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**STATE OF ICT EDUCATION IN NIGERIA: IMPLICATIONS
FOR ACTUALIZATION OF VISION 20: 2020.**

OLADAYO, O. T*

*Department Of Educational Psychology,
Guidance & Counselling, University Of Port Harcourt Rivers State

Abstract

Information and Communication Technology crucial to the country's achievement of Vision 20: 2020. Its positive effects and impact cut across all sectors in Nigeria. The Nigeria's Vision 20: 2020 recognized the important role of ICT in education towards fast tracking its achievements to make Nigeria one of the 20th economies of the world. The objectives of ICTs in the Nigerian Vision 20: 2020 is well articulated at making the education sector ICT driven. However, the state of ICT in Nigeria needs to be examined to determine to what extent the ICT objectives can be achieved within the timeframe. This is to enable the government and all concerned to reappraise the implementation and work towards achievement building human capital development in the education sector.

Introduction

Information and Communication Technology Education is evolving from recent policies and strategies to achieving its desired goal of ideal placement and application to make Nigerian education at par with other technologically based countries of the world. The revolutionary impact of ICT in Nigeria education cannot be overemphasized considering its vast and enormous effects in fostering sustainable national development and qualitative education which is recognized worldwide.

The Nigerian Vision 2020 (2010), states that education constitutes the core of human development. It further stated that “education is the most crucial instrument for empowering young people with knowledge and skill which in turn provide them access to productive employment in future”. Ahmed (2010), enumerated the challenges of globalization through ICT and state that Nigeria as a nation must have a rethink on how we view education. In the light of the profound impact of globalization as the world is turning into a global, knowledge-based society, where ubiquitous and ever-opening access to information creates a need for skilled workers who can transform information to meaningful, new knowledge.

The Federal Ministry on Education (2009), in its Roadmap for the Nigeria Education Sector emphasized that Nigeria’s ability to realize its vision of becoming one of the twenty largest economies in the world by the year 2020 is largely dependent on its capacity to transform its population into highly skilled and competent citizens capable of competing globally.

Vision 20: 2020 on ICT in Nigerian Education

The Nigeria Vision 20: 2020 Implementation Plan is targeted towards achieving some set objectives by the year 2013 in its medium term objectives and targets aim at promoting Information and Communication Technology Capabilities at all levels. Its policy statements among was to “sustain human capacity development: creation of knowledge or technical workers is important for both the production and use of ICT” as it relates to Nigerian education.

Among the targets of ICT in Nigeria Vision 20: 2020 in relations to education in Nigeria are:

- ❖ Attain 55% coverage of the fibre-optic backbone infrastructure of the country from current coverage of about 10% by 2013. This it is aimed at ensuring: percentage increase in Internet access, computer density, teledensity and percentage increase in ICT penetration.
- ❖ Engender rapid ICT penetration and diffusion for efficient and affordable service across the socio-economic sectors of Nigeria. Its strategies are to:
 - Facilitate increased awareness of potential of ICT by literate people in rural and urban areas of the country
 - Promote the personal acquisition and ownership of computers by pupils, students, employees and households.

The targets are to achieve computer density of 1:30 national, 1:10 for rural and 1:5 for urban primary and secondary schools, 1:3 for tertiary institutions; and attain tele-density of 65% percent from the present 47 percent by 2013.

- ❖ Develop globally competitive indigenous human capital and Knowledge based Products and Services in targeted areas of ICT (software, hardware, network, card technologies, security/biometrics, web and digital content development, etc). Its strategy which focus on its diffusion in education is:
 - Put in place a functional educational curricula for ECCDE, Primary, secondary and tertiary levels with appropriate ICT skills content and is ICT driven content philosophy by 2010;
 - Enact enabling legislation for e-Government, e.g. Digital Signature Act.
 - Incentivize the commercial production and provision by the private sector of Nigerian digital content and online databases in English and Nigerian languages

- Provide recognition for non-formal and distance e-learning modes of education.
- Provide policies and fiscal incentives to encourage ICT Hardware manufacturers to invest towards improving the amount of local content in their products and services.
- Promote local adaptations of foreign ICT systems and solutions that do not infringe patent rights through support and incentives
- Promote the development of local software that interface with Nigerian language in either voice-text or text-vice modes

Its targets are aimed to:

- ❖ Achieve 60 percent ICT Literacy among the literate population by 2013
- ❖ Achieve a ratio of computer scientists, engineers and technologists to population of 1:10,000 by 2013
- ❖ Achieve 30 percent of Nigeria content in ICT hardware, software and services by 2013.
- ❖ Convert at least 40% of current Science Teachers to teach IT and use IT tools in Teaching by 2013
- ❖ Promote Information and communication Technology Capability at all levels
- ❖ Upgrading of ICT facilities in Federal Universities and inter university centres, colleges of education and polytechnics.

The document concluded by stating that implementation of ICT programmes and project is expected to reposition the education sector to produce efficient and competent individuals that will have the requisite knowledge and skills to help in national development and make Nigeria a member of the 20 world economies.

This indeed is a laudable vision, mission, goals and targets on short and medium terms at diffusing ICT at all level of Nigerian education. It is then necessary to look at the state of ICT in the Nigerian education's past, present and what the future of ICT in the sector will look like in line the Vision 20: 2020.

Present State of ICT At All Levels of Nigerian Education

National Policy on Education NPE (Federal Republic of Nigeria, 2004), made provision for ICT usage in Nigerian Education at all levels. It also stated that “All State Teachers Resource Centres, Universities, Institute of education, and other professional bodies shall belong to the network of Information and Communication Technology (ICT)” (p.53). However, Osei (2007), stated that The Federal Republic of Nigeria has no specific policy for ICT Education. It was in early 2007 that the Federal Ministry of Education established ICT department.. It is therefore pertinent to examine the state of ICT in line with the IT (2001) policy statement of ICT in education. Also, it is necessary to compare the state of Nigerian education with the present effort to diffuse ICT to it at all levels of education. This will help us to know where we are in ICT as it concerns the education sector.

❖ Early Childhood Care Development Education:

This level constitutes children at the 3 years education from ages 3 to 6 years. It has an average of 2.02 million enrolments despite an expected 22 million nationwide (FME, 2009). There has not been integration of ICT into this level of education. According to the Nigeria Education Sector Diagnosis (2005), the ownership at the private schools had 57.6% than public schools of 42.4%. It further stated that more of the ECCDE schools are in the urban areas leaving others in the rural areas. It further stated that the level of instruction is English, Mathematics, rhymes, etc. The study further revealed that most ECCDE schools are located in the urban area (64.3%) while the remaining 35.7% are from rural area.

On teachers' conversion (40%) from science education to teach ICT, it is unfortunate to find that at this level, according to Odukoya (2009), it is only The Lagos State College of Primary Education (LASCOPEd) institution in Nigeria that specializes in the training of Pre-Primary school teachers. The Nigeria

Education Sector Diagnosis, Federal Ministry of Education (2009); and Nigeria Vision 20: 2020 further stated that

- ❖ There is dearth of qualified teachers for this level of education.
- ❖ Outdate curriculum due to the dynamic nature of ICT.
- ❖ Low level of commitment towards teaching of Computer Education.
- ❖ Negative attitude of teachers towards ICT which resulted in low utilization of existing ICT facilities.
- ❖ Unstable and erratic power supply.

Another hindrance to effective implementation of Nigeria Vision 20:2020 is the level of access of pupils at this level. FME (2009) reported that 2.02 million students were enrolled with a shortfall of 19.98 million while having an expected 22 million. This is represented in the Table 1 below.

Table 3: Pre-Primary Enrolment (2009)

Year	Expected Enrolment	Actual Enrolment	Shortfall in enrolment	% in Shortfall
2009	22 million	2.02 million	19.98 million	889.11%

Source: Federal Ministry of Education 2009

Also, the shortfall in teaching staff is 969,078 while teaching staff below NCE nationwide is 38.75% and a large number in North-East and North West region of about 70% (FME, 2009). The question is: How will the Federal Government of Nigeria be able to fulfill its goal of putting in place a functional educational curricula for ECCDE and other levels with appropriate ICT skills and content and is ICT driven content philosophy by 2010? This strategy with a definite timeline is a nullity. It is a wish and never what was meant to be a reality. The focus for a sincere strategy plan would have been increase in infrastructure; training and retraining of staff; establishment of more ECCDE schools to accommodate 889.11% staggering number of pre-primary school children that are out of school and increase in funding at the level of education.

Primary Education:

This level constitutes children at the 6 years education from ages 6 to 12 years. One of the goals of Primary Education according to the National Policy on Education (2004) is to “inculcate permanent literacy and numeracy, and the ability to communicate effectively”. Pollock (2008), stated that ICT is a vital tool to achieve this goal of literacy and numeracy at the primary education level.

Government made efforts at providing US \$100 XO laptop computers to primary schools. These computers cannot be cranked and do not need external power supply, Osei (2009), he stated that the laptops are yet to appear in Nigeria. It is also evident that there is no clear cut policy on how ICT would be applied in Primary Schools. According to FME (2009), the primary education is under the control of Local Government of Nigeria. This control in itself is a problem for ICT integration and diffusion in primary education. The question of funding is important as the Local Government Chairmen do default in paying salary of the teaching staff at the level. Funding ICT integration at this level is a problem.

Most primary schools lack basic infrastructural facilities (FME, 2009; Osei, 2007; NESD, 2005). With 774 recognized Local Governments, in Nigeria, 57 are yet to be connected to the national grid (Osei, 2007). Power is the major determinant factor in the usage of ICT and Nigerian Government has not been able to provide constant electricity for its citizens (Aluko, 2004; Ololube, Ubogu, and Egbezor, 2007; Nwachukwu, Paul, Michael, Nkereuwem, Ngboawaji, 2009; Vanguard, 2006; Illoanusi & Osuagwu, 2009).

Lack of adequate teaching staff is another problem confronting ICT integration at the primary school level. The existing shortfall in teaching staff is 338,147 for primary education (FME, 2009). Furthermore, FME gave an average enrolment at the primary education level to be 24.42 million as against 34.92 millions expected enrolments. This is represented in the Table below

Table 3: Pre-Primary Enrolment (2009)

Year	Expected Enrolment	Actual Enrolment	Shortfall in enrolment	% in Shortfall
2009	34.92 million	24.42 million	10.5 million	43%

Source: Federal Ministry of Education 2009

Table 3 shows a staggering 10.5 million representing 43% primary school age students that are out-of-school. Government's effort at ensuring ECCDE student to be ICT literate has not been felt in the system. If the staggering sum of students out-of-school are accommodated, then it may not be possible to achieve Nigeria's Vision 20: 2020.

Another area that needs attention is infrastructure. Computer hardware and software are not available in most public primary schools (Osei, 2007). Also most teachers at the primary education do not have requisite ICT training to impart ICT skills and competency in the pupil. No ICT in-service training for primary school teachers among other problems. The Nigeria's Vision to achieve ICT literacy at the primary school level will be difficult to achieve.

ICT at Secondary School Education

ICT was recognized in National Policy on Education (Federal Republic of Nigeria, 2004), and provision was made to provide basic infrastructure and training at the primary and secondary schools. Computer education was initially introduced to secondary schools by the Federal Government in 1998 but the implementation did not take place until 2004 (Okebukola, 1997, Aduwa-Ogiegbaen and Iyamu, 2005). Okebukola and Aduwa stated that about 90% of Nigerian Public secondary schools are not using computer as a mode of instruction. Also, Computer Studies was introduced as a teaching subject and was placed under Pre-Vocational as an elective subject. At present, some States of the Federation, for example Lagos and Rivers States are writing Computer Studies in their Junior State Examinations. Moreover, the Federal Government through the Federal Ministry of Education (2006) launched an ICT-driven project known as

SchoolNet (www.snnng.org) (Osei, 2007; Federal Republic of Nigeria, 2006; Adomi, 2005; Okebukola, 2004). The aim of SchoolNet is to:

- ❖ Implement, support and co-ordinate ICT development projects in education.
- ❖ Provide and support lower-cost, scalable technology solutions and Internet for schools.
- ❖ Provide support mechanisms for schools for technical infrastructure and connectivity.

Furthermore, the Federal Government also made initiatives with Zinox computer in collaboration with Microsoft to integrate ICT usage in education from primary to university level. Other collaborating companies are Zenith Bank, MTN, first Bank of Nigeria, etc (Osei, 2007; Yusuf, 2007 and Adomi, 2008).

According to Adomi and Kpangban (2008). The Federal Government also commissioned a Mobile Internet Unit (MIU) which is operated by the Nigerian National Information Technology Development (NITDA) which is designed in a bus for Internet access to primary and secondary schools. The constraint however, was that the bus was small and could not cover most of the rural areas.

Despite government effort at ensuring promotion of ICT at this level, the Federal Ministry of Education acknowledged challenges facing full implementation of ICT at this level which include:

- ❖ Lack of commitment to the delivery of Computer Education.
- ❖ Obsolete curriculum. The existing curriculum which was launched in 2007 is already obsolete in view of the highly dynamic nature of ICT
- ❖ General Misunderstanding of ICT on the part of education administrators leading to lack of political will.
- ❖ Phobia for technology on the part of teachers resulting in poor utilization of existing facilities.
- ❖ Little or n relevant skills in ICT.
- ❖ Problems of Power and energy.

Furthermore, Ekeh and Oladayo (2010), found that there are inadequate ICT facilities in public secondary school. Moreover they found that there no application of ICT facilities in teaching, and no utilization of ICT facilities for learning by secondary school students at public schools. They concluded that the Federal Ministry of Education's Turn-Around Strategies of restructuring the teaching/learning environment and management and administration of Post-Basic Education to be ICT-driven with Deliverables of more effective teaching/learning, and administrative system having a timeline of 2010 is unattainable.

Technical Colleges and Vocational Enterprise Institutions (VEIs)

According to FME (2009), formal vocational education commences after Basic education with 3 years of Technical Colleges and Vocational Enterprise Institutions (VEIs), it is also important to note that majority is found in non-formal training which are scattered across the country. There are 159 recognized Technical Colleges at NTC/NBC level (made up of 19 Federal, 137 State and 3 Private). Unfortunately, there was no provision on policy formulation and implementation of ICT integration and application for this sector in the Nigerian Education.

Tertiary Education

At present, Nigeria has a total of 104 (27 Federal, 36 States, and 41 Private) approved universities, 115 approved Polytechnics/Monotechnics and 86 approved Colleges of Education and 62 approved Innovative Enterprise Institutions.

According to Osei (2007), The National Universities Commission (NUC), prescribed Personal Computer (PC) ownership for universities of one to every four students, One PC to every two lecturer below the grade of Lecturer 1, one PC per Senior Lecturer, and one Notebook per Professor/Reader. The Federal Government has improved greatly on that proposition by recommending computer acquisition scheme for staff and students.

Despite achievement that has been made in ICT integration in some universities like University of Jos (UNIJOS), Obafemi Awolowo University

(OAU), University of Ilorin (UNILORIN), and some privately owned university, the Minister of Education Prof. Rufa'I in her keynote address at the annual conference of Association of Vice-chancellors of Nigeria Universities (AVCNU) (2010), identified severe shortage of ICT skills and personnel; low retention of ICT staff and low ICT and ICT related Research among others challenges as the problems plaguing this level of education.

However the Federal Government, through the Federal Ministry of Education in its roadmap to education sector proposed the following:

Turn – Around Strategies	Deliverable	Timeline
<ul style="list-style-type: none"> • Increase budgetary provision for ICT development and deployment • Increase collaboration with the Private Sector and IDPs for necessary interventions on ICT in tertiary education • Establish IT parks and funding research in ICT development and content 	Funding of ICT development and deployment increased by 40%	2010
<ul style="list-style-type: none"> • Implement Government directive on ICT initiatives for Tertiary Institutions through: <ul style="list-style-type: none"> <input type="checkbox"/> Student Resource Centres and campus-wide wireless connectivity <input type="checkbox"/> Computer Acquisition Scheme for staff <input type="checkbox"/> Upgrade of websites <input type="checkbox"/> Pooling of bandwidth and <input type="checkbox"/> Video-driven lectures • Ensure the provision of bandwidth for institutions and all offices in the Education Sector • Promote the development of instructional materials in electronic format 	<ul style="list-style-type: none"> • Functional ICT laboratories with a student computer ratio of 1:4 	2011
<ul style="list-style-type: none"> • Build a critical mass of ICT proficiency and competencies, strategic and specialized ICT skills and requisite entrepreneurship skills among staff and students in the sector • Strengthen and expand e-learning to expand access to quality education • Provide additional incentives for ICT professionals in education • Restructure the teaching/learning environment to be ICT-driven 	<ul style="list-style-type: none"> • All academic staff attain computer literacy • 100% of academic staff own computers • Number of ICT teachers increased by 20% 	2011

<ul style="list-style-type: none"> • Integrate ICT into curricula • Review ICT curricula every three years to reflect emerging societal needs and global trends 	<ul style="list-style-type: none"> • ICT-related curriculum reviewed every three years 	2011
<ul style="list-style-type: none"> • Establish national ICT awareness machinery such as National ICT competitions, ICT Week, etc • Provide alternative power supply such as solar panels to support ICT development deployment • Create virtual fora and community-based IT facilities to strengthen accessibility to information and networking among tertiary institutions • Strengthen the interface and collaboration between the industry and educational system 	<ul style="list-style-type: none"> • Schedule of activities • Alternative power supply • Virtual for a and ICT facilities 	2011

The Federal Ministry of Education also identified poor deployment of ICTs in teaching and learning at Technical and Vocational Education and Training (TVET) and Innovation Enterprise Institutions (IEIs) and Colleges of Education (Technical). It seeks to improve the use and inclusion of ICT in TVET curricula and in implementation and improved ICT curricula by the year 2010.

Recommendations for Improvement

In the light of the above approaches towards teachers and school administrators attitudes and disposition towards acquisition of ICT competencies and diffusion in Nigerian education at all levels, Oyesanya (2005); Kwache (2007); Yusuf (2007); Egwu (2009); Rufa'I (2010) and the Nigerian Vision 20: 2020 Implementation Plan (2010), made the following recommendation that will enhance human capital development:

1. Upgrading of ICT facilities in Federal tertiary institutions and National Universities Commissions.
2. All academic staff attain computer literacy by 2011, 100% of academic staff own computers by 2011.

3. Number of ICT teachers to be increased by 20% by 2011 and ICT-related curriculum, reviewed every three years. Continuous and periodic training of teachers on computers and ICT skill acquisition.
4. Funding of ICT development and deployment increased by 40% by 2010.
5. Establishment of student resource centres and campus-wide wireless connectivity.
6. Building of a critical mass of ICT proficiency and competencies.
7. Teachers in Nigerian schools should be trained not only to be competent in the use of ICTs, but capable in their use and integration for instructional purposes.
8. Provision of infrastructure needed for the implementation of ICTs in schools. Regular power supply, etc.
9. Government ICT procurement rules should be adjusted to give preference to Indigenous ICT Business, or Multinational with presence in Nigeria.
10. Federal, State, and Local Governments should create balanced urban and rural ICT development initiatives.
11. Implementation of life long ICT human capital development policies. Education curriculum at all levels must be revised to be ICT-driven and an ICT work-force assistance. Training and retraining of unemployed graduates. Replacement of non-specialized foreign ICT expatriate workforce with indigenous Nigerians.
12. There should be a division responsible for monitoring, inspection and evaluation at all level of education to monitor policy and strategic implementation of all government turn-around deliverables

Implications of the Present State of ICT to Human Capital Development For Vision 20: 2020

Going the present state of ICT from the Early Childhood Care Development Education to the University level of education, it is important to note

that the Federal Government's effort at ensuring an ICT driven education may be far from being achieved within the timeline set for it. From available data on infrastructural facilities; ICT staff strength compared to students' population; leadership commitment to delivery of ICT at all levels; available teaching staff ratio to students; dearth of ICT teachers; problem of power; allocation of funding for maintenance of ICT equipment; etc. the Nigeria Vision 20: 2020 may not be able to achieve its timeline objectives and target at producing human resources for technologically driven economy at ensuring that the country become one of the 20th economies of the world.

Conclusion

Every sector of the Nigeria economy cannot thrive and develop to its full potentials to be able to compete globally and achieve the Nigeria Vision 20-2020 without a vibrant and IC-driven education at all level. Efforts should therefore be made to ensure that all recommendations are pragmatically implemented to increase human capital development in ICT to make Nigeria's one of the 20th economies of the world.

References

- Adomi, E. E. & Kpangban, E. (2008). Application of ICTs in Nigerian Secondary Schools. Department of Science Education. Delta State University. Abraka.
- Aduwa-Ogiegbean, S.E., & Iyamu, E.O.S. (2005). Using information and communication technology in secondary schools in Nigeria. *Educational Technology & Society* 8 (1), 104-112.
- Ahmed, M. (2010). University Infrastructure and Services: Concession Options, Considerations and Methodologies. Infrastructure concession Regulatory Commission. ICRC. Abuja. Nigeria.
- Ajayi, I. A. and Ekundayo, H. T. (2009). The Application of Information and Communication Technology in Nigerian Secondary Schools. *International NGO*
- Aluko, M. E. (2004). Some Issues in ICT for Nigerian Development. Howard University Burtonsville, MD, U.S.A
- Egwu, S. (2009). 21st Century University Education in Nigeria: Strides, Challenges and Pathways. Conference of Association of Vice-Chancellors Of the Nigerian Universities. University of Ilorin. Nigeria.
- Ekeh P. U. & Oladayo, O. T (2010). A comparative Analysis of ICT Utilization in Public and Private Secondary Schools in Port Harcourt Metropolis. Unpublished Articles. University of Port Harcourt.
- Federal Ministry of Education (2009). Roadmap of the Nigerian Education Sector. Consultative Draft.
- Federal Republic of Nigeria (2004). National Policy on Education. 4th ed. Lagos: Nigerian Educational Research and Development Council.
- Federal Ministry of Education (2005). Nigeria Education Sector Diagnosis. A Condensed Version. A Framework for Re-engineering the Education Sector. Education Sector Analysis Unit. Abuja.
- Iloanusi, N. O. and Osuagwu, C. C. (2009). ICT in Education: Achievement so far. Department of Electronic Engineering, Faculty of Engineering. University of Nigeria, Nsukka. Enugu State A. Méndez-Vilas, A. Solano.
- Kwache, P. Z. (2007). The Imperative of Information and Communication Technology for Teachers in Nigeria Higher Education. *MERLOT Journal of*

Online Learning and Teaching. Vol. 3, (4). Pp.1-5.

National Information Technology Policy (2001). Nigerian National Policy For Information Technology (IT). NITP. Abuja.

Nwachukwu, P. O.; Paul E.; Michael, C. U.; Nkereuwem S. E.; & Ngboawaji, D. N. (2009). Instructional technology in higher education: A case of selected universities in the Niger Delta. *Asia-Pacific Forum on Science Learning and Teaching*, Vol.10(2), 7

Odukoya. D. (2009). Formulation and Implementation of Educational Policies in Nigeria. Educational Research Network for West African and Central Africa. University of Lagos. Nigeria.

Okebukola, P. (1997). Old, new, and current technology in education. *UNESCO Africa*,14(15):7-18.

Osei, T. A. (2007). ICT for Education in Nigeria. Survey of ICT and Education In Africa: Nigeria country Report. www.infodev.org

Ololube, N. P., Ubogu, A. E. & Egbezor, D. E. (2007). ICT and distance education programs in a Sub-Saharan African country: A theoretical perspective. *Journal of Information Technology Impact*, 7(3). 181-194.

Oyesanya, F. (2005). Review of ICT Development Memorandum. Submitted by ICT-G22 to National Political Reform Conference (NPRC). Nigeria

Pollock, K. (2008). The Four Pillars of Innovation: An Elementary School Perspective. *The Innovation Journal: The Public Sector Innovation Journal*, Vol. 13(2). Pp. 1-20

Rufa'I, R. A. (2010). The New National Education Roadmap: Reinvesting the Higher Education Sector. Osun State University.

Yusuf, M. O. (2007). Trends on the Integration of Information and Communication Technology in the Nigerian School System. *Studies in Curriculum and Instructional Technology*. Olabisi Onabanjo University, Ago Iwoye. Nigeria.

Vanguard, (2006). Nigerian higher education has less than 5% ICT applications. 19 October 2006