

## **Influence of Demographic Variables on ICT Use by Lecturers in Public Colleges of Education, South-East, Nigeria**

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### **Abstract**

This study investigated the role of demographic variables as it influences the use of ICT by lecturers in Colleges of Education in South-East, Nigeria. The study was guided by four research questions. The design used for the study was descriptive survey. The population for the study was 120 Computer Education lecturers in six public Colleges of Education in the South East, comprising males and female lecturers who were selected based on total sampling techniques. Structured questionnaire was used to collect information for the study. The reliability of the instruments (0.87) was determined with Cronbach's Alpha. Standard deviation, mean and percentage were used to answer the research questions. The findings of the study showed that the result of the study is an indication that the use of ICT as a tool by computer education lecturers was not consistently dispersed in equal fraction with respect to the demographic variables studied.

**Keywords:** ICT, Utilization, Demographic Variable, intervening Factor, Education

### **Introduction**

The use of Information and Communication Technology (ICT) such as computer, media, attachments and other various software programmes have introduced and brought about countless technological changes such as terahertz communication, space-air-ground integration, and intelligent meta-surface and endogenous intelligence among others in the developed countries and around the world. These changes were not just in practical form, but more importantly of a structural form (Schimdt, 2019). Many establishments have been greatly impacted by the changes brought about by this technological trend. However, the impact on education and the system is beginning to evident in some higher institutions such as colleges of education in South-East, Nigeria. These new technological trends if introduced into the educational system, will have significant effect on the practices pertaining to pedagogy (Prema & Chandan, 2017). In order to achieve the desired educational objectives, lecture delivery through ICT's alone will not be enough in the attainment of the set curriculum objectives. However, it is imperative to have

well groomed and proficient lecturers to serve as an intermediary between the students and the ICT tools. Information and Communication Technology tools pertain to all equipment that supports all activities that concern creation, storage, manipulation and communication of information, as well as related method of application and management (Pratt, 2019). ICT, is considered as a learner centered approach which deviates from the traditional learning that is considered the teacher centered approach. ICT, beautifies, enhances and supports wider access to information resources. It has the potential to advance knowledge, improve and expand access to learning thereby improving quality of education, if the potentials is fully harnessed (Al-Harbi, 2011).

ICT utilization has unlimited potential of enhancing or revolutionizing teaching and learning as well as how people learn. It's facilities touch on different methods including computer based network which is operational, audio and video conferencing, computer assisted instructions, feedback system and computer aided instructions. Utilizing ICT in tertiary

institutions will help in developing student's skills and expose them to the application of computer and software skills in the work environment, which is in accordance with the view of Anetu, Ugwuoke & Favour (2020), who opined that, with the advancement in information and communication technology (ICT), there are bound to be modifications in pedagogical transfer system. However, to successfully use internet for lecture delivery, the lecturers or instructors must be well equipped and skilful on how to access and use the various services such as projectors, multimedia facilities, smartboards, websites video meet facilities, google meet among others which are available through the internet. The use of information technologies in Nigerian institutions such as colleges of education appear to be invariably poor, when compared with its use in some developed countries around the globe. This claim could be attributed to some factors such as demographic variables which affect ICT use by lecturers. Some ICT tools are said to be inadequate and those that are available are considered to be underutilized by both students and lecturers. Anetu et al (2020) opined that many lecturers are deficient in computer skills because their knowledge is base on computer appreciation which they acquire during their educational training. Many lecturers still hold-on to the conventional method of teaching rather than use ICT facilities for learning purpose. Unfortunately, the traditional learning approaches adopted by lecturers have been noted to lead to lack of interest in student's learning activities, causing learning difficulties and bringing about frustration in most learners (Tinio, 2015). This has deprived the students from acquiring new skills in schools, unless they make personal efforts out of the learning institution to acquire update and equip themselves with more skills, knowledge and attitudes needed for the world of work, since their learning expectations are not met in their incumbent institutions due to the impending digital divide (Njokuocha & Onah, 2020). The deficiency in the effective use and adoption of ICT has hindered and set a lot of graduating students back from gaining employment that requires online activities, upon graduation. So, this inadequacy in the effective use of ICT facilities is considered a problem in the educational sector. Studies have it that ICT as adequate learning resources has the potential for building skill and delivering knowledge in an appropriate way and consequently meet the learner's needs (Qureshi, 2012). It is therefore important, that in the consideration of the effective use of ICT tools in colleges of education in the

southeast, the effective use of the new technology requires an immediate attention in the issues that concern its promotion and support (Nawaz, 2012).

In the light of the above statement, Onyeidu (2018) reported that if lecturers were to engage in adequate utilization of ICT resources and are well equipped with the necessary skills, they are inherently contributing towards the accomplishment of the goals and objectives of effective education. In education, different teaching approaches are adopted for instructional delivery in higher institutions and since these instructions are delivered by lecturers to students who are going to impact same knowledge to other people upon graduation, it is therefore pertinent to use this ICT resources effectively to ensure optimum productivity (Olelewe, Nwachukwu & Nwanze, 2017). Since it was stated above in the cause of this study that educators in some institutions possess and impact meagre knowledge of ICT to students, on the other hand the effectiveness of the use of these ICT resources was assumed to be dependent or influenced by a lot of factors such as demographic variables.

Demographic variables according to Olatokun (2009), is a characteristic of human population that include such information on income level, gender, educational level, geographical region, ethnicity, race and family size that are studied statistically. The variables have been perceived as a significant factor that could influence effective utilization of ICT resources by lecturers (Buntat, 2010; Al-Habi, 2011). Among the demographic variables frequently regarded as having influence on ICT usage include; age, gender, marital status, geographical region (location), teaching experience, educational qualification, income and skills (UNDP, 2011; Inan & Lowther, 2009).

Irrespective of the benefits that proceeds from the use of information and communication technology, some literatures (Anetu et al, 2020; Njokuocha, & Onah, 2020) still show that information and communication technology seem to be underutilized where they are available in the Nigerian institutions, in comparison to related institutions in the developed nations. In instructional delivery in most advanced country of the world, information communication technology has paved way for development in both educational and industrial sectors thereby contributing to their economic growth (Njokuocha & Onah 2020). In Nigeria, however, the utilization of ICT in instructional delivery in colleges of education is a thing of concern that should be looked into as a matter of urgency as compared to what is obtainable in other parts of the

world. Incidentally, in colleges of education in south-east, the use of information and communication technology is observed to be inadequate. Anetu et al (2020) in their study on availability and use of E-learning technologies, showed that the utilization of ICT facilities by lecturers is not adequate and their availability to students is very negligible. It is on basis of this lapses that this study was carried out to assess the role of demographic variables as an influence of ICT utilization by Lecturers in colleges of education in Southeast, Nigeria.

### Research Questions

The study is intended to answer the following research questions:

1. What is the role of age as an influence of ICT use by lecturers in public colleges of education in southeast?
2. What is the role of gender as an influence of ICT use by lecturers in public colleges of education in southeast?
3. What is the role of educational qualification as an influence of ICT use by lecturers in public colleges of education in southeast?
4. What is the role of teaching experience as an influence of ICT use by lecturers in public colleges of education in southeast?

### Methodology

The study adopted descriptive survey design in the investigation. In the opinion of Uzuagulu (2011), descriptive research design is a blue print or an arrangement which specifies how data connected to a given problem should be collected and analyzed. Descriptive design was used because it will help in gaining insights into the relationships, and preferences in a diverse population, and invariably helps in ascertaining the roles of demographic variables as an influence of ICT use by lecturers in public colleges of education in southeast, Nigeria.

A total of 120 lecturers populated the study which was carried out in six colleges of education located in southeast, Nigeria. The colleges were; Abia State College of Education, Alvan Ikoku College of Education, as well as colleges of Education Ikwo, Eha-amfu, Umuze, and Enugu State College of Education Technical (ES CET). This population comprised 79 male and 41 female lecturers in Computer Education in the six (6) College institutions. The lecturers were chosen because the lecturers adopt ICT to an extent in lecture delivery process and should have appropriate

information on the role of demographic variable as an influence of ICT use. Sampling was done using total sampling technique. Total sampling technique is a form of sampling where the population of interest is studied (Usman, 2016) and this technique was used to select the entire 120 lecturers from the colleges of education listed.

The instrument for data collection was a 35-item structured questionnaire, structured on a four-point scale. The response option for sections A to D was, Strongly Agreed (SA = 4), Agreed (A = 3), Disagreed (D = 2) and strongly Disagreed (SD = 1). The questionnaire was subjected to face validation by three research experts from the Department of Computer and Robotics Education, University of Nigeria Nsukka, Enugu State. Each of the research experts were presented with a copy of the instrument for validation. The research experts vetted the items for clarity, relevance and ambiguity. Their suggestions, comments corrections and recommendations served as a guide for the improvement of the items in the instruments. Cronbach's Alpha reliability formula was used to ascertain the internal consistency or relatedness of the items of the questionnaire. The reliability test of the instrument was obtained by distributing 25 copies of the questionnaire to 25 computer lecturers of the Federal College of Education (Technical), Asaba Delta State, which was different from the population of study. The test gave a reliability coefficient of 0.87. Of the 120 copies of the questionnaire administered, 100 copies were returned representing 95%. Copies of the questionnaires were then administered and collected through the help of six research assistants. Statistical Product and Service Solutions (SPSS) was used in analyzing the data. The percentage comparative of the respondents on demographic variables were obtained. Data obtained from answers to research question A to D were analyzed using mean and standard deviation. Mean rating of 2.50 was used to take decisions regarding the research questions. This was calculated on bases of the 4 point rating interval used for the study. The items that have mean values of 2.50 and above were considered as agreed, while the ones that have mean values below 2.50 were considered as disagreed.

## Results

**Table 1: The Mean Rating of Respondents on the Role of Age as a predictor of ICT use by lecturers in public colleges of education Southeast, Nigeria**

S/N	Lecturers' age and ICT use	N	$\bar{X}$	Std	Dec
1	Age influences social media for discussion, instructional delivery, collaboration or exchange of ideas in the classroom	100	2.60	.85	A
2	Age influences use of ICT tools to stay up to date with new contents	100	2.62	.94	A
3	Age permits me to use the most trending ICT tools to bring my content together with the help of multimedia to promote collaboration	100	3.04	.75	A
4	Age enables use of ICT tool to create quizzes that serves to test students' knowledge or review content	100	3.03	.71	A
5	Age enables me use ICT tools to report	100	2.87	.90	A
6	Age influences my use of ICT tools in the classroom for lecture delivery and preparation	100	2.99	.81	A
7	Age enables me to apply some learning management system to manage my course	100	3.06	.75	A
8	Age influences the use of spreadsheets for result computation	100	3.01	.97	A
9	Age influences the use of multimedia facilities for the development of instructional video	100	2.85	.85	A
10	Age enables me make use of Open educational Resources (OER) as an external resource to my content delivery	100	2.95	.84	A
<b>Grand Mean</b>		<b>100</b>	<b>2.90</b>	<b>.84</b>	<b>A</b>

$\bar{X}$  : Mean, Std = Standard deviation, A= Agree, SD= Strongly Disagree, D= Disagree

The findings as shown in Table 1 revealed that items 1-10 have an average mean of 2.90 and a standard deviation of 0.84. A grand mean of 2.90 implies that the

respondents in a large number agreed to an extent that age play an important role in the influence of ICT use.

**Table 2: The Mean Rating of Respondents on the Role of Gender as a predictor of ICT use by lecturers in public colleges of education Southeast, Nigeria**

S/N	Gender and ICT use	N	$\bar{X}$	Std.	Dec
11	Gender influences my level of ICT utilization in instructional delivery	100	2.77	.84	A
12	Gender influences my ability to explore and acquire new knowledge through research	100	2.89	.87	A
13	Gender influences my use of ICT for personal capacity building in my course	100	2.56	.95	A
14	Gender poses barrier to learning innovation in order to apply it in real situation	100	2.04	.78	D
15	My gender serve as a major challenge in the use of ICT for live streaming of lecture	100	1.94	.73	SD
16	My gender serves as hindrance to the integration of ICT tools in instructional delivery	100	1.88	.77	SD
17	Gender enables me use ICT for analysis of student's performance data	100	2.70	.99	A
18	Gender exposes me to use of ICT in lecture which makes the students understand lesson more	100	2.82	.82	A
19	Gender enables me to use ICT in expressing ideas and thought in instructional delivery better	100	2.76	.83	A
20	Gender allows me the use of ICT for implementation of flipped learning strategy	100	2.50	.94	A
<b>Grand Mean</b>		<b>100</b>	<b>2.49</b>	<b>.85</b>	<b>A</b>

$\bar{x}$  : Mean, Std = Standard deviation, A= Agree, SD= Strongly Disagree, D= Disagree

Table 2 shows that items 11-20 have an average mean of 2.49 and a standard deviation of 0.85 and also indicates that 7 out of 10 items had mean ratings ranging between 2.50 and 2.89 indicating that the respondents agreed to the item. Each of the mean was above the limit point of 2.50. These indicate that majority of the respondents agreed that gender plays significant role in the use of ICT in colleges of education. Items 14, 15 and 16 had their mean values as 2.04, 1.94 and 1.88, which are below the benchmark of 2.50. From the result of the mean ratings in Table 2 it was concluded that male lecturers use ICT more than their female colleagues.

**Table 3: Mean Rating of Respondents on Role of Educational qualification as a predictor of ICT use by lecturers in public colleges of education in South-East Nigeria.**

S/N	Educational Qualification	N	$\bar{X}$	Std	Dec.
21	My level of qualification affect my use of ICT to increase learning interest	100	2.82	1.07	A
22	My B.sc qualification influences my use of ICT in lecture preparation and delivery which poses hindrance in given the students the best they deserve	100	2.75	1.05	A
23	My M.sc qualification influences my use of ICT in lecture preparation and delivery that I see it as a problem embracing new skills	100	2.85	.95	A
24	My PhD qualification influences my use of ICT in lecture, There by hindering me from further research in other to add to an existing knowledge	100	2.83	1.04	A
25	I do not consider my educational qualification as a hindrance to the use of ICT resources in providing students with the knowledge they need	100	3.48	.66	A
<b>Grand Mean</b>		<b>100</b>	<b>2.95</b>	<b>.95</b>	<b>A</b>

$\bar{x}$  : Mean, Std = Standard deviation, A= Agree, SD= Strongly Disagree, D= Disagree



Data presented in table 3 show that items 21-25 have a grand mean of 2.95 and a standard deviation of .95. All items were rated above 2.50 meaning that

educational qualification have a major role in the influence and the use of ICT in Colleges of Education in south-east, Nigeria.

**Table 4: The Mean Rating of Respondents on the Role of Teaching Experience as a predictor of ICT use by lecturers in public colleges of education Southeast, Nigeria.**

S/N	Teaching Experience	N	$\bar{X}$	Std.	Dec.
26	My years of experience allows me to use ICT facilities to increase students' interest in learning	100	3.28	.45	A
27	My years of experience enables me try innovative methods for better learning	100	3.34	.49	A
28	As a result of my teaching experience I am well informed of the opportunities that ICT provides in instructional development	100	3.43	.55	A
29	My years of experience allows me to voluntarily put effort to ensure students gets the best	100	3.37	.61	A
30	I have acquired good knowledge in my areas of teaching as a result of my experience	100	3.53	.56	A
31	My teaching experience enables me link new content to students' prior knowledge	100	3.28	.71	A
32	As a result of my experience I encourage students to develop their understanding of the instruction	100	3.33	.53	A
33	My experience enables me emphasis on students assessment and work in order to monitor their progress	100	3.41	.66	A
34	As an experienced instructor I participate in professional developmental activities like conferences or seminars	100	3.50	.54	A
35	My experience enables me to engage in informal dialogue with colleagues on how to improve teaching activities and provide effective learning	100	3.40	.58	A
<b>Grand Mean</b>		<b>100</b>	<b>3.39</b>	<b>.57</b>	<b>A</b>

Standard deviation, A= Agree, SD= Strongly Disagree, D= Disagree  $\bar{x}$ : Mean

Table 4 show that items 26-35 have everage mean of 3.39 and a standard deviation of 0.57. All items were rated above 2.50 meaning that teaching experience is one of the demographic variables that the respondents highly agreed to play vital role on the influence of the use of ICT in Colleges of Education in south-east, Nigeria.

### Discussion of Findings.

The findings of this study on the Influence of Demographic Variables on ICT Use by Lecturers in Public colleges of education in South-East, Nigeria showed that with respect to age, a larger population of the respondents agreed to an extent that age plays a vital role in the influence of ICT use. This was common among the middle-aged lecturers and the slightly older ones (74%), indicating that majority of lecturers in this group or age bracket make use of ICT in instructional delivery compared to those of the younger and older lecturers. The poor use of ICT by younger and more

older lecturers may be attributed to lack of funds needed to acquire the needed ICT tools by the institutions and the lecturers, lack of facility and inadequate technical support by the institutions and ICT staff, lack of time due to heavy workload to learn and adapt the ICT technology to the school curriculum and the negative attitude towards the use of ICT over the traditional methods. This finding conforms to the study of Teo (2008) who showed that pre-service teachers' attitudes for ICT use were influenced by their age and also supports the study of Garrison (2011) who stated that younger lecturers were found to use ICT less often. Buntat (2007; 2010) and Alampay (2006) suggested that this could be attributed to lack of confidence regarding their knowledge of the subject compared to their ICT knowledge and skill. Also Sani, Alabi, Saidu & Momohjimoh (2019), found out from there study that lack of funds, facilities and unstable power supply hinders and discourages the utilization of ICT by lecturers.

The findings of this survey with respect to gender in table 2 indicated that each of the mean response was above the limit point of 2.50, except for items 14, 15 and 16 which had their mean values below the benchmark of the cutoff point. This indicates that majority of the respondents were in agreement that gender plays significant role in the use of ICT. From the results of the mean ratings, it was concluded that male lecturers use ICT more in the range of 58% as against their female colleagues with the range of 42%. This shows that in the use of ICT as a tool in the teaching profession, the male lecturers out-numbers their female counterparts. This agrees with the findings of Alampay (2006) who stated that male lecturers were more inclined to the use of ICT than the female lecturers. This may be attributed to distraction of the female lecturers by other matters that prevent them from devoting much effort to the use of ICT facility (Alampay, 2006). However, this contradicts the findings of Uloh-Bethels, Chinyeaka (2014) who opined that both the male and female lecturers use ICT facilities to a high extent in teaching and lecture delivery.

Furthermore, the data presented in Table 3 showed that items 21-25 have an average mean of 2.95 and a standard deviation of 0.95. All items were rated above 2.50 meaning that educational qualification have a major role in the influence and the use of ICT in Colleges of Education southeast, Nigeria. However, the lecturers with M.Sc and PhD were found to use ICT more with a greater percentage. Equally, it was clear that 86.0% of lecturers have second and the highest degrees in M.sc and PhD. The findings of this study confirm the assertion of Yi (2003) and Prema & Chandan (2008) who reported that the lecturers possessing higher educational qualifications are better exposed and have the tendency to use ICT because they have more skill and the likelihood of using the internet.

In the cause of this study teaching experience and ICT was investigated and the result in Table 4 showed that items 26-35 have average mean value of 3.39 and a standard deviation of 0.57. All items were rated above 2.50 meaning that teaching experience is one of the demographic variables that the respondents highly agreed to play vital role on the use of ICT in Colleges of Education in southeast, Nigeria.

Masalela (2011) who studied the discriminating variables between lecturers that use ICT and lecturers with restricted usage, reported no significant relationship between teaching experience of lecturers and the use of ICT in lecture delivery. But, Kalogiannakis (2008) and Ertmer (2005), conducted a

study which revealed that years of work experience of lecturers plays a role their use of ICT in teaching activity, and this supports the findings of this study. The findings of this study supports the results of some of the past studies which found that lecturers with more experience had used ICT in their teaching. For example, in comparison, Egbert, Paulus and Nakamichi (2020) found that teachers who engaged in CALL activities were habitually those teachers who had experience with CALL. These therefore lay credence to the fact that demographic variables have implications on the use of ICT by lecturers in the teaching activities.

## Conclusion

This study was set out to ascertain the influence of demographic variables on ICT use by lecturers in public colleges of education in southeast, Nigeria. The results revealed that ICTs are very useful and important tools used by computer lecturers in shaping the academic achievements of the students and also in knowledge delivery. They are also seen as tools that could help students acquire enough skills, knowledge and competences in recent times, there by exposing them to the world of creativity and performance needed to succeed during and after school years. Data generated in the cause of this study indicates that there is difference in the way lecture is delivered between the younger lecturers and older lecturers in terms of teaching experience. The relationship between teaching experience and ICT was investigated, and was found that 56.3% of the older lecturers tend to use ICT more with 10 to 20 years of experience than their younger counterparts of 36.5% with 0 to 9 years of teaching experience. Since years of experience is a contributing factor in ICT use, it is therefore not surprising that the lecturers with the older years of experience might have been exposed to certain challenges connected with presentation of lectures, in using ICT for sourcing of information, downloading and saving of files, presentation of seminars and conferences attendance among others in the cause of their profession. Such experiences might have exposed them to the use of ICT facilities more than their younger counterparts in the teaching profession.

The findings of this study showed that ICT is effective in upgrading students' knowledge to suit every happening in line with all the expectations of the 21<sup>st</sup> century. But, the result of the study is an indication that the use of ICT as a tool by computer education lecturers was not consistently dispersed in equal fraction with respect to the demographic variables studied.



## Recommendations

The following recommendations were made based on the findings and conclusion drawn from this study.

1. ICT facilities should be provided in the right number within the school environments particularly in colleges of education, southeast, Nigeria, to guarantee ease of accessing and compulsory use of ICT by lecturers of different age brackets.
2. The tertiary institutions management should ensure that appropriate technologies are sufficiently employed, they should also ensure that capable technicians are on ground to take care of the ICT resources as well as employing capable lecturers for the work.

## References

- Abascal, J. & Nicolle, C. (2015). Moving towards Inclusive Design guidelines for socially and Ethically aware HCI. In Special Issues of Interacting with Computers: *Social Impact of Emerging Technologies*, 17(5).
- Alampay, E. (2006). Analyzing socio-demographic differences in the access and use of ICTs in the Philippines using the capability approach. NCPA G, University of the Philippines.
- Al-Harbi, K.S., (2011). e-Learning in the Saudi tertiary education: Potential and challenges. *Applied Computing and Informatics*, 9, 31–46.
- Anetu, C. A. Ugwuoke, E.O. & Favour, A. M. (2020). Availability and Utilization of E-learning Technologies for improving Teaching and Learning of Business Education Programme in Public Universities in Enugu State. *Vocational and Technical Education Journal (VOTEJ)*, 2(2), 2734-2697.
- Buntat, Y. (2010). Computer technology application and vocational education: a review of literature and research. *European Journal of Social Sciences*, 14(4), 645–651.
- Egbert, J., Paulus, T. M. & Nakamichi, Y. (2020). The impact of CALL instruction on classroom computer use: A foundation for rethinking technology in teacher education. *Language Learning and Technology*, 6(3), 108-126.
- Ertmer, P. A. (2005). Teacher pedagogical beliefs: The final frontier in our quest for technology integration? *Educational Technology Research and Development*, 53, 25-39.
- Garrison, D. R. (2007). Online community of inquiry review: Social, cognitive, and teaching presence issues. *Journal of Asynchronous Learning Networks*, 11(1), 61–72.
- Inan, I. A. & Lowther. D. L. (2010). Factors affecting technology integration in K-12 classrooms: a path model. *Educational Research, Technology and Development* 58.2: 137-154. <http://dx.doi.org/10.1007/s11423-009-9132-y>
- Kalogiannakis, M. (2008). Training with ICT for ICT from the trainee's perspective. *Alocal ICT teacher training experience. Education and Information Technologies Journal*, 15(1), 3-17. <http://dx.doi.org/10.1007/s10639-008-9079-3>
- Masalela, R. K. (2011). Implementing e-Learning at the University of Botswana: the Practitioner's Perspective. *Online Journal of Distance Learning Administration*, 14(2), n2, <https://www.learntechlib.org/p/52637/>.
- Nawaz, A. (2012). Metaphorical Interpretation of E-Learning in Higher Education Institutions. *Journal of Advances in Information Technology* 3(1):1-9, February. <http://ojs.academypublisher.com/index.php/jait/article/download/jait03010109/4284>
- Njokuocha, M .M.C. & Onah, E. N (2020). Repositioning Computer Education in Tertiary Institutions in Enugu State using ICT for Sustainable Industries. *Vocational and Technical Education Journal (VOTEJ)*, 2(2), 94-101.
- Olatokun, W. M. (2009). Analysing Socio-Demographic Differences in Access and Use of ICTs in Nigeria Using the Capability Approach. *Issues in Informing Science and Information Technology* 6,
- Olelewe, C. J. Okwor, N. A. & Nwanze, M. N. (2017). Exploring Information and Communication Technology (ICT) Integration in Education. *Computer Education Research Journal* 4(1), 32-41.
- Pratt, M. K. (2019). Information and Communication Technology. <https://searchcio.techtarget.com/definition/ICT-information-and-communications-technology-or-technologies>. Retrieved, 14 July 2021.
- Prema, B. & Chandan S. K. J. (2017). Factors Affecting Teachers' Perceived Proficiency in Using ICT in the Classroom. *Somaiya Institute of Management Studies and Research: IAFOR Journal of Education* 5(2), 67-82.
- Qureshi, I. A. Ilyas, K. Yasmin, R. & Whitty, M. (2012). Challenges of implementing e-learning in a





- Pakistan University. Knowledge management and e-learning. An International Journal 4 (3): 310 – 324.
- Sani, J., Alabi, C., Saidu, D. & Momohjimoh, F. (2019). The use of ICT tools for lecture preparation and Delivery in Federal University of Lokoja, Kogi State, Nigeria. Islamic Multidisciplinary Journal, 6 (1): 145 – 153.
- Tinio, V. L. (2015). ICT in education/key challenges in integrating ICTs in education. Wikibooks. Retrieved 07 May 2025 from [https://en.m.wikibooks.org/wiki/ICT\\_in\\_Education/Key\\_Challenges\\_in\\_Integrating\\_ICTs\\_in\\_Education](https://en.m.wikibooks.org/wiki/ICT_in_Education/Key_Challenges_in_Integrating_ICTs_in_Education).
- Tella, A. (2011). Availability and Use of ICT in South-Western Nigeria Colleges of Education. International Multidisciplinary Journal, Ethiopia, 5 (5), 315-331, DOI: <http://dx.doi.org/10.4314/afrev.v5i5.25>
- Teo, T. (2008). Pre-service teachers' attitudes towards computer use: A Singapore survey. Australian Journal of Educational Technology, 24(4), 413-424.
- UNDP. (2011). Promoting ICT for human development programme. A Pioneering Regional Human Development Report in Asia. Retrieve from <http://www.apdip.net/projects/rhdr/resources/PDF> on 15/08/2011
- Uloh-Bethel & Chinyeaka, A. (2014). Language Education Lectures perception of Computer Language Learning (CALL) in the Instructional Delivery of English Language.
- Usman K. O. (2016). Exploring Information Technologies in Support of Teaching and Learning. A keynote Address Presented at Computer Association of Nigeria Conference University of Nigeria Nsukka
- Uzoagulu, A. E (2011). Practical Guide to Writing Research Project Reports Tertiary Institutions. Cheston Printers Enugu, Nigeria.
- Yi, M. Y. & Hwang, Y. (2003). Predicting the use of web-based information systems: Self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model. International journal of Human-Computer Studies 59(4):431-449.