

Access to Information and Communication Technologies (ICTs) in selected Villages of Bauchi Local Government Area: Challenge to E-Learning and use of Open Educational Resources in Rural Areas of Nigeria

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Abstract: *The study examines the challenges of E-Learning and the access of Open Education Resources (OER) using Information and Communication Technologies (ICTs) in Bauchi Local Government Area of Bauchi State, Nigeria. A total of 120 respondents were randomly selected in ten villages in the LGA. Data were collected using pre-tested questionnaires and analyzed using percentages, means, modes, median, frequencies; chi-square and other parametric statistical tools. For the purpose of the research, ICTs were divided in to two categories: conventional (Radio/Television) and contemporary or modern (computer/internet and GSM). Results showed that radio was the widely accessible ICT by the respondents (98.33%) it was followed by television (41.67%), GSM (40.00%) and the least computer/internet (5.00%). Chi-square analysis revealed that age, background and educational level of respondents were significant ($P \leq 0.05$) with access to modern ICTs. Kruskal-Willis rank test on reception of ICT services was not significant because on the average, at least the service of one of the categories of ICTs was received by respondents in all the villages studied. Mann-Whitney rank test on the problems confronting the respondents was significant ($P \leq 0.05$) with access to ICTs. Thus, it is recommended that widespread education on the use of modern ICTs especially computer/internet and intensification of the use of existing conventional ICTs particularly the radio will bring a turning point in the access of OER using both the conventional and contemporary ICT tools in most rural areas of Nigeria.*

Key words: Access, challenge, E-Learning, OER, ICTs

INTRODUCTION

The emphasis being placed on the development of information and communication technologies (ICTs), particularly its use in e-learning cannot be over emphasized. These days it is often said there can be no effective learning without access to ICTs. It is certainly true that students with access to ICTs fare better but they are few and far between in developing countries (Mulder, 2008:14). The ICTs in use in Nigeria include Radio, Television, Computer/internet, Global System of Mobile (GSM) Telecommunication and the Fixed Telephone Network. Research information, books, periodicals and all open education resources are often hosted and easily disseminated using the various ICT platforms.

However, in developing countries like Nigeria and especially their rural areas are devoid of ICT facilities as such, the rural dwellers cannot access such technologies thereby making them vulnerable and removed in terms of effective access of e-learning resources. The problems associated with poor access to ICTs by rural dwellers include: erratic network coverage, poor infrastructures of the service providers, high cost of tariffs, and lack of power supply, illiteracy level and inconsistent government policies (Arokoyo, 2003). It is widely recorded in most developing countries that minimal attention is being given to reception and retention of information accessed through ICTs as compared to advanced countries, which several conferences and declarations were made to correct the imbalance. The launch of Wikieducator in August 2006 was to provide a venue for planning education projects built on OER, creating and promoting open education resources (OERs), and networking towards funding proposals as well as its Wikieducator's Learning4Content project aimed at building skills in the use of MediaWiki and related free software technologies for mass-collaboration in the authoring of free contents are classical examples to correct the imbalance but are yet to make impact in the rural areas, because of high level of illiteracy and vicious cycle of poverty that pervade the rural dwellers (Mulder, 2008:14). To achieve wide spread access and utilization of ICTs as enunciated by globalization campaigns such as the Millennium Development Goals (MDGs), this study was set to determine the impact of selected ICTs in the study area. This is aimed at determining the ICTs potentials in transforming OER and E-Learning behind the backdrop of variety of problems inhibiting its impact in the rural areas.

INFORMATION AND COMMUNICATION TECHNOLOGIES FOR OER AND E-LEARNING DELIVERY

Efforts geared towards effective access of OER and E-Learning will remain passive unless the open course wares, books, journal and course contents are diffused through the appropriate channels to the people that need them. The OER movement originated from developments in open and distance learning (ODL) and in the wider context of a culture of open knowledge, open source, free sharing and peer collaboration, which emerged in the late 20th century. OER and Free/Libre Open Source Software (FLOSS), for instance, have many aspects in common, a connection first established in 1998 by David Wiley, who introduced the concept of open content by analogy with open source. All these efforts will not have any impact where effective ICTs are not available.

The modern ICT software has by no means broadened the delivery of OER and E-Learning, which has brought wider scope in exchange of ideas, skills and information diffusion (Atkins *et al.*, 2007: 4). Thus, while modern ICTs have tended to improve channels of communication generally, the extent of reaching the target audience and the response/feedback mechanism to the various sources of information has also greatly been improved through the use of the modern ICTs. With the effective access of ICTs as channels of communication, which enhances the diffusion of information content to the right audience and at the right time, the much needed development in OER and E-Learning, especially in the developing countries of Africa would be achieved (Huyen, 2007: 30). The priority therefore today is to ensure access to information and communication technologies (ICTs) among all stakeholders in OER and E-Learning.

The aspirations of OER proponents range from a desire to reshape the captive market of textbook publishers to the aim of creating "a world where each and every person on earth can access and contribute to the sum of all human knowledge." High hopes, especially, have been voiced for OER to alleviate the digital divide between the global North and the global South, and to make a contribution to the development of less advanced economies (Wiley, 2006).

In rural areas of Africa, radio, television and telephone have remained the most frequently accessed ICTs. They are used to relay information to most people in the rural areas. It was shown in many developing countries that the initiatives of adoption of ICTs in OER and E-Learning are receiving a boost, for instance in Nigeria where bold developmental steps have been taken by the government, development agencies and non-governmental organizations (NGOs). Other initiatives derived from MIT Open Course Ware include Connexions, China Open Resources for Education and OpenCourseWare in Japan.

The Open Courseware Consortium, founded in 2005 to extend the reach and impact of open course materials and foster new open course materials, counted more than 200 member institutions from around the world in 2009 (Attwood, 2009).

A large part of the early work on open educational resources was funded by well-endowed US universities and foundations such as the William and Flora Hewlett Foundation, which was the main financial supporter of open educational resources in the early years and has spent more than \$110 million in the 2002 to 2010 period, of which more than \$14 million went to MIT. The Shuttleworth Foundation, which focuses on projects concerning collaborative content creation, has contributed as well. With the British government contributing £5.7m, institutional support has also been provided by the UK funding bodies JISC and HEFCE. UNESCO is taking a leading role in "making countries aware of the potential of OER." The organization has instigated debate on how to apply OER in practice and chaired vivid discussions on this matter through its International Institute of Educational Planning (IIEP). Believing that OER can widen access to quality education, particularly when shared by many countries and higher education institutions, UNESCO also champions OER as a means of promoting access, equity and quality in the spirit of the Universal Declaration of Human Rights (UNESCO, 2009).

An assessment of various ICTs currently in use to disseminate information to rural communities in Sub-Saharan Africa shows that ICTs are yet to make a meaningful impact. For example, the ICTs in used in providing OER and E-Learning to rural communities in Kenya are mostly radio and television while in South Africa, a relatively more advanced country, an integrated approach of telecenters, or multipurpose community centres (MPCCS) and citizens post office (CPOS) are being used (Deacon *et al.*, 2003: 5). Like in the case of Kenya, Nigeria's main ICT models in use are radio and television. However, in the Caribbean region today the relevance and benefits of ICTs is being characterized by various approaches that are relationship oriented, task focused and participatory in rural communities, while in more advanced countries, demand-driven approaches are more in use than the traditional radio/television that are more often in use in developing worlds (Ticoll, 2003: 14). The fall out of globalization, with its attendant rules and regulations has suddenly thrown to the developing world competition at the world stage with little or no protection, as a result of various regional liberalization policies. Such transformations are not easy to come by in the developing countries like Nigeria and may never be achieved unless the stakeholders have a clear understanding of the information continuum and synchronize their efforts to become more supportive of what is happening in the global ICT campaign. Therefore, new and improved information communication technologies are required to meet such information needs especially in educating rural families (Ticoll, 2003: 14).

CONSTRAINTS OF ICTs USE IN OER AND E-LEARNING DELIVERY

The OER movement has been accused of failure to connect with the larger world: "OERs will not be able to help countries reach their educational goals unless awareness of their power and potential can rapidly be expanded beyond the interest that they have already

attracted" (UNESCO, 2010). In more fundamental criticism, doubts have been cast on the altruistic motives typically claimed for OER, and the very project has been accused of imperialism in that the creation and dissemination of knowledge according to the economic, political and cultural preferences of highly developed countries for the use of less developed countries is alleged to be a self-serving imposition (Mulder, 2008: 58–67).

In more general terms, the use of OER and e-learning in developing countries like Nigeria is faced with the following challenges:

- Despite ICTs worldwide explosion, most of the educational institutions, especially those operating ODL system seem not to be fully “ICT ready” or have low rating.
- Poor and erratic funding of Nigerian Educational System, especially at tertiary level.
- Poor ICT infrastructural development as clearly seen in the few and poor telephone lines compounded by erratic, limited and unstable power supply and low capacities of gateways to international networks/satellite systems.
- High cost of power either through the national grid or by stand-by generators.
- High cost of telecommunication services either landline or GSM. It has been estimated that Nigeria has the highest rate for GSM calls in the world and the only country that was charging per “minute” until 2005 with explosion of other service providers and government intervention.
- Limited access to computer and less access to Internet, thus little or no inter or intra organizational networks for information exchange.
- Policy inconsistencies by government in both telecommunication and educational sectors resulting in low level of private sector participation and investment for development.
- High level of rural poverty.
- High level of illiteracy of the students, educationists and administrators on computer and specifically Internet usage.
- Limited access to world wide database on CD-ROM due to financial/foreign exchange constraints.
- Limited coverage of states and national FM/AM radio stations and their poor reception in the rural areas.
- Commercialization of government radio and television stations resulting in exorbitant costs of educational programmes broadcasting.

The main objective of this study is to determine the access of respondents to ICTs available in the study area. However, the specific objectives of the study are to:

- Determine the level of respondents’ possession /accessibility and reception of ICT components in the study area.
- Determine the extent of educational resources received by the respondents from the ICTs in the study area.
- Examine the respondents’ problems on ICTs possession/accessibility for educational development.

METHODOLOGY

THE STUDY AREA

Bauchi Local Government Area (BLGA) is the area of study, which comprises of about 200 villages and hamlets that are scattered in a land mass of 3,540 square kilometers, outside the Bauchi metropolis. According to 2006 census the LGA has a total population of 493,810 of which over 75% are rural dwellers. The major economic activity in the area is agriculture, along with other economic and social activities, which are all rural in nature. They also enjoy some social infrastructures such as schools, telecommunication, electricity, etc even though,

they are far and wide. Vegetation in the area is described as open savannah woodland with trees growing singly or in clusters (BSADP, 1997). April is the hottest month of the year, while humidity is highest in August (66.5%) and lowest in February (16.5%). The mean annual rainfall ranges between 800-900mm characterizing the climate with two distinct seasons; wet and dry. While the wet (rainy) lasts for maximum of 5 months (May-September), the dry season prevails in the remaining 7 months of the year. These conditions often characterize the lifestyle of the villagers that is more as farmers than having opportunity of accessing education either through the conventional or the OER/e-learning sources.

Sampling Procedure and Data Collection Method

Two major districts in the area (Zungur and Galambi) were chosen for the study and one hundred and twenty (120) respondents were selected using a stratified random sampling technique. Primary data were collected using a pre-tested, semi-structured questionnaire designed on socio-economic characteristics of the respondents and other relevant information relating to their ICTs access and utilization for e-learning and OER.

Analytical Techniques

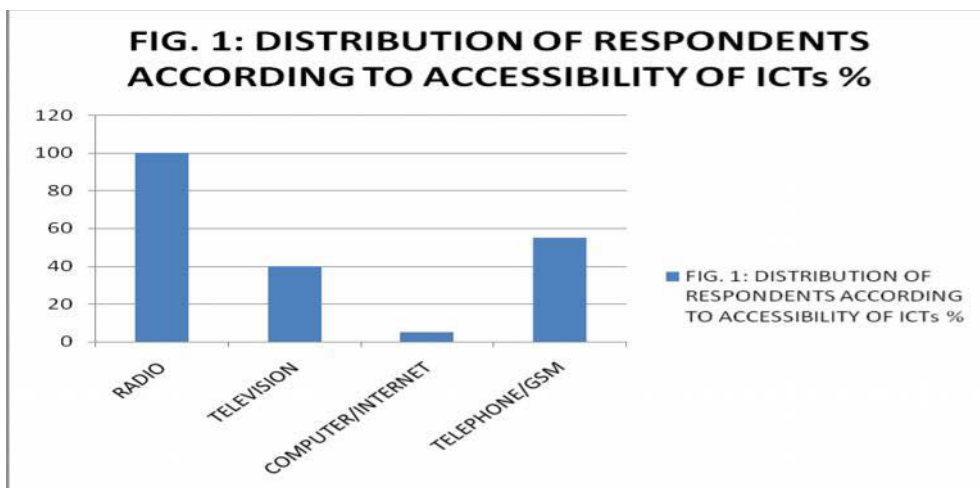
Basic analytical tools, such as percentages and means were used to describe the data, in addition to a modified chi-square test. Kruskal-Wallis and Mann-Whitney ranking models were used to analyze the reception level and the problems associated with each of the ICT channels. These techniques were further explained in Appendix 1.

RESULTS AND DISCUSSION

Accessibility of ICTs among the respondents in the study area has been examined and the result is presented in Table 1. It shows a low level of possession or accessibility to the non-conventional ICTs such as Internet and GSM (5%). However, majority of the respondents do own radio sets (98%) that can be operated on batteries only, as electricity supply is erratic. Based on the availability of services or reception of the ICTs in various villages surveyed, the result indicates availability/reception of radio, comprising the federal/state FM stations, to be highest (63%), this is followed by GSM (27%) and television sets (10%) while computer/internet is zero or non-existent in all villages surveyed as shown in Figure 1 Appendix 2.

Table 1: Distribution of Respondents According to ICTs Accessibility

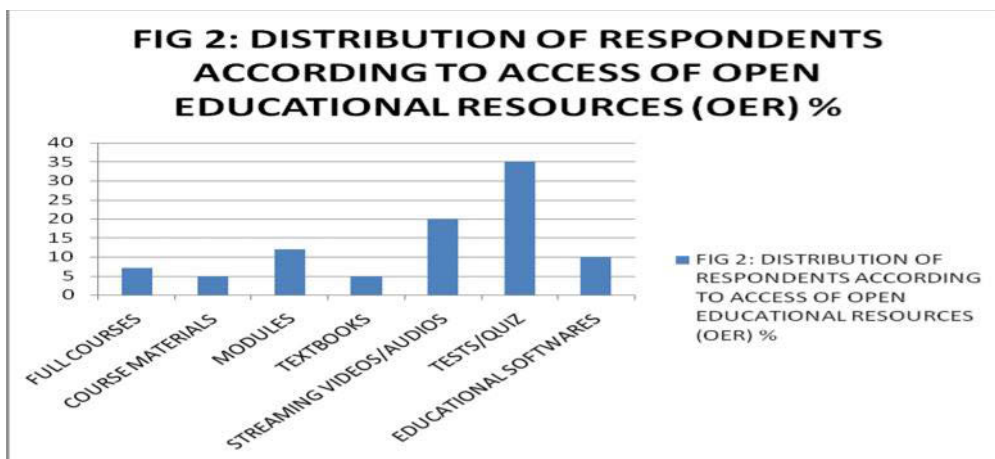
Type of ICTs	Accessible	%	Not Accessible	%	Total (%)
Radio set	118	98.33	2	1.67	100
Television set	50	41.67	70	58.33	100
Computer/internet	6	5.00	114	95.00	100
Telephone/Fax/GSM	48	40.00	72	60.00	100



Accessibility of educational resources from the ICTs was also examined, which result is shown in Table 2. It reveals that accessibility of all OER is generally low but is highest for tests/quiz programmes from FM radios and Television broadcast locally (35%). This is followed by course materials (30%). The access of other E-learning materials such as modules, textbooks and streaming videos/audio programmes, which are not significant as they are mostly based in nonconventional formats and are nonexistent in most of the villages surveyed. The distribution of respondents according to access of OER and E-learning materials is given in Figure 2

Table 2: Distribution of Respondents According to OER and E-learning Materials Accessibility

Type of Resources	Accessible	%	Not Accessible	%	Total (%)
F/course	8	6.67	11	93.33	100
C/material	6	5.00	115	95.00	100
L/modules	14	11.67	106	88.33	100
T/books	36	30.00	84	70.00	100
Video/audios	24	20.00	96	80.00	100
Test/Quiz	42	35.00	78	65.00	100
Edu/software	11	9.17	109	90.83	100



The respondents' problems on ICTs possession/accessibility is given in Table 3. After subjecting the various respondents' views to Kruskal-Wallis and Mann-Whitney rank tests, the problems of ICTs accessibility for OER and E-learning purposes were determined. The most important problem expressed by the respondents is the affordability of ICT facilities (92%) followed by lack of education on how to use Internet (83%). The problem of lack of power supply and poor government policy came third (77%). The details of these can also be seen in Table 3.

Table 3: Problems of Respondents on ICTs Possession/Accessibility in the Study Area

Problems	Serious (%)	Rank (R ₁)	Not Serious (%)	Not Rank (R ₂)
Cannot afford ICTs	92	10	30	5
Lack of Western Education	83	9	33	6
Lack of power supply	77	8	40	7
Poor government policy	77	8	40	7
Have never seen computer	11	15	10	1
No good radio/tv programmes	10	14	20	2
Lack of Internet café	92	11	28	4
Poor infrastructure	-	-	97	13
Total		R₁ = 70		R₂ = 50

CONCLUSION/RECOMMENDATION

The result of this study shows that access of ICTs by respondent in the area studied is still conventional that is radio/television. The inaccessibility of other ICTs especially computer/Internet and GSM is due principally to cost, lack of education and lack of power source in the rural areas, which is prevalent nationwide. To overcome the problems and thus improve the access of OER and E-learning in rural communities therefore, the following issues need be addressed:

- Government and non government agencies to intensify their campaign through the conventional means that is radio/television as they are widely accessible in rural areas.
- The government should liberalise and incorporate policies of improving mass ICT infrastructure in the country to make ICTs accessible, affordable and useful in educational service delivery thus, building capacity in computer and Internet accessibility.
- Level of awareness on usage, skill acquisition and general education of the rural population to better their economic and social standard must be stepped up.

- Government and the private agencies should also assist in the supply of steady power to encourage increased socioeconomic development of the country's populace in general.

References

- Atkins, Daniel E., John Seely Brown, Allen L. Hammond (2007). "A Review of the Open Educational Resources (OER) Movement: Achievements, Challenges and New Opportunities", Menlo Park, CA: The William and Flora Hewlett Foundation, p. 4
- Attwood, Rebecca (2009). "Get it out in the open". *Times Higher Education* (London)
- Deacon, Andrew and Wynsulley, Catherine (2009). "Educators and the Cape Town Open Learning Declaration: Rhetorically reducing Distance". *International Journal of Education Development using ICT*, 5(5)
- Hylén, Jan (2007). *Giving Knowledge for Free: The Emergence of Open Educational Resources*. Paris, France: OECD Publishing. p. 30
- Mulder, Jorrit (2008). *Knowledge Dissemination in Sub-Saharan Africa: What Role for Open Educational Resources (OER)?* Amsterdam: University of Amsterdam. p.14
- Ticoll, David (2003). "MIT initiative could revolutionize learning". *The Globe and Mail* (Toronto). Retrieved 2010-12-20
- "UNESCO and COL promote wider use of OERs". International Council for Open and Distance Education. 2010-06-24
- Wiley, David (1998). "Open Content". *OpenContent.org*, retrieved 2010-01-12.
- Mulder, Jorrit (2008). *Knowledge Dissemination in Sub-Saharan Africa: What Role for Open Educational Resources (OER)?*. Amsterdam: University of Amsterdam. pp. 5867. <http://www.gg.rhul.ac.uk/ict4d/workingpapers/mulderOER.pdf>. Retrieved 2011-01-01