards which are typical of the 21st century classroom that improve teaching effectiveness. The submission of these scholars is contrary to the report of Okolocha and Nwadiani (2015) showed that few ICT resources were available in colleges of education

It is not enough for ICT tools to be available; they must also be accessible. An ICT product or service can be said to be accessible if it can be used by all its intended users considering their divergent capabilities. However, it is also possible for an individual's capability of using ICT to be impaired as a result of physical, emotional, sensory or cognitive disabilities. Although a cross-section of the society today has accepted ICT as an important part of the national culture, colleges of education seem to be slow in accepting it as a critical and useful tool within the classroom. Okafor et al. (2011) revealed that all the lecturers that were interviewed, claimed that they had access to internet services. The access to well-functioning devices influences the attitude of lecturers towards using these devices (Olafare, Adeyanju and Fakorede, 2017). ICT

accessibility seems to be greatly contributed to teaching effectiveness.

Akuegwu et al. (2011) reported that the lecturers' utilisation of ICT facilities was significantly low; Egomo et al. (2012) reported a low level of utilisation of ICT tools; Anunobi (2015) reported that the level of ICT usage among their study participants was average; Okolocha and Nwadiani (2015) reported a rare utilisation of ICT resources among their respondents. Likewise, a survey carried out to assess the utilisation of ICT tools by lecturers in tertiary institutions revealed that although most teachers utilise ICT in preparing for teaching, an insignificant proportion of them utilise it in the course of instruction delivery to enhance pedagogy (Olafare et al., 2017). This result is in tandem with the report of Obiri-Yeboah et al. (2013) which indicated that ICT was not completely integrated into teaching and research in tertiary institutions. This finding also corroborates the report of Emojorho (2013) which showed that the present level of ICT integration is grossly inadequate, and this discourages research.

It is imperative for ICT to be utilised if qualitative instructional service delivery is to be attained in CoE. ICT utilisation can bring about a transformation in teaching and also improve the effectiveness and efficiency of lecturers, thus resulting in increased interests in research and teaching (Atanda and Jaiyeoba, 2013). Akuegwu, Ntukidemi, Ntukideim and Jaja (2011) reported that the lecturers' utilisation of ICT facilities was significantly low while Egomo et al. (2012) reported a low level of utilisation of ICT tools which may affect teaching effectiveness in colleges of education. In contemporary times, ICT utilisation is important for lecturers to discharge their duties efficiently and effectively (Akpan, 2014) but sadly, when contrasted with developed nations, developing nations, including Nigeria, are several miles behind in terms of the incorporation of ICT tools in research and teaching (Kunda, Chembe and Mukupa, 2018). Also, it appears that the attempt to integrate ICT which has led to reforms in the areas of teaching methods and teacher development (Babalola, 2013) is yet to gain a foothold in Nigerian CoE.

Several studies have sought to provide solution to the problem of poor and low teaching effectiveness of lecturers in colleges of education by focusing on institutional

effectiveness, ownership type, satisfaction and work environment but this problem still persists (Abiodun-Oyebanji and Oyedeji, 2018; Agba and Ocheni, 2017; Mbon, Etor and Osim, 2012; Okiki, 2013). However, no attention was given to ICT adaptability on lecturers' teaching effectiveness in Southwestern Nigeria. Hence, this study examined the influence of ICT factors on teaching effectiveness in colleges of education in Southwestern Nigeria.

Statement of the Problem

Teaching effectiveness in Colleges of Education (CoEs) is a critical factor in shaping the future educators who will be responsible for the academic development of pupils and students at primary and secondary schools. However, it has been observed that graduates of CoEs often underperform in job interviews for teaching positions, raising concerns about the quality of their training. Additionally, there appears to be a lack of commitment and dedication among CoE lecturers to effective teaching practices. If these issues are not adequately addressed, the significant investment of time and resources in training future teachers could be wasted, leading to an increase in unemployment among graduates and their continued financial dependence on parents, friends, and relatives.

The decline in teaching effectiveness within CoEs may be linked to the unavailability, poor accessibility, and inadequate utilization of Information and Communication Technology (ICT) resources. Although several studies have explored factors influencing teaching effectiveness, most have focused on aspects such as institutional effectiveness, ownership type, job satisfaction, and work environment, with limited attention given to the role of ICT. This study, therefore, seeks to investigate the impact of ICT factors on teaching effectiveness in Federal Colleges of Education in Southwestern Nigeria.

Purpose of the Study

This study investigated the influence of ICT factors on teaching effectiveness in federal colleges of education in Southwestern Nigeria. Specifically, the study ascertained the level of teaching effectiveness in federal colleges of education; examine the level of ICT factors among lecturers in federal CoEs in Southwestern Nigeria.

Research Questions

The following research questions were raised and answered in this study:

1. What is the level of teaching effectiveness in federal colleges of education in Southwestern Nigeria?
2. What is the level of ICT factors (ICT availability, ICT accessibility and ICT utilisation) among lecturers in CoE in Southwestern Nigeria?

Methodology

The descriptive survey design was adopted for the study. The population of this study consisted of 2,800 lecturers and 6,311 students (300 level) from five federal colleges of education in Southwestern Nigeria. The sample for this study

was comprised of 782 lecturers and 1343 students who were selected from three federal colleges of education in Southwestern Nigeria respectively. Simple random sampling technique was used to select three federal colleges of education. The institutions were Federal College of Education (special), Oyo, Federal College of Education (Technical), Akoka and Federal College of Education, Osiele, Abeokuta while 70% of the lecturers and 10% of the students were purposively selected from each institution on the basis of their willingness to participate in the study. Table 1 revealed comprehensive information of the sample selection.

Table: 1: The sample of the Study

S/N	Institution	Number of Lecturers	70% of Lecturers	Number of Students	10% Of Students
1	Federal College of Education (Special), Oyo	529	370	4938	494
2	Federal College of Education (Technical) Akoka	283	198	1950	195
3	Federal College of Education, Osiele, Abeokuta	305	214	6544	654
	Total	1117	782	13432	1343

Source: Registrar's Office of the twelve colleges of education, 2023

The instruments used for this study were ICT Factors Questionnaire" (ICTFQ) and Teaching Effectiveness Assessment Questionnaire (TEAQ). The ICTFQ was designed to elicit responses from lecturers. This instrument was divided into two sections labelled A to B. Section A contained items on the demographic data of the respondents. Section B focused on gathering data about ICT factors with three sub-scales (Availability of ICT tools, Access to ICT tools and Utilisation of ICT tools), each of which was consisted of 12 items that were formatted on a modified 3-point Likert-type rating scale. For Availability of ICT tools, the responses were: Available and Functional (AF)-3, Available and Not Functional (ANF)-2, and Not Available (NA)-1; for Access to ICT tools, the responses were: Readily Accessible (RA)-3, Seldom Accessible (SA)-2, and Not Accessible (NA)-1; and for Utilisation of ICT tools, the

responses were: Often Utilised (OU)-3, Rarely Utilised (RU)-2, and Not Utilised (NU)-1. The TEAQ was designed to gather data about teaching effectiveness of academic staff by the students they are teaching which were formatted on a modified 4-point Likert-type rating scale. All the items were measured on 4-point Likert scale, rated as follows: Very Good (VG), Good (G), Fair (F) and Poor (P) with scores ranging from 4 to 1 respectively.

A sample of the questionnaire was submitted to the experts in the Department of Educational Management for face, content and construct validity. The contributions and corrections of these experts were incorporated into the final draft of the questionnaire. The reliability of the instrument was established through a pilot study. This was done through the administration of the copies of the questionnaire to 50 lecturers in the College of Education,

Lanlate, Oyo State. The collected data were then subjected to analysis using Cronbach alpha to ascertain the internal consistency or stability of the scales on the questionnaire. The results from the reliability tests were 0.80 and 0.88 for ICT adaptability and teaching effectiveness respectively. A total of 694 (88.7) copies of ICTFQ and 1002 (74.6) copies of TEQ out of

the 782 and 1343 respondents were retrieved and found useful for data analysis. Descriptive statistical tools like frequency count, simple percentage and mean were used to analyse the demographic data of the participants and research questions.

Results and Discussion of Findings

Research Question 1: What is the level of teaching effectiveness among lecturers in federal colleges of education in Southwestern Nigeria?

Table 2: Level of Teaching Effectiveness of Lecturers as Perceived by Students

S/ N	STATEMENTS	VG	G	F	P	ME AN
1	Regularity of lecturers	431 (43.0%)	230 (23.0%)	320 (31.9%)	21 (2.1%)	3.07
2	Punctuality of lecturers	204 (20.4%)	299 (29.8%)	321 (32.0%)	178 (17.8%)	2.53
3	Excellent communication with students	231 (23.1%)	201 (20.1%)	268 (26.7%)	302 (30.1%)	2.36
4	lecturers cover the syllabus for the courses they teach	317 (31.6%)	381 (38.0%)	206 (20.6%)	98 (9.8%)	2.98
5	Regularity of assignments	621 (62.0%)	112 (11.2%)	231 (23.1%)	38 (3.8%)	3.31
6	Explain difficult concepts	278 (27.7%)	213 (21.3%)	349 (34.8%)	162 (16.2%)	2.61
7	Encouraging students to successfully complete the tasks	125 (12.5%)	237 (23.7%)	378 (37.7%)	262 (26.1%)	2.22
8	Lecturers treat every topic on the course outline with passion	334 (33.3%)	215 (21.5%)	234 (23.4%)	219 (21.9%)	2.66
9	Lecturers call all students often to respond to questions in the classroom	321 (32.0%)	297 (29.6%)	218 (21.8%)	166 (16.6%)	2.77
10	Use of instructional resources in delivering lessons	210 (21.0%)	235 (23.5%)	345 (34.4%)	212 (21.2%)	2.44
11	Lecturers listen actively when students are speaking	289 (28.8%)	314 (31.3%)	278 (27.7%)	121 (12.1%)	2.77
12	Joking while lecturing	278 (27.7%)	213 (21.3%)	349 (34.8%)	162 (16.2%)	2.61
Weighted mean = 2.73 (68.3)						

Key: Very Good (VG), Good (G), Fair (F), Poor (P). Decision criteria: Above 2.50= High, Below 2.50= Low.

Table 2 shows level of teaching effectiveness of lecturers as perceived by students in federal colleges of education in Southwestern Nigeria to be high ($\bar{x}=2.73$) which can be interpreted as 68.3%. The result also shows that lecturers of the colleges of education were rated as being good by their students as far as teaching is concerned. In addition, the table reveals that among the lecturers, most of the students perceived regular teaching to be good (n=661, 66.0%); punctuality of lecturers to class to be good (n=503, 50.2%); excellent communication

with students to be poor (n=570, 56.8%); coverage of the syllabus to be good (n=698, 69.6%), giving of regular assignments to be good (n=733, 73.2%). explain difficult concepts by lecturers to the students to be poor (n=511, 51.0%), encouraging students to successfully complete the tasks to be very poor (n=640, 63.8%), lecturers treat every topic on the course outline with passion to be good (n=549, 54.8%), Lecturers call all students often to respond to questions in the classroom to be very good (n=618, 61.6%). use of instructional resources

in delivering lessons to be good (n=445, 54.5%), lecturers listen actively when students are speaking to be very good (n=603, 60.1%) and joking while lecturing to be very poor (n=511, 51.0%). Based on these results, it can be deduced that teaching effectiveness among lecturers in colleges of education was reported to be moderately high when considering weighted average of 2.73 which can be interpreted as 68.3%.

This finding is in line with finding of Taiwo (2014) which revealed a high level of teaching output as 74.6% of the lecturers performed very well in teaching. The results showed that at least 23.1% of the lecturers spent

an average of more than 15 hours teaching in class weekly in the last academic session. This proportion is higher than the 2.72% reported by Israel and Israel (2020) as the proportion of the lecturers who spent more than 15 hours of lecture per week. However, the submission of this study is against the result of Adesope, Oke and Odekunle (2018) who stated that the poor performance of graduates of colleges of education to shallow teaching, inadequate monitoring of lecturers in terms of teaching, lack of practical demonstration, poor subject mastery and poor supervision

Research Question 2: What is the level of ICT factors among lecturers in federal college of education in Southwestern Nigeria?

Table 3: Level of ICT Factors among lecturers

S/N	AVAILABILITY OF ICT TOOLS	AF	ANF	NA	Mean
1	Printer	384 (55.3%)	168 (24.2%)	142 (20.5%)	2.35
2	CBT for exam monitory	259 (37.3%)	307 (44.2%)	128 (18.4%)	2.19
3	Scanner	168 (24.2%)	249 (35.9%)	277 (39.9%)	1.84
4	Electronic notice board	209 (30.1%)	175 (25.2%)	310 (44.7%)	1.85
5	Photocopying machine	384 (55.3%)	176 (25.4%)	134 (19.3%)	2.36
6	Interactive white board	193 (27.8%)	238 (34.3%)	263 (37.9%)	1.90
7	Internet facilities	223 (32.1%)	298 (42.9%)	173 (24.9%)	2.07
Weighted mean (ICT availability) = 2.08					
S/N	ACCESS TO ICT TOOLS	RA	SA	NA	Mean
1	Printer	264 (38.0%)	228 (32.9%)	202 (29.1%)	2.09
2	CBT for exam monitory	221 (31.8%)	324 (46.7%)	149 (21.5%)	2.10
3	Scanner	143 (20.6%)	175 (25.2%)	376 (54.2%)	1.66
4	Electronic notice board	164 (23.6%)	188 (27.1%)	342 (49.3%)	1.74
5	Photocopying machine	329 (47.4%)	297 (42.8%)	68 (9.8%)	2.38
6	Interactive white board	153 (22.0%)	226 (32.6%)	315 (45.4%)	1.77
7	Internet facilities	196 (28.2%)	251 (36.2%)	247 (35.6%)	1.93
Weighted mean (ICT accessibility) = 1.95					

S/N	UTILISATION OF ICT TOOLS	OU	RU	NU	Mean
1	Printer	212 (30.5%)	238 (34.3%)	244 (35.2%)	1.95
2	CBT for exam monitory	195 (28.1%)	313 (45.1%)	186 (26.8%)	2.01
3	Scanner	124 (17.9%)	244 (35.2%)	326 (47.0%)	1.71
4	Electronic notice board	107 (15.4%)	279 (40.2%)	308 (44.4%)	1.71
5	Photocopying machine	335 (48.3%)	270 (38.9%)	89 (12.8%)	2.35
6	Interactive white board	101 (14.6%)	285 (41.1%)	308 (44.4%)	1.70
7	Internet facilities	125 (18.0%)	305 (43.9%)	264 (38.0%)	1.80
Weighted mean (ICT utilisation) = 1.89					
Weighted mean (ICT Adaptability) = 1.97					

Key: Available and Functional (AF), Available and Not Functional (ANF), Not Available (NA). Readily Accessible (RA); Seldom Accessible (SA) and Not Accessible (NA). Often Utilized (OU); Rarely Utilized (RU) and Not Utilized (NU). Decision criteria: Above 2.0= High, Below 2.0= Low

Table 3 reveals that the level of ICT factors among lecturers in college of education in Southwestern Nigeria was low ($\bar{x}=1.97$). To put this in perspective, while the level of ICT availability was high ($\bar{x}=2.08$), the levels of ICT accessibility ($\bar{x}=1.95$) and ICT utilisation ($\bar{x}=1.89$) were low. Specifically, majority of the respondents reported that, among the ICT tools, the printer ($n=384$, 55.3%) and photocopying machine ($n=384$, 55.3%) were available and functional while the CBT for exam monitory ($n=307$, 44.2%) and internet facilities ($n=298$, 42.9%) were available but not functional, and the electronic notice board ($n=310$, 44.7%) and digital camera ($n=282$, 40.6%) was not available. This result largely supports the reports of some previous studies reviewed, for example, Tella (2011) reported that some ICT equipment in the colleges of education were not available; Akuegwu, Ntukidemi, Ntukideim andi Jaja (2011) reported a significantly low availability of ICT tools for instruction delivery except for internet-connected desktop computers; Ugwoke et al. (2012) reported the unavailability of ICT facilities which they attributed to inadequate infrastructures; Ejilibe (2013) also reported that the quality of ICT resources which are available to teach and learn Biology in college of education is low; the results of the study carried out by Okolocha and Nwadiani (2015) showed that few ICT resources were available in their study area;

Lawyer (2019) reported that in her study area, there was a stark lack of rudimentary facilities like projectors, e-library access and interactive white boards which are typical of the 21st century classroom.

It was also observed that the respondents reported that the ICT tools like the printer ($n=264$, 38.0%) and photocopying machine ($n=329$, 47.4%) which were available and functional were also readily accessible. Most of the respondents also reported that the CBT for exam monitory ($n=324$, 46.7%) was seldom accessible while scanner ($n=376$, 54.2%), electronic notice board ($n=342$, 49.3%) and interactive white board ($n=315$, 45.4%) were not accessible. The results also indicated that 36.2% of the lecturers reported that internet facilities were seldom accessible. This result does not agree with the report of Okafor et al. (2011) which revealed that all the lecturers that were interviewed, in their study, claimed that they had access to internet services. When the accessibility of ICT tools is poor, these tools will also be poorly utilised. The proper integration of ICT tools will result in lecturers being digitally literate and trained to utilise ICT tools.

The results also showed that the only ICT tool that was often utilised was the photocopying machine ($n=335$, 48.3%). Most of the respondents also reported that the CBT for exam monitory ($n=313$, 45.1%) and internet

facilities (n=305, 43.9%) were rarely utilised while scanner (n=326, 47.0%), electronic notice board (n=308, 44.4%), and interactive white board (n=308, 44.4%) were not utilised. Mixed reports were also observed in previous studies. For example, Tella (2011) reported a low level of utilisation of ICT gadgets; Akuegwu et al. (2011) reported that the lecturers' utilisation of ICT facilities was significantly low; Egomo et al. (2012) reported a low level of utilisation of ICT tools. Likewise, a survey carried out to assess the utilisation of ICT tools by lecturers in tertiary institutions revealed that although most teachers utilise ICT in preparing for teaching, an insignificant proportion of them utilise it in the course of instruction delivery to enhance pedagogy (Olafare et al., 2017).

This result is in tandem with the report of Obiri-Yeboah et al. (2013) which indicated that ICT was not completely integrated into teaching and research in tertiary institutions. This finding also corroborates the report of Emojorho (2013) which showed that the present level of ICT integration is grossly inadequate, and this discourages research efforts. ICT factors, in this study, was predicated upon the availability, accessibility and utilisation of ICT tools. The results showed that over 50% of the lecturers reported that the ICT tools were either not available or they were available but not functional except for the printer and photocopying machine which were reported by 55.3% of the respondents to be available and functional.

Conclusion

The study was carried out on the impact of ICT accessibility and utilization on teaching effectiveness in Federal Colleges of Education in Southwestern Nigeria. The study examined the level of teaching effectiveness in conjunction with level of ICT factors (ICT availability, ICT accessibility and ICT utilisation) in federal colleges of education. Therefore, this study concluded based on the findings that, ICT factors is critical for teaching effectiveness of lecturers in the colleges of education, and many inherent benefits are expressed in lecturers' outputs toward their institutions. In other words, high level of ICT factors implies expertise on the part of lecturers, which minimise tension but enhance core values, merit, and success.

Recommendations

Based on the findings of this study that teaching effectiveness was reported to be moderately high, effort should be made by colleges' management to sustain and maintain teaching effectiveness of lecturers in colleges of education. ICT skill requirements should be evaluated on a regular basis to ensure that each lecturer has the appropriate skills required in his or her work team. The government and management of colleges of education should organise training and development programs frequently so as to address the gaps in knowledge which have been observed in the job and ICT skill requirements of lecturers. The government and management of colleges of education should continue provide more ICT gadgets on regular basis.

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