

## **Role of Information Communication Technology in Enhancing Sustainable Developmental Goals in Secondary Schools in Rivers State**

Dr. NWABUEZE, IFEANYICHUKWU EMMANUEL  
NWANKPA, LAWRENCE EZEWOKE (M.ED)  
UBAKANMA NKECHI N.

Department of Educational Management  
Faculty of Education  
University of Port Harcourt

### **Abstract**

*The study examined the role of Information Communication Technology (ICT) in enhancing sustainable development goals in secondary schools in Rivers State. Two research questions and two corresponding null hypotheses in line with two objectives guided the study. The study was anchored on the theory of access to information propounded by Freeze (1971). This study adopted a descriptive survey design with the population of all the 268 public secondary schools across the 23 Local Government Areas in Rivers State. Stratified random sampling technique was used to draw a sample size of 131 principals representing 53% of the population. A self designed questionnaire tagged "Role of Information Communication Technology in Enhancing Sustainable Development Goals in Secondary Schools in Rivers State Questionnaire (RICTESDGSSQ)" was used for data collection. Test-retest technique was used to determine the reliability of the instrument which yielded a coefficient of 0.73 through Pearson Product Moment Correlation Coefficient which is high, reliable and adequate for this study. Mean and rank order were used in answering the research questions while z-test statistics was used in testing the hypotheses. The findings revealed among others; establishment of ICT driven skills and global partnership with United Nations and others donor agencies will enhance in the achievement of SDGs in secondary schools. Based on the findings, the study recommended that government and other stakeholders in education should through in-*

*service training such as workshops and seminars enlighten staff on the use of modern ICT facilities to improve their productivity in order to achieve sustainable development goals.*

**Keywords:** Information Communication Technology, Sustainable Development Goals (SDGs), Enhancing.

## **INTRODUCTION**

The importance of Information and Communication Technology (ICT) in the development of any nation socially, politically and educationally cannot be overemphasized. In recognition of the potentials of ICT, Zurich (2013) observed that Information and Communication Technology (ICT) made our work more sustainable: saving energy and material resources by creating more value from less physical input, increasing quality of life forever more people without compromising the future generation ability to meet their needs.

It is also a known fact that the development of any nation is usually influenced by the degree and extent of the socio-economic improvement that are brought to bear through the introduction of science, technology and mathematics. Bayah and Farmation (2012), cited in Nwabueze and Ozionko (2011) have it that sustainable development leads to fulfillment of societal ideas considered relevant to the needs and aspirations of the society. Information technology means set of tools that helps you work with information and perform task related to information processing. Hang and Keen in Nwogu (2007) thought the term ICT originated as information technology until recently when it was though that communication should be an integral part of information technology because of its relevance and significance. Based on United Nations, the World Commission on Environment and Development (Brundtland Commission 1987) defined sustainable development as a situation where current generations meet their needs without compromising the ability of future generations to meet theirs. Also, Hughes and Johnston (2005) recognized that sustainable development is predominantly much about social equality for current generations as about efficient resources use and conservation of natural resources for future use.

Through information and communication, technology is associated with various challenges, it no doubt plays a significant role in sustainable development especially in Rivers State and beyond.

Federal Republic of Nigeria (FRN) (2004) defined secondary school education as the education children receive after primary education and before the tertiary stage. Secondary school education serves two purposes; preparing individuals for higher education and preparation of students for functionality and useful living in the society. In Nigeria, the secondary level of education is at the second stage of the education ladder. In secondary schools, students are expected to spend 6years in accordance with laid down rules and regulations of the Universal Basic Education (UBE) which entitles students to free education up to the junior secondary level.

The introduction of Information and Communication Technology (ICT) into educational practices has widened the scope of opportunities in secondary schools for sustainable development (Nwabueze, 2010). ICT usage in secondary school has a lot to contribute in enhancing the sustainable development goals through global partnership for secondary school development. Secondary schools can collaborate with partners elsewhere through ICT. ICT would promote the opportunity to mirror educational systems elsewhere through information generation and exchange on areas like training and retraining of teachers, equipping them with basic modern technology, choice of content, and distribution of teaching and learning materials as well as sharing information and linking other development partners. This study therefore is on role of information communication technology in enhancing sustainable development goals in secondary schools in Rivers State.

### **Statement of the Problem**

The achievement of the MDGs in Africa, and Nigeria in particular remains an unfinished business which needs further attention with the implementation of the sustainable development goals. Nigeria and the various states that make up the federation still trail behind. The Rivers State education sector in the attempt towards actualizing the SDGs bedeviled by myriad of problems, which ranges from poverty, shortage of infrastructural facilities, inhibition of the access to basic education by gender issues, religious and social cultural beliefs, wide

differences still persists in terms of educational standards, the emphasis on cognitive domain at the expense of technical vocational education, high rate of out of school children and poor governmental efforts towards achieving the SDGs.

Also, observation has shown that if ICT is not effectively integrated into the school system, the result would be that achieving the sustainable development goals may become a mirage and the desire to stay afloat global trends, promote global partnership amongst nations may become unrealistic .Hence, this study is an attempt toward examining the role of ICT in enhancing sustainable development goals in Rivers State.

### **Aim and Objectives of the Study**

The aim of this study is to examine the role of ICT in enhancing sustainable development goals in secondary schools in Rivers State. Specifically, the objectives were to:

1. determine the benefits of ICT in enhancing sustainable development goals in secondary schools in Rivers State.
2. identify the factors that can hinder the role of ICT in enhancing SDGs in secondary schools in Rivers State.

### **Research Questions**

This study was guided by the following research questions.

1. What are the benefits of ICT in enhancing sustainable development goals in secondary schools in Rivers State?
2. What are the factors that can hinder the role of ICT in enhancing sustainable development goals in secondary schools in Rivers State?

### **Hypotheses**

The study was anchored on the following hypotheses.

1. There is no significant difference between the mean ratings of male and female principals on the benefits of ICT in enhancing sustainable development goals in secondary schools in Rivers State.
2. There is no significant difference between the mean ratings of urban and rural principals on the factors that can hinder the

role of ICT in enhancing sustainable development goals in secondary schools in Rivers State.

## **THEORETICAL FRAMEWORK**

This study is anchored on the theory of distribution of access to information propounded by Freeze (1971), as cited in Kpee (2015). This theory states that information should be made available to all users of such information as to keep them relevant and on track with recent development. The theory points out to the fact that the recent craze for information the world over, has given rise to the opening of info-net way and introduction of high and smart communication technologies to facilitate and enhance the speed of information flow. Diverse approaches and programmes have been developed to maintain the encoder-decoder relationship. The most effective and efficient of all is the Information and Communication Technology (ICT), otherwise referred to as the information gate way. Bandele (2006) described ICT as a revolution that involves the use of computers, internet and other telecommunication technology in every aspect of human endeavour.

The theory is relevant to the study in that the theory supports equity in the distribution of information which is a necessary condition to keep up with current happenings and development as they occur. The theory views information and communication as a medium of information and idea exchange which is necessary condition for development.

Similarly, ICT is viewed as a potent tool for achieving development in any society through education. The blend of information and communication technology with education will arm an independence and self sufficiency. However, in the march towards achieving the Sustainable Development Goals the role of ICT cannot be over emphasized. ICT usage in secondary schools will create awareness amongst students, policy makers and other stakeholders on the benefits of achieving the Sustainable Development Goals. It will promote platforms for partnership. Ideas and information exchange amongst individuals and nations around the world.

### **Benefits of ICT in Enhancing Sustainable Development Goals in Secondary Schools in Rivers State**

In recent times, ICT is viewed as a potent tool for achieving development in any society through education. Ukpe (2013) argued that the need for ICT in Nigerian schools generally and Rivers State in particular cannot be overemphasized, as in this technological – driven age, everyone and organization require ICT competence to survive. “Certainly, application of ICT plays a key role in facilitating learning and enhancing the quality of education and radically redesigning of the education curricular and sector through the adoption of ICT as a viable option for economic growth in Nigeria”. The blend of information and communication technology with education, arms a society with the capacity for achieving sustainable development. Thus, the need for integrating Information Communication Technology in our educational system in fact cannot be overemphasized. Unwin (2009) contends that “ICT can be a catalyst by providing tools which teachers use to improve teaching and by giving learners access to electronic media that makes learners’ concepts clearer and more accessible.

The educational system cannot afford to compromise the benefits of information and communication technology usage, since according to Umoren (2006), the introduction and the use of ICT will serve a dual purpose, for acculturation and for more efficient instruction. For the purpose of acculturation, a learner who is being trained to meet the demands of a technologically inclined world must be given some training at an early stage. This training would ensure that the learner integrates perfectly and he/she is not technologically unbalanced. Agugu and Wakili (2015) in their study on availability and utilization of ICT facilities for teaching vocational and technical education revealed the benefits of ICT usage in technical college as making teaching and learning interesting, helping teacher to be up to date in enhancing the quality of both teachers and students. Vikoo (2013), outlined the benefits of ICT in the teaching and learning of sciences as;

1. Motivating the student to learn
2. Facilitates the acquisitions of basic skills.
3. Encourages active learning amongst students
4. Promotes collaborative learning amongst students.

5. Enhancing integrative learning
6. Creates a platform for evaluating learning.

Generally, when ICTs are fully utilized they enable new ways of teaching and learning rather than allowing students do what they already used to, but doing it in better way (Vikoo, 2013).

### **Factors that can hinder the role of ICT in enhancing sustainable development in secondary schools in Rivers State**

The Nigerian state is plagued by a lot of challenges. These challenges range from limited economic diversification, insufficient financial resources for investment in development activities, corruption and embezzlement, infrastructural and technological deficit, humanitarian crisis in the North (Boko Haram activities in the North, East, and Herdsmen killings in the North Central), military, youth restiveness and cultism in the Niger Delta weak public sector institutional capacities, lack of coherent comprehensive and consistent data, amongst others have been partly known to be the reasons for the failure of the Millennium Development Goals. These problems however still persistent and constitutes a major “cog in the wheels” of the nations journey towards achieving sustainable development goals. However, those outlined problems confronting the Nigerian state, also trickles down to the various states that make up the federation, and Rivers State not left out.

Inadequate funding of SDGs activities constitutes a major challenge confronting the implementation of government policies and programmes in Nigeria. The SDGs require huge financial outlay. The rough calculations have put the cost of providing social safety need to eradicate extreme poverty globally at about \$66 billion a year, while annual investments to improve infrastructure (water, agriculture, transport and power) could be up to a total of \$7 trillion all over the world. However, poor funding has been identified as a major impediment in the implementation of the SDGs at all levels of government in Nigeria. Also, this complacency in terms of funding of the SDGs can also be linked to the failure of government and its agencies to prioritize the SDGs. As noted by Amesi and Giami (2018) the Nigerian state has always failed to meet the UNESCO recommendations that the least 26 percent of the national budget

must be committed to education. This however, poses a great threat towards achieving education specific SDGs.

## **METHODOLOGY**

This study adopted a descriptive survey design. The population of the study comprised all the 268 public secondary schools across the 23 Local Government Areas in Rivers State. A stratified random sampling technique was used for this study. The sample of the study was 131 principals representing 53% of the population. The instrument used for data collection was 12 item questionnaire titled: “Role of Information Communication Technology in Enhancing Sustainable Development Goals in Secondary Schools in Rivers State Questionnaire” (RICTESDGSSQ). The instrument was validated by experts in the field of Educational Management and Measurement and Evaluation of the University of Port Harcourt. Test-retest technique was used to determine the reliability of the study using data from the pilot study carried out on 20 participants outside the sample size. Reliability index of 0.73 was established using Pearson Product Moment Correlation Coefficient which is high, reliable and adequate for the study. The instrument was administered personally by the researcher and all the copies distributed were retrieved without loss. Responses to the research questions were analyzed using tables, mean of 2.50 and above were seen as agreed while below 2.50 were seen as disagreed. Z-test was used to test the hypotheses at 0.05 alpha levels of significance.

The weighted mean are as follows:

SA = 4 points

A = 3 points

D = 2 points

SD = 1 point

Thus  $4 + 3 + 2 + 1 = \frac{10}{4} = 2.5$



## RESULTS

**Research Question 1:** What are the benefits of ICT in enhancing sustainable development goals in secondary schools in Rivers State?

**Table 4:1: Weighted mean, standard deviation and rank order statistics of male and female principals on the benefits of ICT in enhancing sustainable development goals in secondary schools in Rivers State.**

S/No	Items	n = 25				n = 106			
		Male principals $\bar{X}$	SD	Remarks	Rank order	Female principals $\bar{X}$	SD	Remarks	Rank order
1.	ICT arms a society with the capacity for achieving sustainable development	3.04	1.74	Agreed	1 <sup>st</sup>	2.98	1.73	Agreed	1 <sup>st</sup>
2.	ICT provides tools which teachers use to improve teaching	2.9	1.70	Agreed	3 <sup>rd</sup>	3.03	1.74	Agreed	3 <sup>rd</sup>
3.	ICT gives learners access to electronic media that makes learning concepts clearer and more accessible	2.86	1.69	Agreed	5 <sup>th</sup>	2.91	1.71	Agreed	5 <sup>th</sup>
4.	ICT provides platform for training teachers and school administrators	3.0	1.73	Agreed	2 <sup>nd</sup>	2.97	1.72	Agreed	2 <sup>nd</sup>
5.	ICT inhibits access to timely information to happenings around the world, in areas of research, development and comparative studies.	1.47	1.21	Disagreed	6 <sup>th</sup>	1.48	1.23	Disagreed	6 <sup>th</sup>
6.	ICT enables the international community to share vital information of best practice	2.94	1.72	Agreed	4 <sup>th</sup>	2.95	1.72	Agreed	4 <sup>th</sup>
	<b>Grand mean</b>	<b>2.70</b>	<b>1.65</b>	<b>Agreed</b>		<b>2.72</b>	<b>1.64</b>	<b>Agreed</b>	

From the table above, items 1, 4, 2, 6 and 3 respectively with the mean scores of 3.01, 2.99, 2.97, 2.95 and 2.89 were accepted, the

respondents agreed that ICT arms a society with the capacity for achieving sustainable development, ICT provides tools which teachers use to improve teaching, ICT gives learners access to electronic media that makes learning concepts clearer and more accessible, ICT provides platform for training teachers and school administrators and ICT enables the international community to share vital information of best practice. While item 5 with the mean of 1.47 was rejected because its criterion mean falls below the mean of 2.50 in the final analysis.

**Research Question 2:** What are the factors that can hinder the role of ICT in enhancing sustainable development goals in secondary schools in Rivers State?

**Table 4.2: Weighted mean, standard deviation and rank order statistics of urban and rural principals on the factors that can hinder the role of ICT in enhancing sustainable development goals in secondary schools in Rivers State.**

S/No	Items	n = 64			n = 67				
		Urban principals X	SD	Remarks	Rank order	Rural principals X	SD	Remarks	Rank order
7.	Inadequate funding	3.05	1.75	Agreed	1 <sup>st</sup>	2.95	1.72	Agreed	1 <sup>st</sup>
8.	Low level of economic diversification	1.54	1.24	Disagreed	6 <sup>th</sup>	1.65	1.28	Disagreed	6 <sup>th</sup>
9.	Ignorance and illiteracy	2.98	1.73	Agreed	3 <sup>rd</sup>	2.92	1.71	Agreed	3 <sup>rd</sup>
10.	Unreliable data base mechanism	2.6	1.61	Agreed	3 <sup>rd</sup>	2.93	1.71	Agreed	3 <sup>rd</sup>
11.	Infrastructural and technological deficit	3.01	1.74	Agreed	2 <sup>nd</sup>	2.92	1.71	Agreed	2 <sup>nd</sup>
12.	Humanitarian crisis	2.87	1.69	Agreed	2 <sup>nd</sup>	2.98	1.73	Agreed	2 <sup>nd</sup>
	<b>Grand mean</b>	<b>2.68</b>	<b>1.66</b>	<b>Agreed</b>		<b>2.73</b>	<b>1.65</b>	<b>Agreed</b>	

From the table 2 above, items 8, 11, 9, 10 and 12 with the mean of 3.05, 2.97, 2.95, 2.93 and 2.77 respectively were all accepted, the respondents agreed that inadequate funding, low level of economic diversification, ignorance and illiteracy, unreliable data base mechanism and infrastructural and technological deficit are the factors that can hinder the role of ICT in enhancing sustainable development goals in secondary schools in Rivers State. While item 2 with the mean of 1.54 was rejected because its criterion mean falls below the mean of 2.50 in the final analysis.

### Test of Hypotheses

The null hypotheses formulated for the study were tested by the means of z-test analysis, which is a test of difference of mean.

**H<sub>01</sub>:** There is no significant difference between the mean ratings of male and female principals on the benefits of ICT in enhancing sustainable development goals in secondary schools in Rivers State.

**Table 4.3: Summary of z-test analysis on the mean ratings of male and female principals on the benefits of ICT in enhancing sustainable development goals in secondary schools in Rivers State**

Category	N	X	SD	Level of sig	Df	z-cal	z-crit	Decision
Male	106	2.72	1.65					
Female	25	2.70	1.64	0.05	129	0.069	+1.96	Not significant

The table showed that the calculated z is +1.96 at the degree of freedom of 129. Since the calculated z is less than the critical z, the null hypothesis was not rejected, which means, there is no significant difference between the mean ratings of male and female principals on the benefits of ICT in enhancing sustainable development goals in secondary schools in Rivers State.

**H<sub>02</sub>:** There is no significant difference between the mean ratings of urban and rural principals on the factors that can hinder the role of ICT in enhancing sustainable development goals in secondary school in Rivers State.

**Table 4.4: Summary of z-test analysis on the mean ratings of urban and rural principals on the factors that can hinder the role of ICT in enhancing sustainable development goals in secondary schools in Rivers State**

Category	N	X	SD	Level of sig	Df	z-cal	z-crit	Decision
Urban	64	2.77	1.66					
Rural	67	2.77	1.65	0.05	129	0.14	+1.96	Not significant

The table showed that the calculated z is 0.14 and the table z is 1.96 at the degree of freedom of 129. Since the calculated z is less than the critical z, the null hypothesis was not rejected, which means, there is no significant difference between the mean ratings of urban and rural

principals on the factors that can hinder the role of ICT in enhancing sustainable development goals in secondary schools in Rivers State.

## **DISCUSSION OF FINDINGS**

### **Benefits of ICT in Enhancing Sustainable Development Goals**

It was generally accepted that some of the benefits of ICT in enhancing sustainable development goals in secondary schools in Rivers State include among others; ICT arms a society with the capacity for achieving sustainable development, ICT provides tools which teachers use to improve teaching, ICT gives learners access to electronic media that makes learning concepts clearer and more accessible, ICT provides platform for training teachers and administrators and ICT enables international community to share vital information of best practice. This finding is in line with Ukpe (2013) who opined that ICT plays a key role in facilitating learning and enhancing the quality of education. He further stated that the blend of information and communication technology with education, arms a society with the capacity for achieving sustainable development goals.

### **Factors that can hinder the role of ICT in enhancing suitable development goals in secondary schools in Rivers State.**

The result of the analysis signified that inadequate funding, low level of economic diversification, ignorance and illiteracy, unreliable data base mechanism and infrastructural and technological deficit are some of the factors that can hinder the role of ICT in enhancing sustainable development goals in secondary schools in Rivers State. This finding agreed with Acharu and Solomon (2014) who asserted that infrastructural deficit is linked to poor funding by government. They further noted that poor funding has been identified as a major impediment in the implementation of the SDGs at all levels of government in Nigeria.

## **CONCLUSION**

The SDGs is a global effort by nations of the world to escape the traps of poverty and enjoy the benefits of sustainable development.

Furthermore in achieving this however, ICT through education offers a variety of support. Inadequate funding, inequality and unequal access to education and unreliable data mechanism are factors that can hinder the achievement of the SDGs. However, establishment of ICT driven skills acquisition centers, and global partnership with United Nations and other donor agencies will promote the achievement of the SDGs in our secondary schools.

## **RECOMMENDATIONS**

Based on the findings of the study, the researchers offered the following recommendations for implementation.

1. The Sustainable Development Goals requires adequate funding to be achieved effectively. Funds are necessary to provide the appropriate and adequate infrastructural facilities needed in schools.
2. Government and other stakeholders in education should through in-service training such as workshops and seminars enlighten staff on the use of modern ICT facilities to improve their productivity in order to achieve the SDGs.

## **REFERENCES**

1. Acharu, S.T. & Solomon, E. (2014). Influence of infrastructure on the teaching and learning of office education in polytechnics – ABEN conference proceedings (1) 73 – 83.
2. Adieme, F.G. (2011). Implementation of the Millennium Development Goals (MDGs) in the Management of Universal Basic Education in Rivers State. (Unpublished Doctoral Thesis. Department of Educational Management, University of Port Harcourt, Rivers State, Nigeria.
3. Bandele, S.O. (2006). Development of Modern ICT and Internet System. In A.A. Agagu (Eds.) Information and Communication Technology and Computer Application. Abuja: Parot Press.
4. Brundtland Commission, (1987). Development Report on Sustainable Development, New York, NY.
5. Federal Republic of Nigeria, FRN (2014). National Policy on Education (6<sup>th</sup> ed.) Lagos: NERDC.
6. Kpee, G.G. (2015). Theories and theoretical frameworks: The Researchers' Handbook. Owerri: Uzopietro.

7. Nwabueze, A.I. (2010). Achieving MDGs through ICT Usage in Secondary Schools in Abia State (Unpublished M.Ed dissertation, Department of Educational Management, University of Port Harcourt, Nigeria).
8. Ukpe, E. (2013). ICT in Education: Catalyst for economic growth in Nigeria. *International Journal of Education and Research*. 1 – 10.
9. Umoren, G. (2006). Information and communication technology and curriculum. *Nigerian Journal of Curriculum Studies*. 2 (1), 57 – 83.
10. Vikoo, B. (2013). Why the computer is not dominating schools in Nigeria: A failure of policy or a failure of practice? *African Journal of Educational Research and Management Studies*, 5. 202 – 217.
11. Nwabueze, U. & Ozionko O. (2011). Assessment of ICT usage among secondary schools computer studies teachers and students in Nsukka Education Zone (NEZ) of Enugu State, Nigeria. 4<sup>th</sup> International Conference on Education,=. 1 – 29.
12. Nwogu, J.E. (2007). Use and evaluation of internet resource: A case of the academic community in Imo State, Nigeria. *African Journal of Education and Research* 2 – 10.