



Evaluation of the Application of Information and Communication Technology in Enhancing Lesson Planning and Instructional Delivery in Higher Institutions in Kaduna State, Nigeria

¹Akut, Yakubu Bobai, ²Yakubu, Iliya

¹Department of Geography

²Educational Management

Federal University of Education, Zaria

ABSTRACT

The study "Evaluated the Application of Information and Communication Technology in enhancing Teaching and Learning in Higher Institutions in Kaduna State, Nigeria". Specifically, the study was set out to: evaluate the application of ICT in lesson planning in higher institutions in Kaduna State; and assess the application of ICT in instructional delivery in higher institutions in Kaduna State. In line with the stated objectives, two corresponding research questions were raised and two null hypotheses were formulated in the study. Survey research design was adopted in the study. The population of the study was 1,303 lecturers from the five state-owned higher institutions in Kaduna State. The sample size was 306 lecturers selected from 3 higher institutions in Kaduna State. The instrument titled "Application of Information and Communication Technology Questionnaire (AICTQ)" with reliability coefficient of 0.85 was used for data collection. Data collected in the study was analysed using descriptive statistics; frequency counts, mean and standard deviation to answer the research questions while Chi-square (χ^2) was used to test the three null hypotheses at 0.05 level of significance. Findings of the study revealed among others that significant difference exist in the mean response of lecturers on the application of ICT in lesson planning in higher institutions in Kaduna State (p -value .010 < 0.05); and there was no significant difference in the mean response of lecturers on the application of ICT in instructional delivery in higher institutions in Kaduna State (p -value .130 > 0.05). Recommendations made include that: Lecturers should learn how to prepare lesson notes and instructional packages using ICT. This will not only alleviate the problem of lack of computer skills, but will reduce their workload, save them time, make them to be more organised, and increased their efficiency.

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INTRODUCTION

Technological advancement has dramatically reshaped human life, influencing virtually every sector, including education. One of the most remarkable developments brought about by Information and Communication Technology (ICT) is the computer and its vast applications, which have revolutionized how knowledge is

generated, shared, and utilized. Globally, educational systems are making concerted efforts to integrate ICT tools in order to prepare learners with the knowledge and competencies essential for survival and success in the twenty-first century. In higher education institutions, ICT has emerged as a critical instrument for enhancing the quality,

Corresponding author: Akut Yakubu Bobai

✉ yabqutt68@gmail.com

Department of Geography, Federal University of Education, Zaria.

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accessibility, and effectiveness of teaching and learning processes.

The adoption of ICT has transformed traditional methods of instruction, enabling lecturers to employ more engaging, flexible, and learner-centred approaches. These tools support various academic activities, including research, collaborative learning, inquiry-based education, and lesson preparation. When effectively implemented, ICT promotes a more interactive learning environment that allows both teachers and students to explore, communicate, and share ideas beyond the physical classroom. According to Alasoluyi, Shaibu, and Garba (2016), technology enables learners to access, expand, transform, and exchange knowledge in innovative ways, fostering creativity, participation, and deeper understanding.

In Kaduna State, Nigeria, higher education institutions are increasingly adopting ICT to improve teaching and learning outcomes. However, questions remain regarding the extent of its application and its overall effectiveness in academic delivery. This study, therefore, aims to evaluate the application of Information and Communication Technology in enhancing teaching and learning in higher institutions within Kaduna State. The research seeks to assess how ICT tools are used, their impact on instructional quality, and the challenges affecting their full integration into the tertiary education system.

Information and Communication Technologies encompass a wide variety of technological tools and resources designed to create, manage, and disseminate information (Nath, 2011). According to Ofodu (2007), ICT tools that can facilitate educational change include radio, television, computers, projectors, telephones, fibre optics, fax machines, audio recorders, CD players, CD-ROMs, the Internet, electronic notice boards, multimedia resources, and video systems. When appropriately applied, these technologies enhance educational quality, promote relevance to the digital workplace, and expand access to learning opportunities. Tinio, as cited in Scholastica and Kayange (2014), further emphasizes that ICT makes the teaching and

learning process more participatory, engaging, and connected to real-life experiences.

Higher education, also referred to as tertiary education, represents the stage of learning that occurs beyond post-secondary education. As stated by the Federal Republic of Nigeria (2013), tertiary education includes instruction offered in universities, colleges of education, polytechnics, and monotechnics, including distance learning programmes. These institutions award both professional and non-professional qualifications and play a vital role in advancing human capital development. For higher institutions in Kaduna State to achieve the goals of access, equity, quality, and relevance, the integration of ICT into their operations is indispensable. In today's interconnected world, knowledge, information, and communication skills have become the pillars of societal advancement. Thus, educators must equip learners with the ability to navigate and benefit from the information age, thereby contributing to national growth and sustainable development. To achieve this, the comprehensive utilization of ICT—from radio and mobile devices to computers and the Internet—remains essential in laying the foundation for a knowledge-driven and technologically empowered society.

Modern technologies have redefined educational practices, offering tools that simplify instruction and enhance learning outcomes when compared with traditional teaching resources. Unlike conventional methods, ICT-based approaches stimulate learners' creativity and deepen their engagement with content. According to Ogunsola (as cited in Alasoluyi, 2015), students who utilize ICT in classroom activities tend to have a better grasp of complex ideas and retain information more effectively than those taught through traditional means. This highlights the desirability of ICT adoption in higher education institutions.

Igba and Oyibe (2013) emphasize that tertiary education requires innovative and participatory teaching approaches that foster student engagement and understanding. Integrating ICT into teaching encourages a more comprehensive and interactive presentation of concepts, thereby improving knowledge retention



and learner motivation. Alasoluyi (2015) and the National Teachers' Institute (NTI, 2014) also argue that ICT promotes a paradigm shift from teacher-centred to learner-centred instruction. This shift demonstrates that the effective use of ICT can enhance teaching and learning in Nigerian higher institutions—especially in Kaduna State—provided that lecturers exhibit a positive disposition toward technological adoption (Bellrams & Iyamu, as cited in Adeosun, 2004).

The term *application* denotes the practical use of tools or methods to execute a plan or achieve a desired outcome. Hornby (2005) defines application as the practical use of something, particularly modern technologies, for educational purposes. ICT application in education involves incorporating tools such as e-learning platforms, video conferencing, electronic resources, the World Wide Web, and both synchronous and asynchronous communication software into curriculum delivery. Despite the availability of these technologies, teachers and lecturers remain the principal facilitators of ICT implementation in schools. They create conducive environments that enable students to acquire relevant ICT competencies. However, the mere presence of ICT facilities in classrooms does not guarantee their effective utilization. As Kadel (cited in Yusuf & Balogun, 2011) notes, the degree to which technology contributes to effective teaching depends largely on lecturers' skills and attitudes toward its use. Lecturers therefore serve as key agents in determining the extent to which ICT enhances instructional quality.

Ofodu (2007) defines the application of ICT as the use of diverse technological resources and methods to generate, process, transmit, store, retrieve, and manage information. In an educational context, this includes employing ICT tools to support teaching, assessment, and course management. Lecturers now use ICT to deliver instructional content through multiple digital applications and media. Teaching and learning in today's ICT-driven environment extend beyond the teacher's physical classroom presence. For instance, instructors can post lectures online, assign digital tasks, and receive completed

assignments via email, allowing for timely feedback.

This digital integration enables teachers to transcend traditional instructional boundaries by promoting active student engagement, encouraging innovation, and fostering critical thinking. Through ICT, lecturers can cultivate learning environments that encourage experimentation, creativity, and collaboration among students. Consequently, the era in which educators' function without digital literacy is rapidly fading, as ICT competence has become a prerequisite for effective teaching and learning in modern higher education.

Students' academic performance in higher education is strongly influenced by the competence and professionalism of their lecturers in using Information and Communication Technology (ICT) for instructional purposes. When lecturers possess the necessary ICT skills, they can deliver lessons more effectively and create interactive learning experiences that promote understanding. However, without proper assessment of students' progress during instruction, the teaching process loses its intended purpose and effectiveness.

According to the Federal Republic of Nigeria (FRN, 2013), teaching is a systematic, deliberate, and rational activity aimed at transmitting knowledge, skills, and values to learners in accordance with established ethical and educational principles. Similarly, Akinpelu (as cited in Offorma, 2006) defines teaching as a conscious and purposeful effort made by an experienced individual to impart knowledge, skills, or attitudes to a less experienced learner through morally sound and pedagogically appropriate methods. In essence, the primary aim of teaching is to facilitate meaningful learning.

Learning, on the other hand, is a dynamic process through which an individual acquires knowledge, skills, attitudes, concepts, traditions, and values that contribute to intellectual, emotional, spiritual, social, and physical development. Paul (as cited in Edem, 2012) explains that learning results in holistic growth and the ability to adapt to various life situations. Similarly, Igbo (as cited in Edem, 2012)



views learning as a relatively permanent change in behaviour or capacity that cannot merely be attributed to biological growth. Effective learning occurs only when learners are mentally and emotionally ready to engage with instructional content.

Yusuf (2007) emphasizes the importance of equipping student-teachers with ICT competencies for both personal and instructional use. Higher institutions, therefore, have a crucial responsibility to develop students' abilities to design and utilize ICT-based instructional materials and to integrate technology directly into their classroom learning activities. Moreover, lecturers should encourage students to develop a critical understanding of ICT and its social, ethical, and cultural implications. By fostering these abilities, higher institutions help students cultivate essential cognitive skills such as critical thinking, decision-making, problem-solving, and logical reasoning. These skills not only enhance student-centred learning but also prepare learners to function effectively in the technology-driven world. Ultimately, integrating ICT into the teaching and learning process enables students to engage actively with knowledge, apply what they learn in practical contexts, and perform better academically across diverse subjects.

Information and Communication Technology (ICT) serves multiple purposes in the classroom and can be applied to support students across all areas of the curriculum. Globally, ICT has become a central driver of educational development and transformation (Anderson, 2002). In many nations, the integration of ICT into education is not only viewed as a pedagogical necessity but also as a justification for increased social and economic investment in the educational sector (UNESCO, 1998). ICT plays a significant role in all aspects of curriculum implementation, particularly in teaching and learning processes within educational institutions and teacher-training colleges (Avlos, as cited in Kisanjara, Mangula, & Noyi, 2014). Furthermore, ICT enhances the efficiency and effectiveness of management and administrative operations in higher institutions (Ayodo, 2009).

ICT in education generally involves the use of computers and related technologies to facilitate and improve instructional delivery. ICT-based programmes incorporate tutorials, simulations, problem-solving exercises, and drill-and-practice methods to present instructional content while simultaneously assessing students' understanding. These programmes enable learners to progress at their own pace, thereby promoting individualized and self-directed learning. According to Sharp (1996), ICT can be effectively used to teach a wide range of subjects, from basic mathematical operations to advanced concepts in science, social studies, and language arts.

Different scholars have defined ICT from diverse perspectives. Marshall (2014) describes ICT as the convergence of computing and telecommunications aimed at processing and managing information. Similarly, Chatterton (1992) defines ICT as the application of scientific principles to the handling of information. In a broader sense, ICT encompasses technologies that support the creation, storage, manipulation, and transmission of information, along with their associated techniques, management, and applications. These include computers, telecommunications systems, and various electronic technologies. ICT is often distinguished from traditional Electronic Data Processing (EDP), which primarily focuses on routine data handling and remains one of the major uses of computers today.

Within the teaching and learning process, teachers perform a multifaceted role as planners, facilitators, managers, counsellors, and evaluators. According to Offorma (2006), teaching is a deliberate and systematic activity undertaken to enable learners to acquire meaningful knowledge, skills, and values, and it involves receiving feedback to improve the instructional process. Teaching is more than the transmission of facts; it involves creating opportunities that help learners develop intellectual, moral, and practical competencies. It equips individuals with the necessary knowledge and abilities to become productive citizens, earn a living, and contribute meaningfully to society. Ultimately, teaching



serves as the vehicle through which knowledge, culture, and values are transferred from one generation to another.

Teaching and learning are not monologues but rather dialogues in which both the teacher and the learner actively participate. While the teacher may be the vocal partner, learners contribute meaningfully through inquiry, reflection, and engagement. According to Brunner (1994), teaching involves the ability to impart knowledge to others or to guide learners through a process of discovery and understanding. Similarly, Agun and Imogie (as cited in Owusu, 2009) describe teaching as an interpersonal process through which one individual intentionally influences another to bring about desirable behavioural change. Teaching, therefore, is fundamentally the activity of facilitating learning and not merely transferring knowledge. The value of instruction lies not only in the delivery of content but also in the extent and quality of learning it stimulates.

An essential component of effective teaching is the preparation of a comprehensive lesson plan. Lesson planning involves setting realistic objectives, determining how best to utilize available resources such as textbooks and instructional materials, and designing learning activities that foster student participation. A well-prepared lesson ensures clarity of purpose and structure, as teachers spend more time preparing lessons than presenting them. Effective lesson preparation requires selecting suitable teaching strategies, defining learning goals, and choosing appropriate instructional aids. According to Volman and Van Eck (2001), lesson planning entails consulting the course syllabus to determine the topics to be covered, the learning objectives, instructional materials, student activities, and necessary teaching equipment. They further argue that lesson planning encourages teachers to reflect deeply on how a topic will be presented, the resources required, and the methods that will ensure instructional success. Teachers often consult diverse reference materials such as textbooks, journals, newspapers, and magazines in the course of lesson preparation.

In the modern era, Information and Communication Technology (ICT) has

revolutionized lesson planning and instructional preparation. ICT tools—such as computers, radio, television, overhead projectors, optical fibres, CD-ROMs, Skype, electronic notice boards, multimedia slides, and video/VCD machines—have become valuable aids for educators in preparing teaching materials, lesson notes, and practice exercises. Roblyer and Edwards (2000) observed that ICT tools enable teachers to search for relevant topics, prepare digital lesson notes, and deliver direct instruction effectively. Common software applications used in lesson preparation include Microsoft Word for creating lesson notes, PowerPoint for multimedia presentations, and Internet platforms for accessing and organizing teaching materials. The use of these technologies reduces paper-based processes and enhances the flexibility and efficiency of instructional preparation.

The application of ICT in instructional delivery represents a significant and transformative development in the Nigerian education system. Instructional delivery refers to the interaction between the teacher and the students during the actual teaching process—it brings the prepared lesson to life. Regardless of how well a lesson plan is written, its success depends on how effectively it is delivered. Instructional delivery is the point at which learning becomes meaningful, engaging, and memorable. The growing use of computers and digital tools in teaching is a result of the global ICT revolution, which has significantly influenced educational practices.

In higher education, lecturers are responsible for organizing course content to achieve specified learning outcomes and for setting instructional objectives that promote students' intellectual growth and skills development. This process includes selecting suitable teaching methods and techniques, identifying and assembling instructional materials, and actively involving students in the preparation and use of learning aids. According to Lee (2002), instructional tools and materials should not merely supplement teaching; they are essential in illustrating concepts that cannot be effectively conveyed through verbal explanations alone. The



teacher's responsibility, therefore, is to select and use relevant instructional technologies to reinforce learning outcomes. While these tools are valuable, they should not be seen as ends in themselves but as means of supporting effective instruction and promoting deeper student understanding.

The use of Information and Communication Technology (ICT) in education offers numerous pedagogical benefits. It enhances learners' motivation, aids in recalling prior knowledge, provides new instructional stimuli, elicits active responses from learners, delivers systematic and consistent feedback, facilitates appropriate practice, ensures logical sequencing of learning experiences, and serves as a dependable source of information for improved learning outcomes (Olakulehin, 2007). Given the rapid pace at which new knowledge emerges and old knowledge becomes obsolete, individuals must engage in lifelong learning. ICT therefore serves as a vital tool for sustaining continuous education throughout one's lifetime. Through the effective use of ICT-based instructional strategies, lecturers can cultivate in students a lasting positive attitude toward technology and its role in learning.

To achieve this, teachers and lecturers must possess adequate competence in ICT utilization, as well as the ability to critically evaluate and integrate technological tools across different curriculum areas. However, despite the recognized importance of ICT in teaching and learning, many lecturers still rely heavily on traditional instructional methods (Cooper, 2006). This reluctance to adopt ICT may stem from challenges such as limited training, insufficient technical support, or a lack of understanding of how to effectively apply ICT in pedagogical contexts (Ajelabi, 2005). In light of these challenges, it becomes imperative to assess the extent to which ICT is being applied to enhance teaching and learning in higher institutions in Kaduna State, Nigeria.

STATEMENT OF THE PROBLEM

Despite continuous governmental and institutional efforts to promote the integration of Information and Communication Technology (ICT)

in higher education, its application in teaching, lesson planning, and instructional delivery within Kaduna State remains considerably low. Although ICT infrastructure has been made available in several institutions, its utilization for pedagogical purposes is still minimal. Preliminary findings by the researcher indicate that only a limited number of computers and accessories are available in higher institutions across the state. For example, Kaduna State College of Nursing and Midwifery, Kafanchan, and the College of Nursing, Tudun Wada, Kaduna, possess 68 and 56 functional computers respectively. However, based on field experience, many lecturers still do not effectively integrate ICT tools—including internet resources—into their teaching activities. Factors such as economic constraints, inadequate digital literacy, and language barriers continue to hinder their active participation in ICT-driven instruction. Consequently, the few existing ICT resources are often restricted to administrative or non-academic purposes (Issa, 2008).

Empirical reports have further shown that ICT facilities are rarely employed as tools for teaching or learning enhancement (Hare as cited in Kisanjara, Mangula & Noyi, 2014). The increasing call for a paradigm shift in teaching methods to maximize ICT usage has not yet yielded the desired results. As Edem (2012) identified, challenges such as weak telecommunication networks, lack of coordinated institutional ICT policies, poor connectivity, insufficient staff training, inadequate funding, unreliable electricity supply, limited human capacity, and poor maintenance culture continue to impede the effective use of ICT in higher institutions. Moreover, lecturers' resistance to adopting new technologies and their preference for traditional methods contribute to the persistence of outdated instructional practices (McKenzie et al., cited in Owusu-Ansah, 2013).

The insufficient application of ICT in lesson planning and instructional delivery adversely affects the quality and effectiveness of teaching and learning processes. ICT has the potential to transform conventional classrooms into interactive, flexible, and student-centered environments, thereby enhancing creativity,



communication, and critical thinking among students. According to Khirwadkar (2007), ICT empowers teachers and learners beyond the limitations of traditional instruction through interactive feedback systems, diverse learning resources, and dynamic engagement opportunities. Therefore, this study seeks to evaluate the extent to which ICT is applied in enhancing lesson planning and instructional delivery in higher institutions in Kaduna State, Nigeria, with a view to identifying existing gaps and recommending strategies for improved practice.

Objectives of the Study

The following objectives were set to be achieved in the study:

1. evaluate the application of ICT in lesson planning in higher institutions in Kaduna State;
2. assess the application of ICT in instructional delivery in higher institutions in Kaduna State;

Research Questions

The following research questions were raised in the study:

1. To what extent is ICT applied in lesson planning in higher institutions in Kaduna State?
2. To what extent is ICT applied in instructional delivery in higher institutions in Kaduna State?

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

- H0₁: There is no significant difference in the mean response of lecturers on the application of ICT in lesson planning in higher institutions in Kaduna State;
- H0₂: There is no significant difference in the mean response of lecturers on the application of ICT in instructional delivery in higher institutions in Kaduna State; and

METHODOLOGY

The study adopted survey research design because it was intended to describe the state of affairs as it exists at present. The target population of the study is 1,303 lecturers from the five state-owned higher institutions in Kaduna State (Registry Department of each Institution, 2025). The sample size for this study is three hundred and six (306) lecturers selected from 3 higher institutions which are Kaduna State College of Nursing and Midwifery, Kafanchan, Shehu Idris College of Health Technology, Makarfi, and College of Education, Gidan Waya in Kaduna state.

The selection of 3 (60%) institutions was based on the recommendations of Kothari (2004) who suggested that 50% and above can be used as sample. Hence, 3 is 60% of the 5 targeted population (institutions) of the study. The sample size was selected through the adoption of the Research Advisors (2006). The instrument titled "Impact of Information and Communication Technology Questionnaire (AICTQ)" with reliability coefficient of 0.85 was used for data collection. Descriptive statistics of mean and standard deviation were used to respond to the research questions while Chi-square (χ^2) was used to test the null hypothesis at 0.05 level of significance. The use of this statistical method is appropriate because the study collected nominal data, which are regarded as non-parametric data.

RESULTS

Answers to the Research Questions

The retrieved questionnaires administered on respondents were tabulated followed by detailed interpretation. This section presents answers to the research questions using descriptive statistics such as frequency counts, mean and standard deviation.

Research Question 1:

To what extent is ICT applied in lesson planning in higher institutions in Kaduna State?



Table 1: Descriptive Statistics on the Extent to which ICT is Applied in Lesson Planning in Higher Institutions in Kaduna State

S/N	Item Statement	SA	A	U	D	SD	Mean	SD	Remark
1.	ICT is to a great extent applied for lesson note planning in higher institutions in Kaduna State.	12	123	77	45	49	3.10	1.16	Positive
2.	ICT is to a great extent applied in preparing lesson slides in higher institutions in Kaduna State.	9	175	65	32	25	3.50	0.99	Positive
3.	ICT is to a great extent applied in preparing multimedia presentation in higher institutions in Kaduna State.	14	170	53	47	22	3.31	1.03	Positive
4.	ICT is to a great extent applied in downloading or updating lecture materials in higher institutions in Kaduna State.	10	145	41	56	54	3.36	1.22	Positive
5.	ICT is moderately applied in preparing exercise sheets in higher institutions in Kaduna State.	13	156	50	19	68	3.39	1.27	Positive
6.	ICT is to a great extent applied in surfing for learning experience in preparing for lectures in higher institutions in Kaduna State.	5	188	42	37	34	3.30	1.07	Positive
7.	ICT is moderately applied in preparing assignment, quiz, test and examination questions in higher institutions in Kaduna State.	14	99	70	44	79	3.35	1.27	Positive
8.	Lecturers sometimes apply ICT in designing learning strategies in higher institutions in Kaduna State.	10	130	65	64	37	2.98	1.11	Positive
9.	ICT is to a great extent applied in printing out materials from the net such as journals, textbooks, magazines, standard books etc.	4	143	56	50	53	3.28	1.17	Positive
10.	ICT is applied in obtaining relevant and suitable resources for a given topic and subject available on the net.	6	142	51	85	22	3.08	1.05	Positive
Average Response Mean							3.26	1.13	

Table 1 revealed that ICT is to a great extent applied in lesson planning in higher institutions in Kaduna State. The table presents the responses of 306 lecturers, with an average response mean of 3.26, which is higher than the benchmark means of 3.0. All the 10 items stated on the table with regards to research question, one was positive. For instance, the respondents strongly agreed with item number 2 which recorded the highest response mean of 3.50 that,

ICT is to a great extent applied in preparing lesson slides in higher institutions in Kaduna State. Details of the item revealed that 9 lecturers strongly agreed on the item, 175 lecturers agreed, 65 stayed undecided, 32 lecturers disagreed while 25 lecturers strongly disagreed with the item.

Research Question 2:

To what extent is ICT applied in instructional delivery in higher institutions in Kaduna State?

Corresponding author: Akut Yakubu Bobai

✉ yabquff68@gmail.com

Department of Geography, Federal University of Education, Zaria.

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Table 2: Descriptive Statistics on the Extent to which ICT is Applied in Instructional Delivery in Higher Institutions in Kaduna State

S/N	Item Statement	SA	A	U	D	SD	Mean	SD	Remark
11.	ICT is to a great extent applied in engaging students in an online class discussion in higher institutions in Kaduna State.	55	6	50	155	40	2.16	1.13	Negative
12.	ICT is to a great extent applied in the presentation of instructional contents in textual, audio, visual and audio-visual forms.	9	10	61	176	50	2.30	1.22	Negative
13.	ICT is to a great extent applied in posting notice and course content on screen for students.	8	28	52	172	46	3.22	1.15	Negative
14.	Whiteboard and video projector is applied in lesson delivery in higher institutions in Kaduna State.	2	138	76	47	43	3.67	1.09	Positive
15.	ICT is to a great extent applied in illustration and plotting of graphs in higher institutions in Kaduna State.	21	34	52	59	140	2.18	1.16	Negative
16.	Skype is to a great extent applied in online instructional delivery in higher institutions in Kaduna State.	2	35	55	86	128	2.92	1.08	Negative
17.	Zoom is to a great extent applied in online instructional delivery in higher institutions in Kaduna State.	2	40	95	143	26	2.88	0.96	Negative
18.	ICT is to a great extent applied while presenting or introducing new content in higher institutions in Kaduna State.	8	2	75	194	27	2.50	0.92	Negative
19.	Blogs is moderately applied in online instructional delivery in higher institutions in Kaduna State.	3	159	87	28	29	3.26	0.98	Positive
20.	Lecturers used synchronous and asynchronous online lecture delivery system in higher institutions in Kaduna State.	17	119	94	24	52	3.08	1.17	Positive
Average Response Mean							2.82	1.07	

Table 2 revealed that ICT is to a little extent applied in instructional delivery in higher institutions in Kaduna State. The table presents the responses of 306 lecturers, with an average response mean of 2.82, which is lesser than the benchmark mean of 3.0. Seven out of the 10 items stated on the table with regards to research question two were negative. However, the respondents strongly agreed with item number 14 which recorded the highest response mean of

3.67 that, whiteboard and video projector is applied in lesson delivery in higher institutions in Kaduna State. Details of the item revealed that 2 lecturers strongly agreed on the item, 138 lecturers agreed, 76 stayed undecided, 47 lecturers disagreed while 43 lecturers strongly disagreed with the item.

Corresponding author: Akut Yakubu Bobai

yabqutt68@gmail.com

Department of Geography, Federal University of Education, Zaria.

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Hypothesis 1:

There is no significant difference in the mean response of lecturers on the application of ICT in lesson planning in higher institutions in Kaduna State.

The data collected through the administration of questionnaire was tested using Chi-square (χ^2). Table 3 gives the summary of the test conducted on hypothesis one.

Table 3: Summary of Chi-square (χ^2) Statistic on the Application of ICT in Lesson Planning in Higher Institutions in Kaduna State

N	Cal χ^2	df	α	P-value	Decision
306	112.758	36	0.05	0.010	Rejected

The non-parametric statistic of Chi-square (χ^2) on table 4 revealed the χ^2 calculated of 112.758 and 36 degrees of freedom at 0.05 level of significance. Since the p-value of 0.010 was less than the significance level of 0.05, the null hypothesis which states that there is no significant difference in the mean response of lecturers on the application of ICT in lesson planning in higher institutions in Kaduna State was rejected.

Hypothesis 2:

There is no significant difference in the mean response of lecturers on the application of ICT in instructional delivery in higher institutions in Kaduna State.

The data collected through the administration of questionnaire was tested using Chi-square (χ^2). Table 4 gives the summary of the test conducted on hypothesis two.

Table 4: Summary of Chi-square (χ^2) Statistic on the Application of ICT in Instructional Delivery in Higher Institutions in Kaduna State

N	Cal χ^2	df	α	P-value	Decision
306	29.712	36	0.05	0.130	Retained

The non-parametric statistic of Chi-square (χ^2) on table 4 revealed the χ^2 calculated of 29.712 and 36 degrees of freedom at 0.05 level of significance. Since the p-value of 0.130 was higher than the significance level of 0.05, the null hypothesis which states that there is no significant difference in the mean response of lecturers on the application of ICT in instructional delivery in higher institutions in Kaduna State was retained.

DISCUSSION OF FINDINGS

The first major finding of the study indicated that Information and Communication Technology (ICT) is applied to a considerable extent in lesson planning across higher institutions in Kaduna State. Respondents overwhelmingly agreed that ICT tools are extensively utilized in the preparation of lesson slides and other planning activities. Based on this, the first hypothesis—

which proposed that there was no significant difference in the mean responses of lecturers regarding the application of ICT in lesson planning—was rejected. This implies that a statistically significant difference exists in lecturers' responses concerning the use of ICT in lesson preparation.

This result aligns with the study of Agwi and Akpojaro (2017), who observed that ICT integration enhances the effectiveness of lesson planning in higher education institutions. Their research further emphasized that institutions with well-established ICT infrastructure tend to improve lecturers' instructional capacity and students' learning experiences. Similarly, the present finding supports the conclusions of Edem (2012), who reported that ICT is widely used by lecturers during lesson preparation activities in tertiary institutions. However, this finding contrasts

Corresponding author: Akut Yakubu Bobai

✉ yabqutt68@gmail.com

Department of Geography, Federal University of Education, Zaria.

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sharply with that of Oyediran and Dick (2017), whose study revealed that over 70% of lecturers lacked access to essential digital devices such as laptops, desktops, tablets, modems, and iPads—limiting their ability to employ ICT tools for lesson note preparation and classroom teaching.

The second major finding revealed that ICT is only minimally applied in instructional delivery in higher institutions within Kaduna State. Although respondents strongly agreed that certain ICT tools—such as whiteboards and video projectors—are used in lesson delivery, the overall level of ICT integration in classroom instruction remains low. Consequently, the second hypothesis—which stated that there was no significant difference in the mean responses of lecturers on the application of ICT in instructional delivery—was retained, indicating that the hypothesis was not statistically significant.

This outcome corroborates the findings of Edem (2012), who reported that lecturers applied ICT to a limited degree in instructional delivery processes. It also supports the study by Oyediran and Dick (2017), which found that many lecturers did not incorporate ICT tools into classroom teaching. Conversely, the result differs from the findings of Ajayi and Haastrup (2009), who noted that ICT applications in education make teaching and learning more engaging, support distance learning programmes, enable teachers to remain up-to-date with new pedagogical practices, and improve the overall quality of academic work among both lecturers and students.

CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn:

1. Information and Communication Technology (ICT) is significantly utilized in lesson planning within higher institutions in Kaduna State, particularly in the preparation of lesson slides and other related instructional materials. This suggests that lecturers increasingly recognize the relevance of ICT tools in organizing and structuring their teaching content.

2. The study further concluded that ICT is only minimally applied in instructional delivery and self-learning activities in higher institutions in Kaduna State. Although some lecturers employ tools such as whiteboards and projectors during classroom instruction, the overall integration of ICT in actual teaching practice remains limited.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made:

1. Lecturers should be trained and encouraged to develop competency in preparing lesson notes and instructional materials using ICT tools. This will not only address the challenge of inadequate computer skills but also reduce workload, save time, enhance organization, and improve overall teaching efficiency.
2. Higher institutions of learning should be adequately equipped with computers, reliable internet connectivity, and other essential ICT resources such as projectors, slides, and educational videos. The availability of these facilities will enhance effective curriculum delivery and promote a more interactive and engaging learning environment.

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