

# CHALLENGES OF INTEGRATING INFORMATION AND COMMUNICATION TECHNOLOGY: BRIDGING DIGITAL DIVIDE AMONG STUDENTS OF HIGHER EDUCATION IN NIGERIA.

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## **Abstract**

*The global swing towards a knowledge based society has seen the role of ICTs in higher institution becoming increasingly important. Use of new technologies in tertiary institution in Nigeria is an ongoing reality today. However, the inequalities that exist among students of tertiary institution are the source of an important problem. Such inequalities need to be detected and analysed and therefore a study of newly admitted students can be valuable. A total of 91 students from tertiary institution participated in this research. Results obtained show the presence of asymmetries in the use of ICTs and indicate the presence of digital divide. Such inequalities with respect to technology imply fewer ICT resources for some of these fresher's and difficulties to access the internet. Worth highlighting is the fact that not all tertiary institution fresh students use digital technology in a standardised manner for academic purposes but they nevertheless use such technology more frequently for private purposes.*

**Key words:** ICT integration, digital divide, higher education, one-to-one digital device.

Information and communication technology (ICT) is a diverse set of technology tools and resources to communicate and to create, disseminate and manage information. This broad definition of ICT includes technologies such as radio television, video, DVD, telephone, satellite system, computer and network hardware, and software as well as the equipment associated with these technologies, such as videoconferencing and electronic mail (UNESCO, 2009). ICT is potentially a powerful tool for extending educational opportunities and can provide remote learning resources. ICT encourages students to take responsibilities for their own learning and offers problems centered and inquiry based resources. It is necessary to acquire the ability to use technology as a tool to research, organize, evaluate and communicate information and the possession of the fundamental understanding of the ethical or legal issues and use of information (Krishna, 2011), today knowledge of networking, communication and retrieval technology has become core to the profession, with the urgent need of integrated education in the educational system in Nigeria, it requires the integration of information and communication technologies (ICT) into the training process. Salmon and Jones 2004, sustain that the inclusion of ICT in syllabi as a driving force for learning and bring about educative innovation.

This study researches the digital divide of tertiary institution students with respect to obstacle experienced by them for using the ICTs facilities. The central objectives of this study are as follows

- Identification of ICT resources available to students for training and personal use
- Identification of nature of ICT used by the students whether academic or personal

### **ICT in Higher Education**

The ICT policy in higher education aims at preparing youth to participate creatively in the establishment, sustenance and growth of a knowledge society leading to all round social economic development of the nation and global competitiveness. The introduction of ICT in the higher educational process has profound implications for the whole education process ranging from investment in the use of technologies in dealing with key issues of access, equity, management, efficiency, pedagogy and equality (Tejedor et al 2005).

1. **Student Centered Learning:** ICT provides a technology that has the transformation to promote and encourage the transformation of education from a teacher directed enterprise towards student-centered models as more and more students use computers as information source and cognitive tools, the influence of the technology will increase the support of their studies (Fengchin 2010).
2. Supporting knowledge construction learning approaches using contemporary ICTs provide many opportunities for constructive learning and support for resource based student centered setting by enabling learning to be related to context and to practice.

3. **Any Place Learning:** With the help of ICT, educational institution can offer programs at a distance mode. Today many students can use this facilities through-facilitated learning setting.
4. **Anytime Learning:** Technology facilitated educational programs remove the geographical barriers students are able to undertake education anywhere, anytime at any place .this flexibility has provided learning opportunities for many more students who previously were constrained by other commitment.
5. **Information Literacy:** The growing use of ICT as tools of everyday life have seen the tool of generic skills expanded in recent years to conclude information literacy .it is highly probable that due to the feature development and growth in technology. It will help further for information literacy

### **Review of Relevant Literature**

Digital divides is known to be linked with digital literacy and the limitation experienced by people in the base of ICTs for the UNESCO (2008),digital conference competence comprises mastery of the several capacities of students to search select analyze and evaluate information rather than just technical.

**Operation of Technological Equipment:** This means that they must be creative and efficient at using digital tools, communicate and collaborate with other people and produce and publish materials and information. They must also be able to solve problems, making decision through technology, be responsible and contribute to enriching the knowledge society.

The organization of economic cooperation and development (OECD 2001), defines the concept of digital divides as the equality of access to ICTs among geographical areas and people from different socio –economic level, A double dimension is therefore accepted i.e. socio economic and territorial.

Zhang, Wang and Kolodinsky (2010) widen the scope of this expression to the skills needed for effective and re-use of ICTs. Archibugi and Coco (2004, 2005) suggest the creation of digital divide, indicated at analyzing; creation of technology, existing digital structures and development of abilities for the same at the local level. Cantwelk and Iammarino (2003), considered regions as important study areas for the digital proficiency of people.

Digital divides is a problem that affect students from all over the world to a greater or lesser extent. Therefore scientist has tried to analyze the phenomenon at different stages of all student life in an attempt to discover the underlying problems and

seek explanation and possible solution. for example Waycott, Bennett, Kennedy, Dalgarno and Gray (2010), identify differences in the use of technology in higher education and on daily lives of teachers and student in Austrsalia.they justify such differences based on individual motivations and social norms that promote the use of ICTs. The study reveals that teachers are the ones who most resist the use of ICTs as against students who are receptive and enthusiastic. The study also show that teachers mostly forced on using ICTs for institutional matters and pedagogic application while students use the same to organize their social life.

For Edmunds, Thorpe, and Conole (2012), researching students experience with ICTs is a valid method to exploit the influence and the attitudes related to their use in academics, social and leisure context. They also state that analysis of the use of ICTs by students and their interaction and contribute to the feature use of ICTs in an appretisizing, this study also provide and insight into students previous knowledge and can be a starting point to channel the development of innovative methodological strategies.

Even though Goode (2010) affirms that ICTs are part and parcel of the daily lives of university students in USA, their finding however indicated the presence of differences associated with technological skill. This study pointed the need for incorporating teaching and policing dynamics in order to permit higher education students receive training through the integration of ICTs. It further more indicates that institution should be the one responsible for providing such ICT support.

### **Methodology**

The research described in this paper was undertaking using narrative enquiry method, through techno-autobiographies’. This narrative technique permit student to describe their previous experiences on a specific subject or problem, which is the purpose of the study.

### **Participant**

The participant for the study includes 91 fresh students of tertiary institutions in Nigeria. There were 51 males and 40 females aged between 16-25 years (table 1)

**Table 1. Age and Gender Distribution of Respondent**

**Table 1**

Age	16		17		18		19		20		21		22		23		24		25		Total
Sex	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	Gender
Freq.	15	10	10	6	8	4	7	6	7	4	3	4	1	1	0	1	2	1	1	0	91
Total	25		16		12		13		11		7		2		1		3		1		91
Percent	27.4		17.6		13.2		14.3		12.1		7.7		2.2		1.1		3.3		1.1		100%

### **Findings**

Result is shown for the following general categories based on the above mentioned objectives.

- ICT resources available to student
- What student use ICT for.

### **ICT Resources Available to the Student**

Students of tertiary institutions in Nigeria can avail of the variety of ICT resources for their training and personal use. The tables below show the ICT resources normally used.

**Table 2: ICT Devices that Students have.**

<b>Equipment</b>	<b>% of the total participant</b>
Camera	45
Smart phones	60
Audio/video	57
Desktop computers	20
Tablets	15
Cell phones	55
Laptops	44
Television	40

### **Table 2**

A small group of students were found to be well versed with technological updates evident from the amount and variety of resources that they had at their disposal for personal use.

The narration of some students is reproduced hereunder:

*“I have a laptop, a smart phone and share two (20 TVs at home with my families. Most times I used my smart phones because I can use it for many things such as searching information in the internet, during academic work, accessing my social and allying games”* [R<sub>18</sub> female, 20 years].

*“I use the Wi-Fi connection available on campus on my computer for academic work whenever I am in school and my smart phone whenever at home because we cannot afford internet connection at home”* [R<sub>16</sub>, male, 24 years].

Generally, only middle to upper class families can afford to purchase the latest technology in Nigeria. In fact, most students stated that ICTs are beyond their reach.

This in turn negatively affects the level of digital skill acquired. These aspects also point to the presence of digital divides in higher education students

### **Use of ICTs by Students**

The result obtained generally shows that fresh students of tertiary institutions in Nigeria have good technical command for handling the different ICT equipment. They normally use a variety of digital applications and different software's.

With respect to software's and digital applications they presented different intensities and experiences both in their academics and private lives. An extract taken from the techno-autobiography of one of the students is reproduced below as an illustrative example.

*“My experience with new technologies in the academic field includes preparing works such as power points presentation and using excels spreadsheet. Other activities we carried out online include creation of blogs where we share links to view images and videos [R<sub>9</sub> male, 20 years].*

Worth highlighting is that some of the students who participated in the research have limited experiences in the use of ICTs, their reasons were ranging from problem to access internet in their respective schools and few activities carried out using ICTs. The inequality among students becomes evident with respect to type and amount of ICT resources used and the heterogeneity expressed in the use of the same.

At a personal level, students associated ICTs mainly with leisure activities and connection to the internet. They highlighted use of internet for communicating with families and friends (through e-mails and social networks), downloading and listening to music, watching film, playing games on lines and for reading newspapers. The result shows that students prefer to use some digital application for communication but not for academic use. These facts points to asymmetries in the use of ICTs on the personal and academic fronts. And therefore, digital divides becomes more pronounced in the academic use of ICTs.

### **Discussion and Conclusion**

The result presented in this paper points to the presence of digital divides indicators among students that have just joined tertiary institution in Nigeria. Several in-equalities between schools were observed as well as the amount and diversity of ICTs used by them. This consequently affected the type of activity they performed with such ICTs. There is therefore a need to introduce palliative measures to boost a generalized use of such technology with a view to avoiding to negative effect to academic training.

Most students own several digital devices and use them with great ease both for academic and private purposes. However the study revealed that some of the students have economic limitations for acquiring such devices, while some lack digital competence. Goode (2010), alert about high cost of technology and states that students who do not have enough resources and experience would probably lose out on training opportunities. Such conclusion can be extended to fresh students from our studies, since they do not have a standardized use of ICTs. Therefore lecturers must provide strategies for the students in order to orient training via supporting tools that will help them train in both academic and digital context (Hwang, Chu, and Tsai, 2011). In like manner higher institution should in great measure provide initiatives to ameliorate inequalities between students by providing provisional loans of digital mobile devices increasing class times, increasing quality and bandwidths of the internet signals etc. students should also be given supplementary digital lessons and integration of one-to-one ICTs in learning to reduce the existing asymmetries.

The study also revealed that fresh students in higher education use some digital applications (social networks and e-mail for personal purposes but do not use them, for academic purpose to that end Terries and Ramsay (2012). States that the use of ICTs can stimulate both formal and informal learning. This study has generally revealed asymmetry in the use of social networks, presence within personal context but absence within academic context. The same trend was also observed in a study carried out among universities students in Russia and Germany (Porshner and Giest 2012).

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