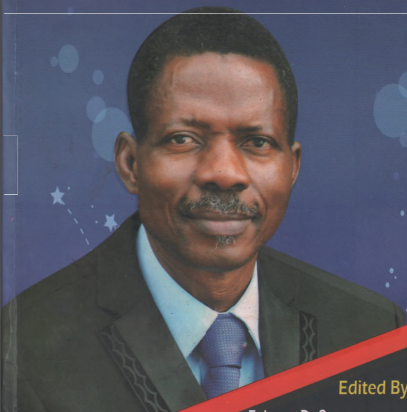


**FURTHER THOUGHTS ON LANGUAGE,
EDUCATION AND THE CURRICULUM NEXUS
FOR SUSTAINABLE DEVELOPMENT IN NIGERIA**

A Festschrift in Honour of

Professor Clement Olusegun Olaniran Kolawole



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ADVANCING EDUCATIONAL DEVELOPMENT THROUGH INFORMATION AND COMMUNICATION TECHNOLOGY IN NIGERIA

Oluyomi. O. Folorunso

Introduction

Information and Communication Technology (ICT) in education has been continually linked to higher efficiency, higher productivity and higher educational outcomes, including quality of cognitive, creative and innovative thinking (Adeosun, 2010). The technology has affected teaching, learning and research while research has proven undoubtedly, the benefits to the quality of education. In the light of this and in response to the global imperative of Education For All (EFA), Nigeria launched the Universal Basic Education program in 1999 and developed an ICT policy in 2001. One of the objectives of the policy focused on integrating ICT into the mainstream of education and training, including basic education. This has been evolving through a number of private and donor-funded initiatives though there is the need to ensure effective and sustained use of ICT in mainstream formal education system.

However, Nigeria is yet to fully commit to ICT integration in education as two key ingredients are lacking: skilled teachers and ICT tools and other infrastructures. These issues must be addressed within a focused and implementation committed ICT in education policy (Adeosun, 2010)

Issues in ICT Application in Nigerian Educational System

There are developments in the Nigerian education sector which indicate some level of ICT application in Nigerian schools. The Federal Government of Nigeria, in the National Policy on Education, recognizes the prominent role of ICT in the modern world, and has integrated ICT into education in the country (Matthew et al., 2015). To actualize this goal, the document states that government will provide basic infrastructure and training at the primary school. At the basic school, computer education has been made a pre-

vocational elective, and is a vocational infrastructure and training for the integration of ICT in the school system (Matthew et al., 2015).

It should be noted that 2004 was not the first attempt the Nigerian government made to introduce computer education in schools. In 1988, the government enacted a policy on computer education. The plan was to establish pilot schools and diffused computer education innovation first to all secondary and tertiary schools, and then to primary schools. Unfortunately, the project did not really take off beyond the distribution and installation of personal computers (Okebukola, 2007). Furthermore, computer is not part of classroom technology in more than 90 percent of Nigerian public schools (Matthew et al., 2015). This implies that the chalkboard and textbook continue to dominate classroom activities in most Nigerian schools.

In spite of the government visions and policies for the use and integration of ICT in schools, two very important features of integration are lacking: human resource development in terms of skilled teachers to use ICT in teaching and learning processes, as well as ICT infrastructures. Very few schools in Nigeria can actually boast of minimal provision of ICT tools. Unfortunately, to most Nigerians, including teachers, ICT integration stopped at the use of computers, and that to be ICT literate is to be computer literate (Adeosun, 2010). Of course, computer literacy is essential for ICT use especially in education, however, most primary and secondary school teachers could not demonstrate evidence of effective acquisition and use of ICT, beyond computers, even at the basic skill level, hence they cannot fully utilize the technology in their classrooms, and the traditional "chalk and talk" approach still dominates the school pedagogy (Adeosun, 2010).

More importantly, ICT tools and equipment are grossly lacking in most schools. Even when they are available, they need to function with other infrastructure such as electricity, under controlled and reliable conditions. For over three decades, Nigeria has been unable to provide minimum acceptable standards of electricity services to her citizens. Initiatives by NGOs and Corporations in donating

hardware, software, Internet access and training to some schools are often incomplete without provisions for power generating sets to enable these projects function properly. Moreso, the few Internet access available in Nigeria is found in urban centres. All ICT equipment, infrastructure and terminals depend on electricity to energize and unless this vital source is always available and reliable, Nigerians will not be able to fully enjoy the benefits that the digital revolution offers. These environmental realities make ICT integration and sustainability difficult in the education sector.

ICT in Education

Recall that Information and Communication Technology (ICT) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems as well as the various services and applications. The term "ICT in Education" refers to the "uses of ICT in education, or teaching and learning with ICT". It is not synonymous to "ICT Education" which is defined as the study of the tools and techniques for the transmission and reception of reliable information content over appropriate channels. Therefore, the two terms should not be used interchangeably.

There are at least five levels of ICT use in education: presentation, demonstration, drill and practice, interaction, and collaboration (Haddad, 2002). Each of the different ICTs- print, audio/video cassettes, radio and TV broadcasters, computers or the Internet- may be used for presentation and demonstration, the most basic of the five levels. Except for video technologies, drill and practice may likewise be performed using the whole range of technologies. On the other hand, networked computers and the Internet are the ICTs that enable interactive and collaborative learning best; their full potential as educational tools will remain unrealized if they are used merely for presentation or demonstration.

Radio and television have been used widely as education tools since the 1920s and the 1950s, respectively. There are three general approaches to the use of radio and T.V broadcasting in education:

- Direct class teaching, where broadcast programming substitutes for teachers on a temporary basis;
- School broadcasting, where broadcast programming provides complementary teaching and learning resources not otherwise available; and
- General educational programming over community, national and international stations which provide general and informal educational opportunities.

Teleconferencing is used in both formal and non-formal learning contexts to facilitate teacher-learner and learner-teacher discussions, as well as to access experts and other resource persons remotely. In open and distance learning, teleconferencing is a useful tool for providing direct instruction and learner support, minimizing learner isolation.

There are three general approaches to the instructional use of computers and the Internet, namely:

- Learning about computers and the Internet, in which technological literacy is the end goal. This is a notable example of "ICT education" earlier referred to;
- Learning with computers and the Internet, in which the technology facilitates learning across the curriculum; and
- Learning through computers and the Internet, integrating technological skills development with curriculum applications.

Learning with the technology means focusing on how the technology can be the means to learning ends, across the curriculum. Technological literacy is required for learning with technologies to be possible, implying a two-step process in which students learn about the technologies before they can actually use them to learn. However, there have been attempts to integrate the two approaches (Haddad, 2002). Learning through computers and the Internet combines learning about them with learning with them. It involves

learning the technological skills “just-in-time” or when the learner needs to learn them as he or she engages in a curriculum-related activity.

In preparation for the integration of ICT in schools, Nigeria developed the National Policy on Computer Education in 1988 with the objective to encourage teachers to develop a sense of rapport with computer and appreciate its potentials for solving teaching and learning challenges, and to entrench computer culture that permeates all activities in institutions of learning (Abimbade et al., 2003, cited in Adeosun, 2010). Government implemented the initiative through Federal Government colleges and Unity schools. It later permeated other state-owned and private schools. However, the policy, with its lofty goals did not take off beyond the distribution and installation of computers in some schools, as at 2005 (Aduwa-Ogiegbam & Iyamu, 2005).

The National Policy for Information Technology was formulated in 2001 (Federal Ministry of Science and Technology, 2001) and the mission statement recognized the need to use IT for education (p.iii). In addition, the general objectives (3 out of 31) focused on integrating ICT into the mainstream of education and training, with a strategy to “restructure educational systems at all levels” to respond effectively to the challenges and imagined impact of the technology. Yusuf (2005a) noted that although the mission, general objectives and strategies recognized the importance of ICT in education, the document has no sectoral application to education and issues relating to education are subsumed under human resources development. To this end, the National Information Technology Development Agency (NITDA) was established, which serves as the clearing house for IT projects in the public sector, including education. It developed some standards for computer uses in schools, including students-computer ratio, stipulating that:

- Early Child Care Development Education (ECCDE) – 50 pupils to one functional computer
- Primary – 50 pupils to one functional computer
- Post primary – 40 students to one functional computer

- Tertiary – 25 students to one functional computer (Adeosun, 2010).

In implementing the ratio, schools are required to establish computer laboratories and classrooms equipped with interactive white boards and other teacher-aided learning tools.

ICT-in-Education Initiatives

Owhotu (2006), cited in Adeosun (2010) noted that within her sub-region, Nigeria has been in the lead in the integration of ICT tools with a number of initiatives, through collaborations with the government. Some are briefly discussed:

- **SchoolNet Nigeria:** Launched in September 2001 and funded by Education Trust Fund, SchoolNet is engaged in the effective and sustainable deployment and use of ICT to enhance teaching and learning in the primary and secondary education sector. It embodies a partnership between public and private sector interests and is affiliated to SchoolNet Africa. The core activities are in implementation, support and co-ordination of ICT at national and State level development projects in education through support, training and development of relevant content.
- **Education Trust Fund (ETF):** Education Tax is 2% of companies' profit tax which is distributed by the Education Trust Fund for education purposes. Besides working with SchoolNet Nigeria, ETF also works on the Education Resource Centre project, which aims to create science and ICT laboratories and multi-purpose halls in schools and institutions of higher learning.
- **Computers-in-Schools Project:** This was kick-started in 2002. The major objective is to develop computer and technological literacy through the introduction of computers

in secondary schools similar to what has been done in many other countries.

- **One-laptop-per-Child (OLPC):** September 2006 witnessed the launch of the one-laptop-per child (OLPC) initiative in collaboration with the Nigerian government which has resulted in the provision of 100-dollar laptop for the e-secondary school project in Nigeria. Nigerian software developers are concentrating on integrating local curriculum content into the project, covering every subject in the school system from JSS1-JSS3 and then SSS1-SSS3. With OLPC however, there is still the need to give schools a satellite dish, power generator and a modem to ensure electricity and connectivity.
- **The NEPAD e-Schools Initiative:** is being led by the e-Africa Commission. Its stated objective is “ensuring that young Africans participate actively in the global information society and knowledge economy”, with focus on ICT skills and knowledge to primary and secondary school students through series of trainings to teachers and school administrators, in collaboration with Intel, Microsoft, HP and other IT companies. In Nigeria, NEPAD initiative is chaired by NITDA and is currently working out strategies of connecting some schools to the Internet.

Other initiatives include the National Infrastructure framework for Open and Distance Learning, Virtual Library project, and Microsoft IT academies.

ICT and Teacher Education

Many Nigerian teachers have not been able to find effective ways to use technology in their classrooms or any other aspect of their teaching and learning life. The possible explanation for this lack of success is that the use of technology in the classroom has not been encouraging and teachers are not well trained in using ICT in teaching as a means for educational sustainability and development,

notwithstanding the specifications in the National Policy of Education by the Federal Government of Nigeria (Ololube, 2006). Nigeria as a nation came late and slowly into the use of ICT in all sectors of the nation's existence more especially in teacher education. This is as a result of chronic limitations brought about by economic disadvantages and government policies. These factors have direct consequences on the nation's educational development (Ololube, 2006). Fundamentally, the slow access to basic ICT equipment, low internet connectivity, and the inadequacies in the use of audiovisual materials and equipment, including films, slides, transparencies, projectors, globes, charts, maps, bulletin boards, and instructional television in teacher education programs are barriers to the effective and professional development of teachers in Nigeria (Ololube, 2006). Moreover, teacher education institutions are faced with the challenges of preparing a new generation of teachers to effectively use the new learning tools in their teaching practices (UNESCO, 2005). As a result, teacher education programs have not been unaffected by the penetrating influence of ICT. Certainly, ICT has impacted on the quality and quantity of teaching, learning, and research in traditional and distance education institutions around the world.

The concept of teachers' ICT literacy is theoretically unclear and changing in that the definition of the concept is more or less precise depending on whether it occurs at the level of the definition of operational abilities or at other levels. Most contemporary authors tend to centre the definition of ICT literacy on a few competencies or abilities, which characterize teachers' knowhow in relation to use of ICT instructional materials. In actuality, it goes beyond this and includes the ability to identify, select, prepare, operate and effectively use ICT materials and efficiently affect students' abilities to build knowledge and develop critical and creative thinking. Thus, teacher education and training is a means for professional updating, which deals with all developmental functions, directed at the maintenance and enhancement of one's professional competence and literacy. Teachers' professional growth supports the idea that ICT in teacher education and training is an important factor in

teachers' job effectiveness and development. This is so because teachers' education and training has long been generally considered to be essential for school effectiveness and improvement (Larose et al., 1999). Similarly, studies had long demonstrated the need to offer teachers better opportunity to educate and develop themselves in order to create understanding between their job and their effectiveness (Keen, 1991; Kauto-Koivula, 1996). To make this work, teachers need effective techniques, tools and assistance that can help them develop ICT based projects and activities especially designed to raise the level of teaching in required subjects in order to improve student learning and academic achievement (Aduwa-Ogiegbaen & Iyamu, 2005). Realistically, the inclusion of ICT materials in secondary schools is not valuable if first of all in-service and pre-service teachers are not conversant with the traditional teachings necessary for adequate and effective teaching involvement. It then follows that teachers should initially be trained and developed professionally to be able to assist students in their ICT material utilization competencies (Ololube, 2006).

The poor standard of teacher education programs in Nigeria invariably affects the standard of pre-service and in-service teachers' performances. Furthermore, computer education introduced into the Nigerian secondary schools since 1988 has largely been unsuccessful as a result of teachers' incompetence because empirical studies (e.g. Yusuf, 2005b) have recognized that teachers' ability and willingness to use ICT and integrate it into their teaching is largely dependent on the poor quality of professional ICT development they receive. Thus they have been unable to find effective ways to use technology in their classrooms or any other aspect of their teaching and learning life (Ololube, 2006).

Therefore, since the teachers trained through these programs are not well equipped technologically to be able to face the challenges of carrying out their duties effectively, it demonstrates that the existing curriculum designed for the training of pre-service teachers in Nigeria does not include the practical usage of ICT materials. Even if it is included, it is only based on theoretical paradigms. Student teachers hardly come in contact with ICT instructional materials,

including those who are in the department of educational technology proper (Ololube, 2006).

Barriers to ICT integration in Nigerian Schools

In spite of the willingness of some institutions of higher learning to establish effective ICT education programs, they are confronted with enormous problems that may impede the proper implementation of these programs. The most significant of these is poor ICT integration and usage among Nigerian higher education practitioners (Ololube et al., 2009). Major barriers to ICT integration in schools include lack of skilled teachers, and lack of time. In particular, lack of time can be perceived in two ways: lack of time on the part of the teachers to engage in training in the use of ICT as a form of professional development, or the lack of instructional time to effectively use ICT within a forty-minute lesson usually allocated for basic school subjects in Nigeria. Other barriers include limited ICT infrastructures, poor Internet connectivity, inadequate learning resources (educational tools, course curriculum, etc), attitudes of teacher-trainees and teacher trainers which indicate a gross lacking in independent learning skills and reluctance to take responsibility for their own learning, software license and associated highly prohibitive costs, lack of maintenance and technical support (Aduwa-Ogiegba & Iyamu, 2005; Olakulehin, 2007; Okafor & Edet, 2008; Salawu, 2008); and most importantly poor power supply, a problem that is wide-spread in Nigeria. Generally, several cities and rural areas in the country still have fluctuation in their supply of electricity which makes the implementation of ICT in education most difficult. Additionally, most Nigerian universities do not have access to basic instructional technology facilities, which also makes the integration of instructional technology in the delivery of quality education difficult.

In spite of these barriers, the prospects for the use of ICT in teaching and learning in Nigerian higher education are positive, though there is much work left to be done. It has been observed that ICT enhances educational efficiency in general and that the efficiency of faculty teaching in Nigerian institutions stands to be improved. Many higher

education faculty, for instance, are already teaching large classes of students using ICT materials (Ololube et al., 2009). With enhanced ICT capabilities it would be possible to use carefully prepared ICT programs to ensure that learners are more accurately and systematically instructed, using effective instructional technology.

Conclusion

It is no more disputable that ICT is important in the development of quality teaching and learning in educational systems around the world, as well as a means for fundamental transformation into the existing school principles and practices for the preparation of students in meeting the innovations in the global arena (Adeosun, 2010). Achievement in the ICT penetration and usage in Nigeria's basic education programs is dependent on the recognition of this importance, beyond policies and disjointed efforts at ICT application to education. The world outside the school system has been able to achieve much in the area of ICT integration in their daily routine, while the schools are left behind. It is therefore imperative for the government to demonstrate more serious attitude to the use of ICT in schools. Even though the government has demonstrated a strong commitment to the promotion of ICT in her educational goals, it should be noted that Nigeria has no particularly articulated policy for ICT in education. In fact, the examined policies demonstrated that government stands committed to developing a comprehensive ICT tools integration in education within a national IT policy, basic education reforms and poverty reduction strategy. However, it has been posited that the formulation of an IT policy constituted only about 20% of the IT solution for the country (Adeosun, 2010).

Information and Communication Technology efforts in Nigeria are mainly driven by private initiatives. While these are welcomed developments in integrating ICT into education, there is the need to sustain the integration through conscious, planned, and deliberate utilization of ICT in instructional processes in schools, as effective use of e-learning requires the presence of extensive and sustained support (Knowles, 2004). The initiatives are often piloted, short term, donor-funded projects which give no room for continuity and

sustainability. They often show pockets of efforts with no coordination, resulting in poor distribution of resources, duplication of efforts and lack of meaningful results. Though, there are often data supplied to support the impact of these programs, the percentage of beneficiaries is small compared to the number of school age children that require such opportunities. In addition, there is no mechanism put in place for measuring the subsequent performance and learning achievements of recipients of these projects. Their impact is therefore minimal, if any (Adeosun, 2010).

It is very clear that with the emerging new technologies, the teaching profession is evolving from emphasis on teacher-centred, lecture-centred instruction to student-centred interactive learning environments (Newhouse, 2002a, 2002b; UNESCO, 2002). Therefore, designing and implementing successful ICT-enabled teacher education program is the key to fundamental, wide-ranging educational reforms. Consequently, teacher education institutions in Nigeria should either assume a leadership role in the transformation of education or be left behind in the swirl of rapid technological changes. Accordingly, for Nigerian education to reap the full benefits of ICT in learning, it is essential that pre-service and in-service teachers are able to effectively use these tools for learning. Teacher education institutions and programs must provide the leadership for pre-service and in-service teachers and model the new pedagogies and tools for learning through effective strategic plan. That is, leadership in higher education should be visionary about conceiving a desired future state, which includes the picturing of where and what the teacher education program should be in the future, without being constrained by such factors as funding and resources. However, a successful and effective strategic plan depends on the extent to which proper implementation and monitoring are carried out.

Education is a very socially oriented activity, and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners. The use of ICT in education lends itself to more student-centred learning settings. Students learn and retain far more by "doing" than by "taking in".

Generally, with the world moving rapidly into digital media and information, the role of ICT in education is becoming more and more important and this importance will continue to grow and develop in the 21st century. However, the reality has not matched the promises so far in terms of pedagogic innovation (Igwe, 2012). This does not mean that ICT in education has not produced any significant positive results in improving the overall learning and teaching experience in the institutions where it is implemented. More importantly, when ICT in education does not achieve expected goals or when it introduces complicated educational reforms, students and teachers can lose focus on the essentials and become distracted by the rapidly changing technologies themselves. This result is likely when students and teachers have not been able to acquire a full understanding of the technologies, the role ICT plays and where, how and what technology to use. When the meaning of ICT and its unlimited potential in the educational arena are understood, rapidly changing technologies are not seen as overwhelming, but as enablers of greater critical thinking and problem solving in education (Ololube, Eke, Uzorka, Ekpenyong and Nte, 2009).

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