

**CHALLENGES IN THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) FACILITIES IN TEACHING AND LEARNING OF GEOGRAPHY IN SECONDARY SCHOOLS IN AFIKPO NORTH L.G.A. OF EBONYI STATE.**

**EBURU P. I. (Ph.D) & ITEM V.K.  
DEPARTMENT OF GEOGRAPHY  
EBONYI STATE COLLEGE OF EDUCATION, IKWO.**

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**Abstract**

*This study was carried out principally to analysis the challenges in the use of information and Communication Technology (ICT) facilities in teaching and learning of Geography in Secondary Schools in Afikpo North L.G.A of Ebonyi State. This is because the theoretical and practical usefulness of geo-informatics (cartography, remote sensing, geographic information systems and geographic positioning systems) has significant disciplinary and societal relevance in national education, resource monitoring, environmental management, industrial and commercial business concerns. Emphasis was on variables such as manpower, qualification, ICT facilities, resources and funding. Questionnaires were used in gathering data for the study. The sample size was 10 public secondary schools in the Local Government Area. Simple statistical techniques were used in analysing the data. These included mean, ratio and percentages. It was found that there were serious dearth in manpower, ICT facilities and resources, and lack of funding of ICT projects in the schools. Based on the findings, comprehensive suggestions were made on how to overcome these challenges. These included the recruitment of ICT based manpower in secondary schools, the provision of ICT facilities and resources, and the funding of ICT projects in our secondary schools.*

**Keywords: Information and Communication Technology, ICT Infrastructure and Teaching and Learning Geography.**

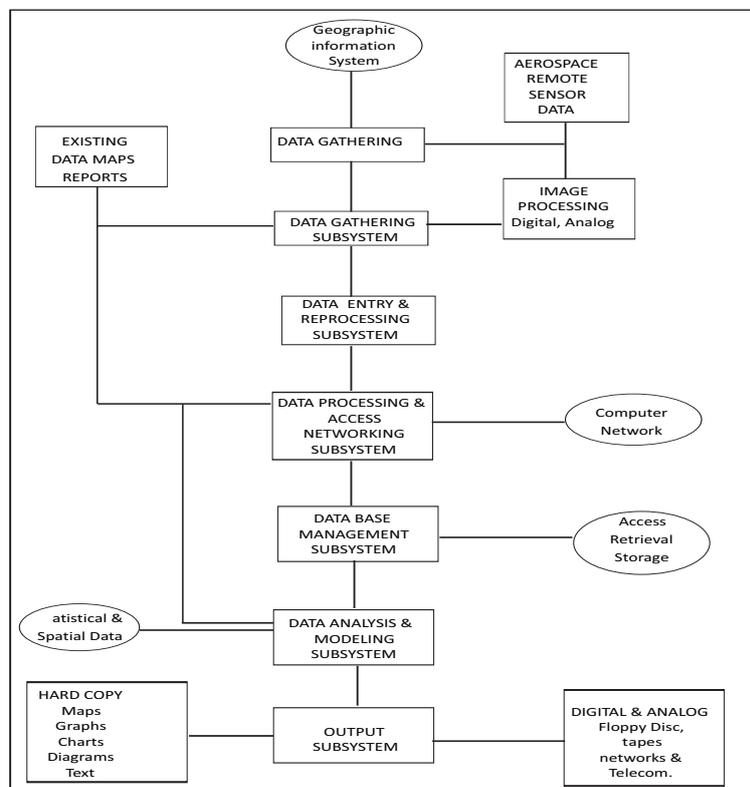
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**Introduction**

The vital place of education in the development effort of nations has never been doubted the world over. Various nations, Nigeria inclusive, have for long been making efforts to develop this sector for optimal development. Although, much has been achieved in this regard, a lot more needs to be done so that the ever- increasing challenges of our time and the times to come can be most effectively confronted.

In Nigeria, for example, the challenges have been that of poverty, disease, hunger, illiteracy and general under development caused by poor planning and

implementation policies. How we are able to tackle these problems will reflect on the value and commitment we attach to education, which according to Baikie (2002) is the biggest industry that touches on every fabric of our human endeavour. The demands for understanding the complexities of the environment and the dynamics of modern society are great and there are few disciplines better placed to respond to these demands such as geography which is the fountain of geo-informatics. The traditional navigation and planning means of the map and geographical information have taken new fundamental importance as digital cartography, remote sensing, geographic information system (GIS), geographic positioning systems and artificial intelligence processes have brought changes in spatial data collection, data visualization, data presentation and usage and decision making (Isi A.1, 2001). Fig. 1. Shows a flow diagram on how information and communication technology (ICT) facilities are integrated into geographic studies.



**Fig. 1: Geo-informatics operational and processing scheme (Bocco and Valenzuela.1988).**

Geography and its allied disciplines adopt and integrate Information and Communication Technology (ICT) facilities in its studies in this digital age. For instance, up to date forest resource, land use and land degradation requires GIS or geo-informatics as an efficient and operational management tool. The military use GIS to determine appropriate battle plans and to organize troop movements. Planning authorities employ GIS to develop growth and development plans and to modify zoning regulations to account for increasing population pressure. Business and telecommunications use GIS to market their product, while the police use GIS to compile information to characterize the movements and operational settings of criminals. Academic Disciplines such as geography, geology and other earth Sciences, biology, architecture, wildlife and public health sciences now use GIS to test hypotheses concerning patterns and diffusions of natural phenomena and disease (DeMers, 1997).

Before applying geo-informatics in geographic studies and environmental management, it is however important that we have a fair knowledge of the fundamental concepts and principles of Information and Communication Technology (ICT). How this is achieved in our secondary schools in a question that remain to be answered.

Education has been identified as a vital tool for any form of development, be it economic, social or political. It is a factor that determines the state of prosperity, sustenance of welfare and security of the people (Bray, 2000, ScoH and Guogh, 2004, Osakwe, 2006). The yearning, needs, aspirations as well as the cultural heritage and environment of any society determine, to a large extent, the kind of knowledge and skills to be acquired (Adebosin, 2004). Therefore, the kind of education operated should bring about skills development as this will enable individuals to live and contribute meaningfully to the overall development of the society in which they live. Since the government regard education (secondary education inclusive) as an instrument par excellence for facilitating and fostering national development as well as economic growth, it is imperative that, the kind of education to be provided should be holistic and wholesome so as to foster a balanced national development. For any nation to boast of educational development, it should be able to boast of a viable and functional information and communication technology (ICT) driven education in its secondary schools, especially in this fast changing world where globalization is the order of the day. Secondary School students in Nigeria, Ebonyi State and Afikpo North in particular, should have access to the enormous wealth of online information and digital communication opportunities. This is however not that case as the use of information and communication technology in the teaching and learning process in Afikpo North L.G.A. especially Geography faces a lot of challenges. For effective implementation of information and communication technology based instruction in secondary schools there is the need for infrastructural and manpower development, elaborate curriculum, proper planning and most importantly adequate funding. The study of geography especially at the higher level has become more complex and sophisticated

with the advent of Remote Sensing, Geographic Information system (GIS) and Geographic Positioning System (GPS). All these requires the knowledge of ICT for practical purposes.

### **STATEMENT OF THE PROBLEM**

Information and communication technology (ICT) is not just the bloom of the education system, but also the primary and secondary options required to improve effective and efficient teaching and learning processes between teachers and students of secondary schools especially in Geography. However, the development of information and communication technology (ICT) in Ebonyi State and Afikpo North Local Government Area in particular is faced with many challenges. Despite the keenness of secondary schools to establish effective ICT education programmes, they are confronted with enormous constraints such as lack of qualified manpower, lack of or inadequate ICT and telecommunication facilities and above all inadequate funding. The premise of this research is to analyse this challenges in order to proffer solutions towards the effective utilization of ICT in the teaching and learning of geography in secondary schools in Afikpo North L.G.A.

### **LITERATURE**

According to the National Policy for Technology (2001) in Nwite (2007), information and communication technology is an equipment or interconnected system of equipments that is used in the automatic acquisition, storage, manipulation, management, control, display, switching and transmission of information (Nwite,2009). Okwor (2002) in Omiko, (2011), described information and communication technology (ICT) as the use of computer and telecommunication technologies in the collection, collation, analysis, processing, manipulation, storage, retrieval, transmission and communication of data in different forms which may include audio, visual and audio visual formats.

The emergence of ICT has changed teaching and learning. ICT has led to e-revolution, upon which other developments occur. According to Olorundare(2006), it is these cyber-educational link that will make it possible for both teachers and learners to work together to share knowledge as they access great amounts of information within the shortest possible time.

According to UNESCO (2002) ICT may be regarded as the combination of informatics technology with other related technology, specifically, the communication technology. ICT consists of the hardware, software, networks and media for the collection, storage, processing, transmission and presentation of information (voice, data text, images) as well as related services (World Bank, 2007).

Furthermore, Abu(2004) saw ICT as the acquisition, processing, storage and dissemination of vocal, textural, pictorial and numerical information by a microelectronic based combination of computer and telecommunication. Okwuanaso (2004) submitted that ICT means, the use of computer system and telecommunication equipments in information processing. It is made up of three

basic components; using computer, transmission of information using telecommunication equipment and dissemination of information in multi-media (internet). Most geographic information is tight to satellite which is connected to the internet system and the computer system.

Information and communication technology (ICT) is not just computer as people always misconstrue it to be, rather has computer as a component as well as telecommunication and internet.

### **Challenges Facing ICT Development in Nigeria Secondary Schools.**

The development of information and communication technology in secondary education is faced with many challenges.

Okorie, Aghabi and Uche, (2008), Bassey, Okodoko and Akpanumo (2008), Observed that lack of computer and computer knowledge, inadequate facilities and equipments of ICT centres, irregular power supply, absence of alternative source of power, expensive rate of ICT facilities, poor internet access, poverty of low bandwidth, low literacy level, poor ICT skills and class size are some of the challenges in the use of ICT in our secondary schools in Nigeria.

Non-availability and inaccessibility of information and communication technology in secondary schools bother the minds of educationists as worrisome trend in education sector in Nigeria. Lack of computer in secondary schools has made the products of the schools half-baked in the current Electronic Internet Age Periods (EIAP), Ojiji, (2012).

According to Law, Yuen, Ki, Li and Lee (1999), recent development across the world have moved much beyond the vision of using ICT as a teaching and learning aids, but of reshaping the delivery of instruction and bring about changes in education. They observed that teachers do not have laptops, LCD projectors, Video recorders, talk books and ICT centre in their houses and schools.

Gbadamosi (2006), noted that inadequate funding is a major challenge because it has negatively affected many areas of education in Nigeria. Areas it has affected include funding of ICT projects, training and retraining of teachers, provision of technology infrastructure, development and maintenance of software packages and electricity. The current level of funding in Nigeria with reduced budgetary allocation to the education sector is a major constraint in the provision of ICT equipment; computers, its accessories, software packages and maintenance. More so, with the slogan of global economic “Melt down” available funds are used to satisfy other vital needs instead of investing them in ICT development in secondary schools.

In secondary schools, there is lack of qualified personnel to manage available systems, develop and use information and communication technology facilities for the teaching learning process. However, in schools where these personnel exist, they lack skills in designing and delivering courses/lectures in electronic formats. Ibadin (2001) argue that there is acute shortage of well-trained ICT handlers, there is need to provide adequate manpower, train and retrain personnel on ICT programme

management, this will help to ensure that these personnel become conversant with ICT techniques and strategies especially in the teaching and learning of Geography.

In every educational system, certain basic facilities are required. The National Policy on Education (2004) posited that the government should provide facilities and necessary infrastructure for the promotion of ICT at all levels of education. However, in secondary schools, there is inadequate or non-existence of physical facilities and material resources such as computer rooms, furniture, electricity or electric generators. Electricity is essential for the operation of all ICT appliances without which they cannot function effectively.

Generally, there is lack of well-articulated educational policy by the Nigeria government. More attention is given to other sectors than to education. This is posing problems to the development of ICT education in secondary schools in the country.

### MATERIALS AND METHOD

The data used in this study is mainly from field studies on issues bordering ICT in secondary schools in Afikpo North Local Government Area (LGA). This field study involved the use of questionnaire, interview and observations. Clustered random sampling technique was used because two samples were taken from each of the five (5) Development Centre in the L.G.A to ensure equal coverage. The questionnaire was designed in five sections and administered to the principals of sampled public secondary schools in the L.G.A. Section A, Sort information on manpower; section B, on infrastructure and resources; section C on ICT facilities; section D on funding and section E on possible solutions to the challenges of ICT in teaching and learning of Geography in the secondary schools.

### PRESENTATION AND DISCUSSION OF RESULTS

**Table 1A: Manpower Situation In our Secondary Schools.**

	Secondary Schools	Total Enrolment	Total Number of Teachers	Total Number Trained ICT Teachers	Ratio of ICT Teachers to Students
1	Govt College Afikpo	1286	64	5	1:257
2	Ibiam Girls Sec School	1324	56	4	1:331
3	Amasiri Secondary School	242	26	1	1:242
4	Ekuma-ubaghala Sec Sch	1208	34	2	1:604
5	Akpoha Technical	348	24	-	0:362
6	Community Sec SchIbii	116	16	-	0:116
7	Oziza Comm. Sec School	326	24	-	0:348
8	Holy Child Sec School	864	44	3	1:288
9	Unwana Sec School	651	32	-	1:651
10	Enohia Secondary School	336	28	-	0:336
	Total	6737	352	15	1:481
	Average	674.0	35.0	2.0	
	% of schools with one or more ICT Teachers			50%	

Source: Author's Field work, 2014.

Table.1A: Shows that there are 6737 students enrolled in the sampled secondary schools in Afikpo North L.G.A. The sampled secondary schools have a total of 352 teachers but only 15 trained ICT teachers, this gives an average of one ICT teacher per secondary school assuming they are distributed evenly. 50% of the sampled Secondary Schools in Afikpo North L.G.A do not have ICT trained Teachers. The ratio of ICT teachers to students in the sampled Secondary Schools is even more disturbing. The sampled schools have a ratio of 1:481 that is one teacher per 481student. Five or 59% of the sampled secondary schools do not have ICT trained teacher. For those with ICT trained Teachers, Government College Afikpo has a ratio of 1:604, the implication of all this is quite obvious. Teaching and learning with ICT facilities cannot be effective and efficient more particularly in geography.

In the sampled secondary schools in Afikpo North L.G.A, there is a very serious inadequate qualified manpower to manage the available system and use ICT for the teaching and learning process. Ibadin (2001) argued that there is acute shortage of well-trained ICT handlers. There is the need therefore to provide adequate manpower, train and retrain personnel on ICT programme management. This will help to ensure that these personnel become conversant with ICT techniques and strategies.

**Table 1B: Qualifications of ICT Teachers**

	<b>SECONDARY SCHOOL (S)</b>	<b>OND</b>	<b>NCE</b>	<b>HND</b>	<b>B.A.,BSC.BED</b>
1	Government College Afikpo	-	2	1	2
2	Ibiam Girls Secondary Schools	-	1	1	2
3	Amasiri secondary School	-	-	-	1
4	Ekumabaghala Secondary School	-	1	1	-
5	Akpoha Technical	-	-	-	-
6	Community Secondary School	-	-	-	-
7	Oziza Community School	-	-	-	1
8	Holy Child Secondary School	-	1	1	-
9	Unwana Secondary School	-	-	-	-
10	Enohia Secondary School	-	-	-	-
	<b>Total</b>	-	5	4	6

Source: Author's Field Work, 2014

The qualification of ICT trained Teachers is shown in table 4.1b. out of the 15 trained ICT teachers in the sampled secondary schools in Afikpo North L.G.A., 5 has NCE, 4 has HND while 6 has either B.A., BSc or B-ED. The issue here is that most of this high level manpower (HND and BED) are Youth Corpers who have only one year of service year to leave the school. By the time they leave the vacuum remains.

**Table 2: Showing the available ICT Infrastructure and Resources**

	Secondary School	Computer Laboratory	Use of Classroom	Electronic Library	Computer Tables	Lab Seats	Chalk Board
1		1	-	-	1	1	1
2	Ibiam Girls Sec. School	1	-	-	1	1	1
3	Amasiri Sec. Sch.	-	1	-	-	-	1
4	Ekuma-Ubaghala Secondary School	-	1	-	-	-	1
5	Akpoha Technical	-	-	-	-	-	-
6	Community Sec. School Amasiri	-	-	-	-	-	-
7	Oziza Community Secondary School	-	-	-	-	-	-
8	Holy Child Sec. Sch.	1	-	-	1	1	1
9	Unwana Sec. School	-	-	-	-	-	-
10	Enohia Sec. School	-	-	-	-	-	-
	Total	3	2	0	3	3	5
	percentage	30%	20%	0%	30%	30%	50%

Source: Author's Field Work, 2014

Table 2: Shows the availability of infrastructure and resources in Secondary Schools to enhance the teaching and learning with ICT. The table indicates that only 30% of the sampled secondary schools in Afikpo North L.G.A. has computer Laboratory while 20% use ordinary classroom for their teaching. No secondary school in the L.G.A. has an electronic Library. 30% of the sampled schools indicated that they have computer tables and computer seats. 50% of the schools indicated that they use chalk board for their teaching.

**Table 3: Showing ICT and telecommunication facilities in our schools.**

	Secondary Schools	Computer s	Internet Facilitie s	Satellit e Dish	Power Point Projector	Power Sourc e	Printe r	Photo Copier s	Modern s	Flash Drive s
1	Govt. College	18	1	1	-	1	1	1	-	-
2	Ibiam Girls Sec. Sch.	24	1	1	-	1	2	1	-	-
3	Amasiri Sec. Sch.	4	-	-	-	-	-	-	-	-
4	Ekuma-ubaghala Sec. Sch.	2	-	-	-	-	-	-	-	-
5	Akpoha Tech.	2	-	-	-	-	-	-	-	-
6	Comm. Sec. Sch. Amasiri	-	-	-	-	-	-	-	-	-
7	Oziza Comm. Sec. Sch.	-	-	-	-	-	-	-	-	-
8	Holy Child Sec. Sch.	14	1	1	-	1	1	1	-	-
9	Unwana Sec. Sch.	2	-	-	-	-	-	-	-	-
10	Enohia Sec. Sch.	-	-	-	-	-	-	-	-	-
	Total	66	2	3	00	3	4	3	00	00

Source: Author's Field Work, 2014.

The available ICT and telecommunication facilities that could encourage ICT education in the L.G.A. is shown in table 3. The table shows that for all the sampled secondary schools in Afikpo North L.G.A. there are only 66 computers against a total student's enrolment of 6737. Only 2 of the schools have internet facilities while 3 schools or 30% of the schools have satellite dish. None of the sampled secondary schools have power point projector. 3 or 30% of the schools have power source which is mainly Enugu Electric Distribution Company (EEDC) which is not steady and reliable. There are a total of 4 printers in all the sampled secondary schools and only 3 photocopiers. None of the sampled schools have modern or flash drives as indicated in table 3.

In every education system, certain basic facilities are required. The National Policy on Education (2004) posited that the government should provide facilities and infrastructure for the promotion of ICT at all levels of education. However, in secondary schools in Afikpo North L.G.A., there is inadequate or non-existence of physical facilities and material resources such as computer laboratory, furnitures, power source and other as can be seen in table 2 and 3.

**Table 4: FUNDING FOR ICT PROJECTS**

	Secondary School	YES	NO
1	Government College	v	
2	Ibiam Girls Sec. Sch.	V	
3	Amasiri Sec. Sch.	V	v
4	Ekuma-ubaghala Sec. Sch.	V	v
5	Akpoha Technical	v	v
6	Community Sec. Sch.	V	v
7	Oziza Comm. Sec. Sch.	V	v
8	Holy Child Sec. Sch.	v	
9	Uwana Sec. Sch.	V	v
10	Enohia Sec. Sch.	V	v
	Total	3	7
	Percentage	30%	70%

Source: Author's Field Work, 2014.

If yes, to the tune of how much?

- |              |           |             |           |
|--------------|-----------|-------------|-----------|
| (a) N 00     | N 50000   | (b) N 5000  | N 100,000 |
| (c) N 10000  | N 150,000 | (d) N 15000 | N 20,000  |
| (e) N 20,000 | N 250,000 |             |           |

Table 4: Shows the response in the funding of ICT project in the sampled secondary schools in Afikpo North L.G.A. The table shows that only 3 schools or 30 % of the school in the area indicated that they had funding for ICT Project. 7 sampled schools or 70% of the secondary schools indicated that they do not have any funding for ICT project. The principals who indicated funding did not state the amount.

Glsadamosi (2006), notes that inadequate funding is a major challenge because it negatively affects many area of education in Nigeria. In Afikpo North L.G.A., the area that it has affected include funding of ICT projects, training and retraining of teachers, provision of technological infrastructure and power supply. In Nigeria and Afikpo North L.G.A. in particular, available funds are used to satisfy other vital needs instead of investing them in ICT development in our secondary schools.

**Table 5: Responses to possible solutions**

Item	X	D
Employ more trained manpower	3.65	S
Provide the infrastructure & resources	4.21	S
Provide ICT & Telecommunication facility	4.14	S
Provide Funds for ICT Projects	3.84	S
Overall mean	3.96	S

Source: Field work 2014.

Table 5: Shows that the respondents mean score ranged from 3.65 to 4.21 for the possible solutions to the challenges of ICT in teaching and learning of Geography in the secondary schools in Afikpo North L.G.A. These scores are therefore above the critical mean score of 3.0 set for the study. The table also shows that the respondents overall mean score of 3.96 was also above the critical mean. This reveals that all the items are possible measures in providing solution to the challenges of ICT in teaching learning of Geography in Afikpo North L.G.A. The provision of infrastructure and resources and ICT and telecommunication facilities had the highest of 4.21 and 4.14 respectively.

### RECOMMENDATIONS

- It is worthy to note that successful use of ICT as an enhancement and catalyst to secondary school education depends to a large extent, on the supportive policy of the three tiers of government, the ministry of education and other stake holders in the education industry. Therefore, the following recommendations are made to promote and improve the development of ICT education particular in the teaching of Geography in secondary schools in Afikpo North L.G.A., Ebonyi State and Nigeria at large.
- The level of literacy in ICT Should be enhanced by creating awareness through the media and by developing positive attitude towards the application of ICT in secondary schools to improve teaching and learning process.
- Teachers in secondary schools should be armed with appropriate and requisite

skills in ICT so as to be able to impart these skills in the students and especially help in reducing ICT related problems.

- The government should make the teaching of ICT a free and compulsory part of the school curriculum so as to provide students with practical and functional knowledge of computers, the internet and associated areas of ICT. This should be accompanied with essential instructional and infrastructural support and adequate training of skilled manpower.
- The government should pay particular attention to the source of electric power supply by overhauling the energy sector in order to play its crucial and supportive role in the development of ICT in secondary schools. This is because ICT operations require constant electricity for its maximum use.
- Adequate funds should be allocated and disbursed to secondary schools for proper financing and maintenance of ICT appliances.
- Generally, there is the need for the Non-Governmental Organisations (NGOs) and philanthropists to invest in the development of ICT in secondary schools by providing adequate human and material resources.

## CONCLUSION

This study highlights the fact that public secondary schools in Afikpo North need ICT education, especially in contemporary world where greater emphasis is being placed on industrial and technological development. The possession of knowledge and competence in ICT is imperative for secondary school system in the teaching-learning process of secondary schools. Information and communication technology is a powerful tool for enhancing practical and functional geography education in secondary schools. Students should be taught to utilize electronic tools (computers, internet connection, skills and other ICT equipment) and other ICT associated facilities in study of physical and human features in our environment. Therefore, if the government, school authorities and other stakeholders in education can view the acquisition of ICT skills as worthwhile, the teaching-learning process in geography will be more effective. This will promote the achievement of the goals and objectives of secondary school education.

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