

ICT REINFORCEMENT FACTORS AS CORRELATE OF LECTURERS' UTILISATION OF ICT IN CURRICULUM CONTENT DELIVERY IN A NIGERIAN PUBLIC UNIVERSITY

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Abstract

Owing it to the impact of Information and Communication Technology (ICT) on educational development, the Nigerian government continues to invest in ICT infrastructure in Universities. Despite, it appears that lecturers are not well accustomed with the use of ICT. This could have resulted from the lack of provision of critical support factors. It is against this backdrop that the study investigated the influence of ICT reinforcement factors on lecturers' utilisation of ICT in curriculum content delivery in University of Lagos. A correlational survey research design was adopted for the study. Three hypotheses guided the study. The population for the study comprised of 1473 lecturers from University of Lagos. The sample size of the study was 315 ascertained using Taro Yamane formula. The study adopted a multi-stage sampling procedure. Simple random sampling was used to select seven faculties; afterwards stratified proportionate sampling technique was used to select participants across the seven faculties. Researchers constructed, validated and reliable ($r = 0.76$) questionnaire was used for data collection. Linear regression analysis was used to test the hypotheses at 0.05 level of significance. The study found out that capacity building, technology specialist support and monitoring and evaluation significantly influenced lecturers' utilisation of ICT in curriculum content delivery in University of Lagos. The study therefore, recommended that University management should: collaborate with the quality assurance unit to ensure monitoring and evaluation exercises; employ the services of technical support staff to provide professional help to lecturers; and organise capacity building in the area of ICT for lecturers.

Keywords: Reinforcement factors, capacity building, technology specialist support, monitoring and evaluation, Lecturers' utilisation of ICT for curriculum content delivery

Introduction

In the 21st century, Information and Communication Technology (ICT) have become a domineering stimulus that continues to elicit unavoidable responses of adaptability, embrace and adjustment from almost all spheres of life, of which, education despite being a major force in national development is not exempted. Its' indispensability in the field of education became evident during the Covid-19 Pandemic, a period that exemplified the dire need for a revolution of the delivery of instruction in Nigeria Universities. For instance, during this period, the University of Lagos in a bid to ensure that teaching and learning continued resulted to the use of ICT such as the University's Learning Management System (LMS), Zoom Conferencing and Google Meet among others for lecturers to deliver instruction as well as for the conduct of continuous assessment. This method of delivery of instruction that was driven by ICT involved the use of ICT devices, its equipment and network connectivity and software in the delivery of learning characterised by a more learner-centered approach such that it fosters activeness on the part of students. In furtherance, amidst the reality of the demand of the labour market, fostering ICT skills among university students cannot be downplayed if the trend of "unemployable output" is to be nipped in the bud.

Lecturers play a crucial role in implementing ICT in education, moreover, the level of utilisation of ICT by lecturers is still not widespread (Jumare et al., 2017; Bansa & Asrini, 2020). Many have argued that the lack of ICT competence and technical expertise among lecturers is a major challenge in the use of ICT for classroom instruction (Uche & Nwabueze, 2011; Nwabueze, Iloabuchi & Adieme 2014). This could be a result of the digital skewness between

students who are regarded as iGeneration and some lecturers who are regarded as digital immigrants (Kibona & Magaya, 2015). In the opinion of Bansa and Asrini (2020), this has contributed to the negative attitude of lecturers toward the use of ICT. Dudeney and Hockly as cited in Bansa and Asrini (2020) also argued that a large part of the negative attitudes lecturers have towards technology is usually a reflection of a low confidence on the part of lecturers, inadequacy of ICT infrastructure and facilities, or a unavailability of capacity building programmes, these result to their inability to perceive the benefit of using ICT for classroom instruction. One could deduce that, since lecturers are indispensable in the integration of ICT, it is imperative that they are provided with reinforcements that foster the application of ICT in the delivery of curriculum content.

This discourse, "integration of ICT in education" is not an abstraction, thus, it requires the initiation of processes, setting up structures, creating awareness, personnel capacity building, policy framework and provision of bespoke resources among many others to achieve a digitalized education system. Therefore, this paper seeks to investigate certain reinforcement factors that would foster lecturers' use of ICT in curriculum content delivery.

Statement of the Problem

There appears to be a low utilisation of ICT by lecturers in the delivery of instruction in Nigeria University. Thus, it can argued that the application of ICT for classroom instruction has become a mere rhetoric than a practical reality. Consequently, it appears many of the available communication materials available in classroom are not put to maximum use. This forgoing may be evidenced in the output from Nigeria

Universities, some of which seem to be deficient of ICT related employability skills, which is a major factor in the parlance of job employment. This may be attributed to the inadequacy of ICT gadgets; however, in the case whereby they are made available there appears to be the problem lecturers' incompetence in the use of these devices. Consequently, the paper focuses on the influence of reinforcement factors such as technology specialist support, monitoring and evaluation, and capacity building on lecturers' utilisation of ICT in curriculum content delivery in University of Lagos.

Objectives of the Study

The study examined the:

1. influence of capacity building on lecturers' utilisation of ICT in curriculum content delivery in University of Lagos,
2. influence of technology specialist support on lecturers' utilisation of ICT in curriculum content delivery in University of Lagos,
3. influence of monitoring and evaluation on lecturers' utilisation of ICT in curriculum content delivery in University of Lagos.

Research Hypotheses

The following hypotheses were formulated and tested in the study:

1. Capacity building does not significantly influence lecturers' utilisation of ICT in curriculum content delivery in University of Lagos.
2. Technology specialist support does not significantly influence lecturers' utilisation of ICT in curriculum content delivery in University of Lagos.
3. Monitoring and evaluation does not significantly influence lecturers'

utilisation of ICT in curriculum content delivery in University of Lagos.

Literature Review

Information Communication and Technology

Information and communication technology is a global phenomenon that has extensively prompted international and national reforms across almost all sectors and national sub-systems. According to Nwabueze and Ukaigwe (2015), "ICT is the emergence of tools of microelectronics and telecommunications that are used in the Automatic Acquisition Analysis, storage, retrieval, manipulations, management, control, movement, display, transmission, reception and interchange of quantitative and qualitative Datum". United Nations Educational, Scientific and cultural Organisation's (UNESCO's) overview (as cited in Nwabueze, 2011) Information and Communication Technology was conceptualised as the utilisation of any shade of technology for the creating, storing, sharing, exchanging and transmitting information to the entire sundry. Critical to this definition is that "information", its processing, sharing, storage and transmission through technological devices are considered to be more efficient compared to the analogous practices.

ICT for Curriculum Content Delivery

The integration of ICT in curriculum content delivery could be described as a game changer. It offers the best framework for the effective implementation of a learners-centered learning environment devoid of the hitherto monopolistic hegemony of instructional process held by lecturers. This fosters self-ownership of learning by students without leaving out but rather making room for their learning diversities. Thus, the

integration of ICT in curriculum content delivery by far a massive upgrade to the traditional method of instruction delivery. The integration of ICT in curriculum content delivery promote a learning environment that is characterised by inclusivity and interaction as against passivity, which describes the traditional method of learning (Ibeh, Adamu & Owoseni, 2007). Hitherto, the traditional model of curriculum content delivery and the teaching-learning process that is the order of the day in most universities entails a teacher-centered approach, teacher-marker board-student mechanism and the face-to-face lecturer-verbal communication-handout style. This mode of delivery has been viewed as not being able to meet the challenges of learning in a technology-driven age (Onwuagboke et' al, 2015)

According to Nwabueze, Nwokedi, and Edikpa (2018), academic staff of universities can administer teaching using projectors, networking cables and laptops, which are parts of the ICT devices needed for effective teaching, learning, research, administration and virtual conferencing. Furthermore, the application of Information and communication technology for classroom instruction entails the use of information and communication technology devices (the computer and its' peripheral), its equipment and processes (network connectivity) by lecturers in acquiring and sourcing knowledge and information about the subject matter which is widely provided through the world wide web (internet, Google or online library); in the preparation of learning content and instructional materials (through software application such Microsoft word, PowerPoint, Camtasia studio); and in the delivery and dissemination of instructional content (overhead projectors, public address system, interactive board, slide presentation, magnetic board; through online

learning software) predicated upon the blended learning methodology that increases educational opportunity, access to education and allows for a hitch-free classroom contact.

Employing the three aforementioned resources of the information and communication technology, that is, the hardware, software and network connectivity to describe how information and communication technology is used for classroom instruction;

1. Sourcing and gathering of information on the courses and subject matter:

This aspect is the behind-the-scenes of the later classroom instruction delivery. The application of ICT for classroom instruction allows lecturers to have a wide range of learning materials through the Internet. The use of the internet i.e. the worldwide web and the popular Google search engine avails the lecturer the opportunity to acquire relevant and current information about related course contents.

2. Preparation of lesson content and instructional materials:

Lecturers utilise the technological devices in the preparation of class lecture notes, instructional materials, and lesson content. The hardware such as the computer with the software applications which include Microsoft Word and Microsoft Excel for preparing lecture notes, preparing tables, charts, mathematical calculations, and financial illustrations; PowerPoint presentations to prepare slides and also the use of certain applications that are used to prepare

instructional materials such as Camtasia studio.

3. **Presentation and delivery of lesson content in the classroom:** In the classroom, the use of overhead projectors, megaphones, public address systems, interactive boards, slide presentations, televisions, and audio-visual materials are used for the presentation of lesson contents. This is very helpful, especially in large/combined classes.
4. **Uploading lecture materials online:** Lecturers are availed the opportunity to upload lecture notes and slide presentations online, either before a class or after a class, this aids a more interactive classroom instruction and also helps students to read ahead of the class.
5. **E-learning:** E-learning is a major innovation that has almost eclipsed or rather complemented traditional face-to-face classroom learning. The term e-learning defines technology-mediated and digitally empowered learning that utilises the several components of the information technology in enriching the learning experience of learners without the encumbrances of time and space.
6. **Evaluation:** lecturers could also give students project assignments that require the use of the internet to source materials and instruct that they make use of the slide projector for the presentation of their project.

ICT Reinforcement Factors and Lecturers' Utilisation of ICT in Curriculum Content Delivery

According to the University of Nebraska (2022), Reinforcement is a process in which a consequence, a reinforcer, is given in response to a desired behaviour to increase the prospect that the behaviour will occur again under similar conditions. They further added that the process is designed to be employed systematically and contingently. Reinforcement means to provide strategic support driven by careful situational analysis in response to observable needs and deficiencies to an end of engendering optimum performance. Lecturers must be provided with reinforcements that engender the use of ICT for instruction delivery. For the sake of this study, capacity building, technology specialist support, and monitoring and evaluation were considered as reinforcement factors.

Capacity building is the process of acquiring new knowledge, teaching methods, up-to-date techniques, skills, ideas and changes required for the production of students through training and development (Nwabueze *et' al.*, 2018). Capacity building is ascertaining the necessary areas of competence lacking in a person required for the attainment of a goal hereby providing the information, knowledge, skill and character among others to beef up the person to that level of competence and proficiency so desired to meet the objective set. It entails improving the quality of staff by the dictates of change, innovation and development of new concepts and ideas in the area of their specialisation through different programmes such as in-service training, seminars, workshops, on-the-job training, and conferences.

Resta (2002) defines technology specialist support as specialised skill personnel who can

support and assist educators in integrating instructional technology into curriculum content delivery. Despite providing capacity-building support for lecturers, universities are also expected to make available qualified technical assistants with ICT skills through the works and service unit saddled with the responsibility of maintenance, repair and providing technical assistance to lecturers when they are faced with certain difficulties in the use of these devices. They facilitate lecturers in the proper use of facilities such as laptops, software apps, projectors, interactive boards and other devices. Simiyu, Mutsotso, and Masibo (2019) articulated that such a highly trained technical workforce with the required skills, knowledge, and ICT competence to service, repair and arrange for the learning environment just like it was with the laboratory sciences with technicians. In support of this, Brown and Murray's diary (2006) (as cited in Simiyu *et al.*, 2019) stressed that where ICT expertise was lacking, policies planned by the government and investment towards the implementation of ICT in schools are bound to fail in realising the desired school reforms.

According to Orji, Mando and Nzewi (2021), monitoring means checkmating and providing oversight function over ongoing activities to ensure that all that is done follows due process as specified in the approved proposal. Evaluation on the other hand means assessing and matching the outcome or result of a particular programme against expected and intended results. Although monitoring and evaluation are complimentary, although monitoring comes into play during the process while evaluation happens after the completion of a programme, evaluation is aimed at identifying the gap between the expected result and the actual result. However, both are aimed at ensuring that quality and

standard are achieved, maintained and sustained as well as provide information either in the form of advice or recommendations having identified obstacles hindering the effective implementation of the programme. Atanda and Adeniran (2020) opined that monitoring and evaluation are aspects of quality assurance aimed at ensuring consistent and thorough monitoring of the quality and standards of instructional delivery that are maintained in schools and universities in general.

Methodology

The correlational survey research design was used for the study. The population for the study comprised of 1, 473 lecturers from the 14 faculties in University of Lagos, Nigeria (University of Lagos, 2024). The sample size of the study was 315 ascertained using Taro Yamane formula. The study adopted a multi-stage sampling procedure. Simple random sampling was used to select seven faculties, which represented 50% of the existing 14 faculties in University of Lagos. Afterwards stratified proportionate sampling technique was used to select 55 participants from Faculty of Arts, 46 participants from Education, 29 participants from Environmental Science, 48 participants from Social Sciences, 34 participants from management science, 84 participants from Sciences and 19 participants from the faculty of Law. Afterwards, a random sampling technique was used to select these participants in the University. Researchers constructed instrument tagged "ICT Reinforcement Factors and Lecturers' Utilisation of Information and Communication Technology in Curriculum Content Delivery Questionnaire (ICTRFLUICTCCDQ)" was used for data collection. The instrument was a modified Likert type with four-point rating scales. Lecturers in

test and measurement validated the instrument, while the reliability of the instrument was done using a test-re-test method, and a reliability coefficient of 0.76 was obtained, and this was adjudged to be reliable. The statistical analytical

Results

Testing of Research Hypotheses

Research Hypothesis One: Capacity building does not significantly influence lecturers' utilisation of ICT in curriculum content delivery in University of Lagos,

Table 1: *Influence of Capacity Building on Lecturers' Utilisation of ICT in Curriculum Content Delivery*

Regression						
Model	Source	Sum of Squares	d.f.	Mean Squares	F	Sig.
R=0.419	Regression	12.010	1	12.010	66.771	0.000
R ² =0.176	Residual	56.298	313	0.180		
Adj. R ² =0.173	Total	68.308	314			

a. Dependent variable: Lecturers utilisation of ICT in curriculum content delivery

b. Predictor: (constant), Capacity building

Table 1 shows a co-efficient of regression (R) of 0.419, likewise, with a Regression square (R²) of 0.176, this indicates that capacity building makes 17.6% (Regression square R² × 100) contribution to the variance in lecturers utilization of ICT in curriculum content delivery. Furthermore, Table 1 indicated that (F= 66.771; df= (1;314); p-value (0.000)<0.05). Since the p-value is less than .05, it is inferred that the result is significant. Therefore, capacity building had a significant influence on lecturers' utilisation of ICT in curriculum content delivery in University of Lagos.

Research Hypothesis Two: Technology specialist support does not significantly influence lecturers' utilisation of ICT in curriculum content delivery.

Table 2: Influence of Technology Specialist Support on Lecturers' Utilisation of ICT in Curriculum Content Delivery

Regression						
Model	Source	Sum of Squares	d.f.	Mean Squares	F	Sig.
R=0.294	Regression	5.884	1	5.884	29.504	0.000
R ² =0.086	Residual	62.424	313	0.199		
Adj. R ² =0.083	Total	68.308	314			

a. Dependent variable: Lecturers' utilisation of ICT in curriculum content delivery

b. Predictor: (constant), Technology specialist support

Table 2 shows a co-efficient of regression (R) of 0.294, likewise, with a Regression square (R²) of 0.086, this indicates that technology support specialist makes 8.6% (Regression square R² × 100) contribution to the variance in lecturers' utilisation of ICT for content delivery. Furthermore, Table 2 indicated that (F= 29.504; df= (1;314); p-value (0.000)<0.05). Since the p-value is less than .05, it was inferred that the result is significant. Therefore, technology specialist support had a significant influence on lecturers' utilisation of ICT in curriculum content delivery in University of Lagos.

Research Hypothesis Three: Monitoring and evaluation does not significantly influence lecturers' utilisation of ICT in curriculum content delivery in University of Lagos

Table 3: Influence of Monitoring and Evaluation on Lecturers' Utilisation of ICT in Curriculum Content Delivery

Regression						
Model	Source	Sum of Squares	d.f.	Mean Squares	F	Sig.
R=0.350	Regression	8.370	1	8.370	43.709	0.000
R ² =0.123	Residual	59.938	313	0.191		
Adj. R ² =0.120	Total	68.308	314			

a. Dependent variable: Lecturers' utilisation of ICT in curriculum content delivery

b. Predictor: (constant), Monitoring and evaluation

Table 3 shows a co-efficient of regression (R) of 0.350, likewise, with a Regression square (R²) of 0.123, this indicates that monitoring and evaluation makes 12.3% (Regression square R² ×

100) contribution to the variance in lecturers' utilisation of ICT in curriculum content delivery. Furthermore, Table 3 indicated that ($F= 43.709$; $df= (1;314)$; $p\text{-value} (0.000)<0.05$). Since the p -value is less than .05, it is inferred that the result is significant. Therefore, monitoring and evaluation had a significant influence on lecturers' utilisation of ICT in curriculum content delivery.

Discussion of Findings

The first result showed that capacity building significantly influenced lecturers' utilisation of ICT for curriculum content delivery. Building the capacity of lecturers cannot be downplayed in the proper integration of ICT into the educational system for classroom instruction, since it appears many are digital immigrants. Lecturers' involvement in capacity-building programmes gives them the opportunity to participate fully in educational activities for the development of individuals, the institution and society at large (Nwokedi *et al.*, 2018). Nwabueze *et al.*, (2018) identified the following as ICT capacity-building needs of lecturers: knowledge of operating the ICT devices, good knowledge of handling the devices in teaching, clear skills of manipulating the devices for research development, using the devices to store and present students' data.

Furthermore, the result illustrated that, technology specialist support had significant influence on lecturers' utilisation of ICT in curriculum content delivery. In support of this, Dexter *et al.*, (2003) found out that technology support has a significant impact on lecturers' use of ICT devices, more specifically in the application of ICT into teaching-learning practices.

The third result showed that monitoring and evaluation significantly influenced lecturers'

utilisation of ICT in curriculum content delivery. Monitoring and evaluation exercises engenders compliance by lecturers to use provided ICT devices. This aspect also cover the enforcement ICT policies, rules and regulations or directives made by the university and the National University Commission (NUC). Monitoring and evaluation is a mechanism to ensure that lecturers are employing the use of ICT in instruction delivery. Extensively, it also helps to identify aspects where lecturers need to improve in the use of ICT.

Conclusion

The findings of the study have shown that capacity building, technology specialist support and monitoring and evaluation are reliable predictors of lecturers' utilisation of ICT in curriculum content delivery. Based on this findings, it can therefore be concluded that, bearing in mind the fact of most of the lecturers fall in the category of digital migrant, it would be the highest level of delusion to provide ICT gadgets in the classroom without providing them with capacity building in the area of ICT, and expect them to use it. By extension, based on the findings of the study, employing the hands of technology specialist support staff is crucial in helping lecturers overcome technological fright and ensure the maintenance of these devices. Furthermore, it is a known fact as pointed out by literature that change would always be resisted, consequent upon this and in line with the findings of the study which showed a direct positive significant influence of monitoring and evaluation on the application of ICT for instruction delivery, undertaking the activities of monitoring and evaluation in enforcing the use of ICT in Nigeria Universities cannot be downplayed.

Recommendations

The following recommendations are made based on the findings of the study:

1. University management in collaboration with the quality assurance units of Universities should ensure intermittent monitoring and evaluation exercise aimed at engendering lecturers' utilisation of ICT in curriculum content delivery.
2. University management should employ the services of technical support staff to help in setting up ICT classroom communication materials, navigating through technology-related issues and maintenance of ICT devices for the use of lecturers.
3. University management should organise capacity building in the area of ICT for lecturers, and by extension ensure that such capacity building programme are enriched in the areas of delivery, content coverage and equipment that necessitate pragmatism and simulation exercise.

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