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## ASSESSMENT OF COMPUTER SCIENCE STUDENTS' ATTITUDES ON AVAILABILITY AND UTILIZATION OF ICT RESOURCES IN COLLEGES OF EDUCATION IN KANO STATE, NIGERIA

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**ABSTRACT:** Attainment of qualitative education requires the use of ICT to improve the quality of teaching, learning, research, communication and educational administration in institutions of learning. Despite global investments on ICT infrastructure, policy formulation, and professional development to improve teaching and learning in institutions of learning by many governments, international indicators, adoption and integration in teaching and learning have not been achieved maximally in Colleges of Education in Nigeria. This paper assesses the availability of ICT resources, students' attitudes towards utilization and the challenges facing computer science students in Colleges of Education of Kano State, Nigeria. Survey research was adopted for this study. Random sampling technique was used to select 150 students from the four Colleges of Education in Kano State. Twenty-three questionnaire were developed on availability of ICT resources. Similarly, twenty-three item Likert scale questionnaire were equally developed using frequency, sometimes, seldom and never were used. Three research questions were adopted. Two experts in the field of ICT and test and measurement validated the instrument. Cronbach Alpha Reliability coefficient of 0.86% was tested at 0.05 level of significant. The researchers personally administered the questionnaire with 100% return rate. The researchers used frequency aspect of the Statistical Packages for Social Sciences version 25 to compute the results of the research in a tabular form. The findings showed that there were challenges to the utilization of ICT resources ranging from lack of students' ICT skills and confidence, lack of suitable ICT resources to inaccessibility. The results also revealed that computer sciences students' attitudes were positive. Recommendations such as provision of adequate funding, adequate and functional ICT resources, supply of constant electricity and constant training and retraining of lecturers and students to effectively utilize ICT for teaching and learning to be competitive in line with the global best practices are put forward.

**Keywords:** Assessment, availability, computer science students' attitudes, utilization of ICT resources, Colleges of Education, Nigeria.

### I. INTRODUCTION

The rapid growth in Information and Communication Technology (ICT) especially Internet and the social media has brought remarkable changes in the society in twenty-first century in terms of new ways of teaching, learning, research and communication, [1], [2]. Computers and network technology have influenced a range of societal and cultural aspects of life as well as individual experiences having different lifestyles, thinking styles, ways of working and new communication patterns compared to previous societies [3]. Technologies can improve the teaching/learning process by reforming conventional delivery systems, enhancing quality of learning achievements, facilitating state-of-art skills formation, sustaining lifelong learning, and improving institutional management [4]. These changes in video-learning: interactive video, micro-learning or Instant learning as a result of its flexibility, mobile learning using phones have technical features that make it possible for you to use them to learn online (screen size, resolution, touch properties, network connection, RAM, processor), Content curation refers to selecting relevant information in order to offer students specialized training, with up-to-date and important information that distinguishes certain training from others. This is the opposite of courses that contain enormous amounts of information since quantity has more weight than quality, digital identity will allow teachers to ensure that the exercises and lessons have been completed by the person registered for the course [5], Virtual Assistants, Social Learning tools such as forums and message boards that encourage teamwork and discussions, Adaptive Learning which makes it possible to offer each student

personalized content, tailored to their real and specific needs, gamification learning can be used to create a good motivation and coaching plan with the ability to set objectives, measure achievements and convey them to participants either individually with badges or trophies or as a group by utilizing Interactive White Boards, Virtual Reality can be used to visit properties virtually without needing to travel anywhere

ICT is becoming increasingly important in society's daily lives and in educational system. [6] claimed that Internet plays an important role in the learning reading course. The growing demand on educational institutions to use ICT to teach the skills and knowledge that students need in their workplace and in everyday life is a welcome development. In respond tothe yearning for ICT literacy and competency in Nigeria, the educational institutions are trying to restructure their educational curricula and classroom facilities in order to bridge the existing technology gap.

It can be applied as learning media from which students may use it to expand their reading skills at university to bridge technology gap in teaching and learning processes. This restructuring process requires effective adoption of technologies into the existing environment in order to provide learners with knowledge of specific subject areas, to promote meaningful learning and to enhance professional productivity. The present study is aimed at assessing the attitudes of students of Colleges of Education in Kano State towards ICT utilization.

### Statement of the problem

ICT is now a global phenomenon which has been embraced all over the world due to its importance. Governments all over the world are harnessing the rich potentials of ICT and are using ICT as a tool for educational development, economic recovery and wealth creation [7]. It is very useful in tackling the ills and problems facing the educational system. Today, no nation can attain its height educationally, economically and socially without ICT.

It is in this context that the researchers want to find out whether Colleges of Education in Kano State have adequate ICT facilities for students to effectively utilize them to enhance their learning and to what extent do the attitudes of students in Colleges of Education affect the utilization of ICT facilities?

### Purpose of the Study

#### The purpose of the study is to:

- a. Find out the availability of ICT resources in Colleges of Education, Kano State, Nigeria
- b. Assess the computer science students'attitudes towards the utilization of ICT facilities in Colleges of Education in Kano State.
- c. Examine the challenges computer science students faced toward utilization of ICT facilities in Kano State

### Research Questions

The following research questions are presented to guide the researchers

- a. What are the ICT resources available to computer science students in Colleges of Education, Kano State, Nigeria?
- b. What are the attitudes of computer science students of Colleges of Education towards the utilization of ICT facilities in Kano State?
- c. What challenges do computer science students faced while utilizingICT resources for their learning in the Colleges of Educations in Kano State?

## II. LITERATURE REVIEW

This literature review will be focused on the concept of ICT, attitudes of students, challenges of ICT and availability and Utilization of ICT in Education

### The concept and role of ICT

Information and Communication Technology (ICT) hasseveral definitions depending on the nature of its usage. However, the term Information and Communication Technology (ICT) became popular after it was used in a report to the UK government by Dennis Stevenson in 1997to reflect the seamless convergence of digital processing and telecommunicationsincluding any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems, as well as the various services and applications associated with them, such as videoconferencing and distance learning [8]. In education ICT is seen as the combination of electronic computers and telecommunication systems to access, convert, store, protect, process, transmit, and retrieve information for teaching, learning, research and communication [2].This concept involves transfer and use of all kinds of information. ICT is the foundation ofeconomy and a driving force of social changes in the 21st century. Distance is no longer an issue whenit

comes to accessing information while working-from-home, distance learning, e-banking, and e-government are now possible from any place with an Internet connection and a computing device.

### **Role of ICT for students and lecturers of Nigeria Colleges of Education (NCE)**

The use of ICT is fast penetrating into all sectors of the economy. This has been made possible by the tremendous improvement the nation has recorded in the provision of ICT resources and Infrastructures across the country and Colleges of Education in Nigeria are not left behind.

Simply providing access to ICT is not going to radically change education systems for the better but utilized them to their full potential within education systems [9]. [2] stressed that the unavailability of ICT components such as computers, electricity, internet connectivity, network problems) in institutions of learning hampers students and teachers' use of ICT. Lack of adequate search skills and of access points in the schools were reported as forces inhibiting the use of internet by teachers [10]. Such limitations of ICT in schools generated the negative attitudes of the students towards the application of ICT such as Internet still receives little attention so that it needs serious efforts to increase research on the application of ICT in Colleges of Education in Nigeria.

To effectively harness the power of ICT to improve learning, the following essential conditions must be met for students to have sufficient access and utilize digital technologies and the Internet in their classrooms in education institutions [11]. [2] stressed that ICT helps to keep pace with the latest developments with the help of the availability of different technologies included in it.

Similarly, [12] postulated that students can easily have contact with one another through the availability of ICT technologies. ICT can provide communication, information, employment services as well as provide electronic, independent living, intergenerational relationship, distance learning services to students. These services can minimize human work and provides ease of access in addition to providing cost reduction and strengthening the community services among students and their lecturers. [12] further explained that the importance of the ICT in the students learning fall under the following: (a) Provide access to large quantity of learning resources. (b) Quick access to information. (c) By the use of ICTs learning can occur anytime. (d) By the use of ICTs learning can occur anywhere. (e) Collaborative learning takes place if ICTs is merged into the education. (f) Gives multimedia approach to education. (g) Provide valid and up to date information. (h) Provide access to online libraries. (i) Teaching of different subjects made interesting. (j) Gives opportunities for the instructive data storage. (k) Provides the facility of distance education. (l) Provides access to the wide source of information.

According to [13], the information revolution is affecting competition in three vital ways: (a) It changes industry structure and, in so doing, alters the rules of competition, (b) it creates competitive advantage by giving companies new ways to outperform their rivals, (c) it spawns whole new businesses, often from within a company's existing operations. They stressed that the successful application of information technology involves a complex process consisting of three important components: (a) person that includes belief, attitude, knowledge and skills, time and responsibility; (b) implementation processes which cover plan, sense of belonging, human resources, and professional development; and (c) organizational context which comprises leadership, culture, and external effect. In this study, the researcher employs those three components because they can help him identify the major factors that affect the successful implementation of technology in higher education institutions or universities.

Contributing, [2] emphasised that the role of ICT in the 21st Century's College of Education include: (1) ICT helps NCE lecturers in both pre-service and in-service training. (2) ICT helps NCE lecturers to interact with students. (3) ICT helps NCE lecturers in preparation of their teaching as well as providing feedback. (4) ICT also helps NCE students and lecturers to easily get access and interact with their colleagues in other colleges of education, universities, National Center for Colleges of Education (NCCE), and Polytechnics. (5) ICT enhances the effective use of ICT software and hardware for teaching and learning process. (6) ICT tends to improve teaching skill as well as in innovative teaching. (7) The use of ICT helps in the effectiveness of classroom instruction as well as for their future occupation and social life. (8) The use of ICT enhances the improvement of professional development and educational. (9) management of human and material resources in the college. (10) The use of ICT enhances active learning of NCE students' trainees. (11) The use of ICT replaces the old technologies such as duster and chalk, blackboard diskettes with Interactive White Board, and CD, DVD ROMs. (12) ICT helps NCE lecturers and students to facilitate their teaching and learning preparation using Word processing, Database, Spreadsheet and PowerPoint presentation. (13) ICT is used as communicating tool, making assignments, collecting data and documentation, and conducting research. (14) ICT is used as a medium in different forms such as drill and practice and exercise and simulation for teaching and learning through which NCE students can learn

Other benefits of ICT to students and lecturers of Colleges of Education according to [2] include: (15) ICT is used as a popular tool for improving organisation and management in Institutions resources. (16)

Teachers competency in the use of various ICT resources for teaching such as motion picture, animation, simulation training will in turn make students to be competent too. (17) The use of ICT is playing an important role in assessing and evaluation of students' progress. (18) ICT is store house of educational institution because all educational information can safely store through ICT. (19) ICT helps Teacher to communicate properly with their students. So ICT bridge the gap between teacher and students. (20) ICT helps Teacher to pass information to students within a very little time. (21) ICT helps student-teachers to design educational environment. (22) ICT helps student-teacher to identify creative child in educational institution of learning. (23) ICT enhances the training of student-teachers' education in the 21st Century. (24) ICT motivates student-teachers to encourage their students and growing interest in learning. (25) ICT helps student-teachers to organise their vision, policy and their culture. (26) ICT is very helpful for the technical preconditions and organisation of their infrastructure. (27) ICT enhances the design and development of institutional curriculum. (28) The use of ICT improves the communication and interaction skills of students and their lecturers.

### **Challenges and the Attitudes of Students towards utilization of ICT**

Facebook, Twitter, Youtube, Instagram, WhatsApp and other social media networking sites can be a distraction to living, teaching and learning in the real world [2]. These types of social media distraction can be the beginning of the formation of negative attitudes toward the use of ICT in education.

[14] explained that computer Attitude is a complex mental state that affects a human's choice of action or behavior toward computers and computer-related tasks. The predisposition of a person to respond positively or negatively towards computers. It affects everything the person does with the computer and in fact reflects what experience the user has and is hence a determining factor of the user's behavior towards computers. Additionally, the user's computer attitude provides the user with a framework within which to interpret the effect and the integration of computer in the user's life. attitudes consist of four components namely; cognition, affective, behavioural and evaluation [15] (Edmunds, Thorpe, & Conole, 2010). They contended that usefulness and ease of use are key dimensions of students' attitudes towards technology. Attitude has many attributes; it implies an established state of readiness and action tendencies. The effect of ICT Based Instructions on attitude can exert a potent influence on an individual serving as motives, incentives and drives in attaining a goal. The three components of attitudes according to [16] include:

- a. Cognitive. In this context, the cognitive aspect of an attitude refers to beliefs and opinions about the use of computer.
- b. Affective. The affective component refers to the feelings, sentiment, moods, and emotions evoked by the experiences of students and teachers using the computers
- c. Behavioral This component refers to the individual's behaviour that occurs as a result of his or her feeling about the computer

Therefore, attitudes of NCE students towards utilization of ICT facilities in their institutions should be enhanced in order to meet up with the demand of the 21<sup>st</sup> century ICT development. The Federal Government of Nigeria in collaboration with National Council on Colleges of Education developed a National Policy on Education that has recognized the prominent role of ICT in Nigeria and emphasised that ICT should be used as a course for effective teaching and learning in all Colleges of Education in Nigeria [17]. The policy states that the use of ICT in Colleges of Education will enhance students' engagement. Learners are engaged in a challenging curriculum that is focused on inquiry. The use of ICT empowers teachers and students to support all learning across the curriculum enabling teachers to function as coaches, mentors, advocates and managers of information. It also enriches students to be collaborative and increased their intellectual processes, personal experiences to explore and discover things for themselves. The knowledge of ICT enables an active learning, lifelong ability to confront ideas, and master knowledge and to learn continuously. To this end, Nigeria cannot afford to lag behind in the integration of ICT into her teacher education programmes of Colleges of Education if the country is to be ICT compliant. One way of achieving this is to provide the enabling environment for ICT based teacher education programmes in all Colleges of Education and Universities in Nigeria.

### **Availability and Utilization of ICT in Education**

According to [2], most ICT resources are not adequately available in schools. This therefore implies that, even though teachers are trained and willing to impart the knowledge they have to students, they are blocked from doing so by this lack of technological equipment and Laboratory facilities. The low utilization of ICT resources and related technologies in the institutions of learning as a result of lack of adequate provision of funds for procurement and maintenance of ICT resources, ensuring existence of functional computer laboratories, consistent power supplies in schools and provision of in-house training for teachers so that they keep in touch with the developments in ICT and related technologies. The availability and utilization of ICT tools for effective instructional delivery in tertiary institutions in Cross River State, Nigeria revealed that the availability of ICT tools for effective instructional delivery is relatively low, except for laptops, multimedia

projectors and internet facilities. They went on to argue that this affects the quality of graduates produced from these institutions.

### III. METHODOLOGY

#### Research Design

This research is a descriptive research survey. Descriptive survey method was appropriate because the information and findings obtained were used in describing the attitudes, opinions and views of computer science students.

#### Population of the study.

All NCEI, II and III science students in the four Colleges of Education in Kano State constituted the population. The respondents were 200 male and 100 female science students in four Colleges of Education in Kano State respectively.

#### Random Sampling

Random sampling technique was used to select 150 computer science students from NCE II and NCE III of the four Colleges of Education in Kano State, Nigeria

#### Research instrument

The research instrument used for this study was researchers'-designed questionnaire titled **Assessment of computer science students' attitudes on availability and utilization of ICT resources in Colleges of Education in Kano State (ACSSAAUICTRCOE)**. The instrument consists of four sections. The first section was to find out the demographic information of the respondents. Section two contained 23 items on availability of ICT resources. Section three contained 22 items on rating of students' attitudes on the use of ICT resources based on their opinions using the Likert four scale of Frequently, Sometimes, Seldom and Never. Section four contained eight (8) items on challenges facing the computer science students on the utilization of ICT resources.

#### Validity and Reliability of Instrument

Two experts in the field of ICT and test and measurement both in the Faculty of Education, University of Jos validated the instrument. Cronbach Alpha reliability coefficient of 0.86% was tested at 0.05 level of significant. That is to say that the validity of test value was significant =  $0.000 < 0.031 < 0.05$ . Therefore, all the 53 items of the questionnaire as a research instrument were valid.

#### Data Presentation and analysis

The results in Section A: Biodata were presented and analysed in percentages using frequency in a tabular form as indicated in Tables 1,2,3,

**Table 1:** Name of the four Colleges of Education

S/N	Institution	Frequency	Percent
1	Sa'adatu Rimi College of Education, Kumbotso	50	33.3
2	Kano State College of Education and remedial studies	41	27.3
3	Federal College of Education (FCE) Kano	40	26.7
4	Federal College of Education Technical Bichi	19	12.7
	Total	150	100

Source: Researchers Field Survey, 2020

The results in Table 1 above indicated that 50(33.3%), 41(27.3%), 40(26.7%) and 19(12.7%) of the respondents were from: Sa'adatu Rimi College of Education, Kumbotso, Kano State College of Education and remedial studies, Federal College of Education (FCE) Kano and Federal College of Education Technical Bichi respectively.

**Table 2:** Subject combination

S/N	Subject combination	Frequency	Percent
1	Computer/Mathematics	27	18.0
2	Physics/Chemistry	50	33.3
3	Computer/Physics	43	28.7
4	Biology/Chemistry	30	20.0
	Total	150	100

Source: Researchers Field Survey, 2020

The results in Table 2 revealed that the respondents' subject combination were: (a) Computer/Mathematics 27(18.0%), (b) Physics/Chemistry 50(33.3%), (c) Computer/Physics 43(28.7%) and (d) Biology/Chemistry were 30(20.0%) respectively.

**Table 3: Gender**

S/N	Gender	Frequency	Percent
1	Male	97	64.7
2	Female	53	36.3
	Total	150	100

Source: Researchers Field Survey, 2020

In Table 3 above, majority of the respondents 97(64.7%) were male while only 53(36.3%) were female.

**Table 4: Level of study**

S/N	Level of study	Frequency	Percent
1	NCE II	70	46.7
2	NCE III	80	53.3
	Total	150	100

Source: Researchers Field Survey, 2020

The results in Table 4 above indicated that 70(46.7%) of the respondents were NCE II while 80(53.3%) of them were in NCE III.

#### Research question one:

What are the ICT resources available to computer science students in Colleges of Education(COEs), Kano State, Nigeria?

**Table 5: Availability of ICT resources in COEs Kano State, Nigeria**

S/N	Availability of ICT Resources	Available	Not available
1	Desktop Computers	1179(78%)	33(22%)
2	Laptop Computers	113(75%)	37(25%)
3	Wireless Internet	105(70%)	45(30%)
4	Cable Internet	82(55%)	68(45%)
5	Digital camera	60(40%)	90(60%)
6	Scanner	53(35%)	97(65%)
7	Video equipment	77(51%)	73(49%)
8	Projector	77(51%)	73(49%)
9	Educational software	82(54%)	68(45.3%)
10	Interactive boards	31(20.7%)	119(79.3%)
11	Computer printer	99(66%)	61(34%)
12	Photocopiers	125(83.3%)	25(16.7%)
13	Virtual library	12(08%)	138(92%)
14	Electronic bulletin board	0(00%)	150(100%)
15	Electronic notice board	15(10%)	135(97%)
16	Radio	147(98%)	3(02%)
17	Tape recorder	132(88%)	18(12%)
18	Record player	7(05%)	143(95%)
19	CD player	73(48%)	77(52%)
20	Digital video disc player	3(20%)	147(98%)
21	Fax machine.	21(14%)	129(86%)
22	Slide projectors	95(63%)	55(36.7%)
23	Smart phones	133(89%)	17(11%)

Source: Researchers Field Survey, 2020

The results in Table 5 above showed that ICT resources in Serial items Nos. 1,2,3,4,7,8,9,11,12, 16,17,22.and 23 were available in Colleges of Education, Kano State, Nigeria. On the other hand, ICT resources in Serial items Nos.6,10,13,14,15,18,19,20 and 21 were not available for computer science students to utilize for their learning.

**Research question Two:**

What are the attitudes of computer science students of Colleges of Education towards the utilization of ICT facilities in Kano State?

**Table 6: Attitudes of computer science students on utilization of ICT Resources**

S/ N	Attitudes of computer science students on utilization of ICT Resources	Frequently happy	Sometimes happy	Seldom happy	Never happy
1	I feel confident in using Internet .always	109(73%)	30(20%)	8(05%)	3(02%)
2	I feel confident of using E-mail.in communicating with my teachers	100(67%)	34(23%)	13(08%)	3(02%)
3	I feel confident in using our college websites	87(58%)	45(30%)	15(10%)	3(02%)
4	Am enjoying applying search engines (yahoo, goggle) in my work	60(40%)	38(25%)	22(15%)	30(20%)
5	I like using E-mail for communication with other people	15(10%)	22(15%)	45(30%)	68(45%)
6	I like talking to my friends using Internet facilities	14(09%)	22(15%)	39(26%)	75(50%)
7	I always use Internet to in submitting my assignment	47(31%)	69(46%)	30(20%)	4(03%)
8	I use our printer and photo copier easily in my school	17(11%)	49(33%)	60(40%)	24(16%)
9	I believe that to use Internet is benefiting for my learning activities	14(09%)	22(15%)	68(45%)	47(31%)
10	Internet helps me to elicit information I like	3(2%)	21(14%)	21(14%)	105(70%)
11	Enjoy using computer to do my assignment	84(56%)	45(30%)	15(10%)	6(04%)
12	Am afraid using ICT facilities in front of my teacher	109(73%)	22(15%)	15(10%)	3(02%)
13	I believe that Internet is important media to learning.	0(00%)	2(01%)	12(08%)	136(91%)
14	I believe that Internet facilitates provide online learning activities.	0(00%)	0(00%)	0(00%)	150(100%)
15	I like printing my assignment myself.	0(00%)	4(03%)	15(10%)	131(87%)
16	Learning Internet skills helps me improve my academic development	144(96%)	3(02%)	3(02%)	0(00%)
17	I don't know how to use computer to type my assignment	131(87%)	18(12%)	1(01%)	0(00%)
18	I feel shy using electronic board	3(02%)	11(07%)	4(03%)	132(88%)
19	I really don't know how to use slid projector	5(03%)	22(15%)	68(45%)	55(37%)
20	I don't know how to use digital camera	0(00%)	0(00%)	3(02%)	147(98%)
21	Am afraid of using interactive board	0(00%)	3(02%)	21(14%)	126(84%)
22	Fax machine has never been use in my school	21(14%)	30(20%)	64(43%)	19(13%)
23	I use Smart phones to access learning materials on the Internet	133(89%)	17(11%)	0(00%)	0(00%)

**Source:** Researchers Field Survey, 2020

The results in Table 6 above indicated that the computer science students had positive attitudes and frequently feel happy during their learning were in items Nos. 1,2,3,4, 11,12, 16,17, and 23. The computer science students sometimes fell happy learning with ICT resources as indicated in items Nos. 7 showing I always use Internet in submitting my assignment. Computer sciences students were seldom happy using ICT during their learning as indicated in items Nos, 8,9,19 and 22 while they were never happy with ICT during their learning as indicated in items Nos, 5,6,13,14,15 and 21 respectively. These results showed that majority of the computer science students attitudes toward the utilization of ICT resources in Colleges of Education in Kano State were positive. In the case of computer science students who expressed their feelings as sometimes, seldom and never could be as a result of either they were afraid or feel shy in front of their lecturers due to none exposure to those facilities or non-availability of most of the ICT resources during their primary and secondary school years.

**Research question three:**

What challenges do computer science students faced while utilizing ICT resources for their learning in the Colleges of Educations in Kano State?

**Table 6:** Challenges facing computer science students on utilization of ICT resources

S/N	Challenges of ICT Resources	Yes	No
1	Inadequate Computer resources	114(76%)	36(24%)
2	Lack of Internet connectivity	135(90%)	15(10%)
3	Epileptic electricity power supply	128(85%)	22(15%)
4	Lack of technical support	83(55%)	67(45%)
5	Lack of ICT Policy	100(67%)	50(33%)
6	High cost of computers and installation	120(80%)	30(20%)
7	Low level of computer literacy	135(90%)	15(10%)
8	Negative attitudes of teachers	147(98%)	3(02%)
9	Lack of competent ICT Staff	120(80%)	30(20%)
10	Students negative attitudes	125(83.3%)	25(16.7%)

**Source:** Researchers Field Survey, 2020

The results in Table 6 above revealed that all the items in Serial Nos, 1-10 were challenges facing computer science students in the utilization of ICT resources in all the four Colleges of Education in Kano State, Nigeria.

#### IV. DISCUSSION OF RESULTS

The results on availability of ICT resources in Table 4 above showed that desktop computers,(78%), laptop computers(75%), wireless internet (70%), cable internet (55%).video equipment (51%),Projector (51%), educational software (54%), computer printer (66%), photocopiers (83.3%), radio (98%), tape recorder(88%), slide projectors (63%) and smart phones (89%) were available for teaching and learning in Colleges of Education, Kano State Nigeria. This result is in line with [2] who believed that the availability of ICT resources providesample opportunities for individualized and self-paced learning. Computers are good for explaining complex processes as well as being useful for teaching, problem solving and decision making skills. This result is also in line with [11] who asserted that essential conditions must be met for students to have sufficient access and utilize digital technologies and the Internet in their classrooms in education institutions. The availability of ICT resources will help to keep pace with the latest developments with the help of the availability of different technologies included in it. This finding equally support [12] Hashmi, Dahar, Sharif, (2019) who postulated that the availability of ICT resources to students can easily enhance students contact with one another, provide communication, information, employment services as well as provide electronic, independent living, intergenerational relationship, distance learning services to students. The services of ICT resources available to students can minimize human work and provides ease of access in addition to providing cost reductionand strengthening the community services among students and their lecturers

On the other hand, the none availability of ICT resources as indicated in Tables 5 and 6 such as Digital cameras (40%), scanners (35%), interactive boards (20.7%), virtual library (00%), electronic notice board (10%), record player (05%), CD player (48%), digital video disc player(20%) and fax machines cannot improve teaching and learning among students and their lecturers. These inadequate ICT resources bring a lot of setback on the progress of teaching and learning. It brings a lot of failure and negative attitudes to teaching and learning. This result also concord with [3] submission that the unavailability of ICT resources such as computers, electricity, internet connectivity, network problems in institutions of learning hampersstudents and teachers' use of ICT. In the same vein, the result also supports [10] who contented that lack of adequate search skills to access documents online in the schools were reported as forces inhibiting the use of internet by students and teachers. The result also affirms [9] position that such limitations of ICT resources in schools generated the negative attitudes of the students towards the application of ICT such as Internet which still receives little attention so that it needs serious efforts to increase research on the application of ICT in Colleges of Education in Nigeria.

Based on the result of this study, the following findings were equally established: that student's positive attitudes toward utilization of ICT facilities has 59.1%. which is positive attitudes The finding buttressed earlier finding of research conducted by [15] which indicated that, students have high attitudes towards ICT use but non availability of I CT facilities paly a great role in making students to set back on how to use various ICT facilities.



## V. CONCLUSION

This study has provided empirical evidence to support the positive attitudes of students in Colleges of Education in Kano State Nigeria. The findings from this study showed positive attitudes of students towards the utilization of ICT resources. The use of ICT in education is now seen worldwide as both a necessity and an opportunity. Issues and challenges of ICT resources in education deal with the use of ICT resources as well as the social, ethical, technological, costs, and electricity in education. Nearly all the public Colleges of Education in Nigeria lack electricity and competent teachers for ICT programmes as well as other ICT resources. ICT is one of the major factors for promoting the rapid changes in our society. It can change the nature of education and roles of students and teachers in teaching learning process. So we should use ICT in Colleges of Education in the 21st century to create a bright future for students. Colleges of Education should embrace the use of ICT in their institutions of learning to improve the process of teaching and learning in Nigeria so as to be in line with global best process.

## VI. RECOMMENDATIONS

The findings recommend the followings:

1. Government should provide adequate fund for the procurement of ICT facilities through Tertiary Education Trust Fund, National Commission for Colleges of Education and Nigerian Communication Commission to enhance the quality teaching in the Colleges of Education.
2. Government should take a holistic approach towards the development of ICT in education plans and policies by involving education stakeholders in how to integrate ICT skills in the curriculum, or tap teachers to help develop policy plans
3. Students should have positive attitudes in utilizing the available ICT resources to effectively and efficiently learn in their institutions.
4. The institution of learning in Nigeria should provide adequate and functional ICT facilities and make them accessible to students in Nigerian Colleges of Education.
5. Lecturers in Colleges of Education in Nigeria should make effort to acquire and equip themselves with the opportunities of ICT tools since they are an integral part of instruction delivery.
6. Federal Government should come up with appropriate ICT policies and workshop training programmes for lecturers at all levels of education.
7. Reliable uninterrupted and affordable power supply in urban and remote areas in Nigeria should be provided.
8. All Colleges of Education both private and public should be connected to the national grid ensuring availability, accessibility and affordable of information to students and lecturers.
9. ICT related courses should be taught to all levels of education from primary to tertiary levels
10. Mobilize resources for research and evaluation of ICT resources in education to spur innovation, gender equality and scale up its use among students, lecturers and administrators

## REFERENCES

- [1] Buabeng-Andoh, C. (2012). Factors influencing teachers' adoption and integration ... – ERIC. International Journal of Education and Development using Information and Communication Technology (IJEDICT), 8, (1), pp. 136-155 Retrieved on 26<sup>th</sup> June, 2020 from: [files.eric.ed.gov](https://files.eric.ed.gov/fulltext) > fulltext
- [2] Gusen, J.N. (2019). *ICT Made Easy*. Jos: Byang Publisher
- [3] Organisation for Economic Cooperation and Development (OECD, 2010). Assessing the Effects of ICT in Education- OECD iLibrary. Retrieved on 2<sup>nd</sup> July, 2020 from: [www.oecd-ilibrary.org/education](http://www.oecd-ilibrary.org/education)
- [4] Partnership on Measuring ICT for Development, (2009). Revisions and additions to the Core List of ICT Indicators. Retrieved on 2<sup>nd</sup> July, 2020 from: [unstats.un.org/statcom/doc09](http://unstats.un.org/statcom/doc09)
- [5] Computer Aided Engineering (CAE, 2019). Top 10 E-Learning Trends for Languages in 2019 (I) & II - CAE ... Retrieved on 26<sup>th</sup> June 2020 from: [www.cae.net/top-10-e-learning-t...](http://www.cae.net/top-10-e-learning-t...)
- [6] Sudiran, C. (2016). Students attitude and their level of the ICT use as learning English media: Sino-US English teaching 13(5), 315-323.
- [7] Sharafat, A.R. & Lehr, W.H. (2017). ICT-centric economic growth, innovation and job creation-ITU. Retrieved on 2<sup>nd</sup> July, 2020 from: [www.itu.int/D-GEN-ICT\\_SDGS.01-2017-PDF-E.pdf](http://www.itu.int/D-GEN-ICT_SDGS.01-2017-PDF-E.pdf)
- [8] Kozma, R. D. (2005). National policies that connect ICT-based education reform to economic and social development: *An Interdisciplinary Journal on Humans in ICT Environments*, 1(2), 117-156
- [9] Ogbomo, E.F. (2011). Issues and Challenges in the Use of Information. Retrieved on 2<sup>nd</sup> July, 2020 from: [www.ajol.info/article/view](http://www.ajol.info/article/view)

- [10] Aworanti, O.A. (2016). Information and Communications Technology (ICT) in Nigeria Educational Assessment System-Emerging Challenges. *Universal Journal of Educational Research* 4(6): 1351-1356. Retrieved on 2<sup>nd</sup> July, 2020 from: [files.eric.ed.gov](https://files.eric.ed.gov/fulltext) > fulltext
- [11] Ratheeswari, K.(2018). (PDF) Information Communication Technology in Education. *Journal of Applied and Advanced Research*,2018: 3(Suppl.1) S45–S47. Retrieved on 12<sup>th</sup> July, from: [www.researchgate.net](http://www.researchgate.net/publication) > publication
- [12] Hashmi. Z.F, Dahar, M.A , Sharif, A.(2019). Role of Information and Communication Technology in ...Retrieved on 12<sup>th</sup> July, 2020 from: [www.longdom.org](http://www.longdom.org/open-accessPDF) > open-accessPDF
- [13] Porter, M.E & Millar,V.E.(2020). How Information gives you competitive advantage. Retrieved from: [hbr.org](http://hbr.org/1985/07/how-informat...) > 1985/07 > how-informat...
- [14] IGI Global (2020). What is Computer Attitude | IGI Global. Retrieved on 2<sup>nd</sup> July, 2020 from: [www.igi-global.com](http://www.igi-global.com/dictionary) > dictionary
- [15] Edmunds, R.,Thorpe, M & Conole, G. (2010). Student attitudes towards and use of ICT in course study, work and social activity: a technology acceptance model approach. *British Journal of Educational Technology*, 43(1) pp. 71–84. Retrieved on 2<sup>nd</sup> July, 2020 from: [oro.open.ac.uk](http://oro.open.ac.uk) > EdmundsThorpe..
- [16] Slechtova, V. (2014). Attitudes of undergraduate students to the use of ICT in ...Retrieved on 2<sup>nd</sup> July, 2020 from: [www.sciencedirect.com](http://www.sciencedirect.com/pii/pdf) > pii > pdf
- [17] Federal Government of Nigeria, (FGN, 2010). National Policy on Information and Communication Technologies (ICT) in Education. Abuja, Publication of Federal Government of Nigeria.