

ICT in Education: Catalyst for Economic Growth in Nigeria

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Abstract

The relationship between Information and Communications Technology (ICT) supported education system and economic development of a developing country has been documented by several studies (Anderson, 2009; Selwood et al, 2003; and Unwin, 2009). ICT can significantly and positively impact the educational and economic landscape of Nigeria if deployed. This paper explores how ICT supported education reforms can have the effect of increasing the efficiency of the economy of Nigeria. It also highlights some of the challenges that need to be addressed to implement a comprehensive ICT reform plan.

Keywords: ICT, Education, Rural, Economic, Nigeria

Introduction

Educators and prominent government policy makers have acknowledged that the education system in Nigeria is in dire need of reforms. In Nigeria public school structure, education is not supported by any ICT based systems. And wherever ICT system exists, it is marred by several challenges ranging from power failure; outdated systems to scarcity of ICT qualified educators. The irony is that Nigerian government believes and has seen hard evidence that ICT can play a major role in education and economy development as witnessed in other developed countries. Wagner et al (2005) note that “ICTs are currently being used widely to aid education in many developing countries, and it appears that there is increasing demand for their use in education by policymakers and parents in developing countries...” (p. vii).

Re-thinking and radically redesigning of the education curricula and sector through the adoption of ICT is a viable option for economic growth in Nigeria. Unfortunately, as Bambanota (2006) realized, investing in national education has not been a top priority for many developing governments for many years, Nigeria included.

For example, in 2011 budget, the Nigerian government allocated N356, 495,828,145 to all institution in the country educating more than 97 million citizens compare with N150, 000,000, 000 allocated to the National Assembly of less than 300 citizens (Budgetoffice.gov.ng). That is about 42% of national education budget for a handful of lawmakers; personally, I do not understand the rationale or the justification for such lopsided allocation, especially when the policy makers and other educated government officials understands the need for educated and skilled workforce. The current education budget is hardly enough to improve basic educational infrastructures in the country, let alone adopt new ICT infrastructures.

As can be noted, the current government has no specific policy for ICT in education (NITDA.gov.ng), even if the government has ICT policy, it would be hard to deploy and implement any national ICT plan for education with this type of budget allocations. It is even harder for educational institutions to fulfill their traditional obligations considering lack of electric power and telecommunications infrastructure. Investing in ICT requires considerable capital, clear objectives, and commitment on the part of government officials. Research has shown that adequate education can reduce extreme poverty, and application of ICT to learning have the potential to accelerate, enhance, and expand skills, that could motivate and engage students, to help relate learning to entrepreneurship, there-by creating self-employment and economic viability for tomorrow's workers, while strengthening teaching techniques

Certainly, application of ICT plays a key role in facilitating learning and enhancing the quality of education. However, successful implementation of ICT requires strategic planning and government support for finance and policy. Improved education is essential to the creation of effective human capital in any country (Evoh, 2007). The need for ICT in Nigerian schools cannot be overemphasized. In this technology-driven age, everyone and organizations requires ICT competence to survive. Organizations are finding it very necessary to re-train their employees to establish or increase their knowledge of computer applications and other ICT tools (Adomi and Anie, 2006; Tyler, 1998). This calls for early acquisition of ICT skills by students, because the ability to use computers effectively has become an essential part of our daily lives.

The Nigeria education system must continue to undergo reforms to be competitive with other developed nations and depart from the system set up by colonial rulers, which is not design to help Nigeria as rightly stated by World Bank Report (2008) that “old education systems in many African countries were not developed to empower Africans”. This statement, simply suggests that there is urgent need for education reforms in Nigeria, if we are to compete and survive in this information-age. Furthermore, a growing body of research supports that ICT is a powerful tool for education in any country (Unwin, 2009). When appropriately implemented, ICT would catalyze and accelerate education reform and economic development in Nigeria. It is my view that application and use of ICT in schools will significantly and positively impact the educational and economic landscape of our country.

The purpose of this paper is to examine the direct impact that ICT may have on the education system, and subsequently, on the economy of Nigeria. The paper considers the role of ICT literacy in education and examines some of the challenges that must be overcome for a successful implementation of an ICT supported education reform plan in Nigeria. Hence it is important to explain some of the key components of ICT.

ICT in Education

Information and Communications Technology (ICT) is widely viewed as a means of effecting changes in business process. These changes if properly implemented can translate directly to wealth maximization and other economic development. Tinio (2009, p.4) defines ICT as a “diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. These technologies include computers, electronic data processing,

broadcasting technologies, telephony, telecommunications, audiovisual equipments, the Internet and related services.

What is ICT in education? According to Gwang-Jo Kim (2009), ICT in education is a comprehensive approach to innovate education systems, methods, and management of the process (p.4). It is unfortunate that ICT is not perceived as a reliable vehicle for education. Neither is it considered a powerful tool for economic growth in Nigeria.

Role of ICT Education

According to Gwang-Jo Kim (2009, p. 4), ICT in Education can serve the following purposes: a) Restructuring education system, b) Diversifying teaching-learning methods and practices, c) Engaging all stakeholders of education and adapt rapidly to changes in society and the environment, and d) Enhancing education efficiency, effectiveness, and productivity. ICT is increasingly and becoming a powerful tool for education and economic development. 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 make learning concepts clearer and more accessible” (p.214). For this reason, ICT is and can be used for capacity development and citizen empowerment, practically in every business. Additionally, ICT can enhance educational opportunities and outcomes for students, including those with learning disabilities (Anderson, 2009, p.3).

Current status of ICT in Education in Nigeria

The World Bank report (2008, p. xiii) describes the grim general state of science, mathematics, and ICT (SMICT) education in Sub-Sahara Africa. The report reveals the following challenges:

- a) Poorly-resourced schools,
- b) Large classes,
- c) Curriculum hardly relevant to current information-age
- d) Lack of qualified teachers,
- e) Inadequate technology teacher education programs.

Since 2008, on a trip from Lagos to Yola in Northeastern Nigeria and we surveyed 79 public schools and universities in 12 states. None of the schools and universities surveyed had a computer lab or a computer in the classroom. Even the ministry of education and other government agencies still rely heavily on paper-based system in their daily activities.

To illustrate lack of ICT systems use in Nigeria, here are some hard figures. As of September 2011, the population of Nigeria, a country of 923,768 km sq was estimated to be approximately 155,215,573. Nigeria only had 43,982,200 Internet access as of September 10, 2011, that is; 28.3% of the population, according to Internet World Stats (2011).

Another report by International Telecommunications Union (2007) entitled “Telecommunication/ICT markets and Trends in Africa 2007”, only 4.44% per 100 inhabitants of Nigeria’s 155,215,573 citizens had main fixed telephone lines in 2007. The Nigeria private sector is doing a lot to be competitive by integrating ICT in its daily business process; the Nigerian government on the other hand has allocated insignificant resources to ICT infrastructure and resources, which account for relatively low usage in Nigeria education sector.

Knowledge Transfer

Developed countries invest huge amounts of money in research and development of ICT, and recognize the importance of education and training, leading to huge return on investment and other benefits associated with technology, while government of other countries, mostly developing nations ignore these trends. Nigeria is one of the countries that have yet to harness the benefits of technology, especially in education and training.

Various education reforms in Nigeria since independent have not had much of an impact. A comprehensive reform must target core areas, such as, curriculum reform integrating ICT to learning process, teacher ICT training and development; entrepreneurship education using ICT and basic knowledge transfer. It is important to point out that there is credible and verifiable evidence in developed countries, in research journals and government reports of links between ICT in education and economic growth. ICT can be a key enabler of economic development and transformation of education system, specifically, in knowledge transfer, acquiring new skills daily and leveling the playing field for both rural and urban school.

Impact of ICT on Economic Growth

It is of utmost certainty that investment in ICT for education would lay the groundwork for transforming Nigeria economic landscape. Research has shown that investment in education can have unwavering impact on economic growth and development of any country. ICT has revolutionized the developed world economy with changes in different economic activities (Kodakanchi et al, 2006). Studies have also shown that given the proper infrastructure, ICT can be an enabler for socioeconomic development.

Torero and Braun (2006, p.22) argue that a country's ICT infrastructure can make a direct contribution to her gross domestic product and also have all-encompassing impacts throughout the economy, by reducing business transactional costs, improving organizational process and functions, improving the logistics of material to production and finally to the ultimate consumer. Examples from the developed world where significant ICT investments had major impacts include the United States with (GDP) of 8.9%, 10.0% in the UK, 9.4% in Singapore and 9.2% in Australia; all such developments were linked with improved productivity, competitiveness and citizen engagement (Bhatnagar, 2005; Kodakanchi et al, 2006).

In a nutshell, "Education has always been a critical investment for the future, for individuals, for economies and for all societies" (OECD, 2009, p. 2).

At present, it is widely recognized that knowledge is increasingly becoming preference of exchange for business and countries need to focus on building up their capabilities to compete in this area (Esque, 2009). A country with growth intention should develop her citizens, because several empirical studies have shown that educated and skilled population usually create, share, and use the knowledge to facilitate the effective creation, dissemination of wealth (Anderson, 2009; Selwood et al, 2003; and Unwin, 2009).

Song et al (2009) note that "Countries with pervasive information infrastructures that used ICT applications possessed advantages of sustained economic growth and social development" (p.4). The adoption of ICT is essential to survival and growth of any economy and gender empowerment.

Considerably, ICT deployment can potentially have a transformational impact on Nigeria education system, on the economy, and practically on every segment of our society where money and goods are exchanged. ICT can bridge the gap and expand access to education, facilitate learner-centered learning in Nigeria where teacher-centered processes prevail.

Challenges of ICT Implementation in Nigeria

The little economic impact of ICT in Nigeria is closely linked to the extent to which different ICT technologies have diffused across our economies. This is partly because ICT is a network technology; the more it's used the more benefits it generates. The diffusion of ICT currently differs considerably between the government and private sectors due to considerable challenges. These challenges have undermined the intended success to promote ICT for economy development through education and expand effective access in ensuring that the digital divide in Nigeria is bridged.

Some of these challenges that needs to be addressed are; unreliable power supply, inadequate and poor ICT infrastructures, limited connectivity, inadequate educational facilities (*in fact, majority of educational institutions in Nigeria do not have power supply during school hours, no computers/labs, no networks, no Internet access, no telephone lines, and no educational radios or televisions*), inadequate capacity and cost hinder access, few qualified ICT educators, inadequate teacher education programs, large classes due to limited teachers, insufficient educational resources, outdated and unrelated curriculum, bottleneck and redundant regulatory policies that hinders potential benefits. Nigeria happens to be one of the richest developing countries in terms of natural resources; why is Nigeria finding it difficult to adopt and deploy ICT plan for education that would facilitate growth? When other developing countries with similar or limited resources such as Ghana, Kenya, Egypt, Mexico, Peru, Jamaica, Bahamas, Trinidad & Tobago to name a few have succeeded in meeting many of their ICT-related challenges.

Overcoming Implementation Challenges

Weak institutions, such as the government both state and federal, the military, political leaders, some private sectors, powerful media houses etc... in my opinion, all constitute serious barriers to effective ICT adoption and deployment in Nigeria. As Torero and Braun (2006) observed, "Research shows that ICTs cannot be developed without strong institutions that overtly facilitate private investment. How does the Nigeria government facilitate ICT investment, with unstable power supply, failed technology leadership, fear of change, limited infrastructures and redundant policies?"

What seems to be holding Nigeria back is the lack of ICT leadership, vision and willpower on the part of the educational /technology professionals and policy makers.

"One of the biggest threats to ICT-enabled projects is resistance to change" (Tinio, 2009, p.20).

At this point, it is imperative for educational professionals, business leaders and economists takes the lead, assume their responsibilities to sensitize political leaders about the economic growth and educational benefits of ICT deployment in education.

Conclusion

For Nigeria to make effective use of ICT for the enhancement of education, the challenges that have been illustrated above have to be addressed. If addressed and properly implemented, information and communications technology has great potential for knowledge dissemination, sustained economic growth, effective learning and social development. Without a doubt, ICT in education is a critical foundation upon which the Nigeria economic recovery will occur. Human capital (quality of labor force) is generally assumed to be a key catalyst for national development and economic growth. ICT is assumed to be part of the growth equation and increase GDP of a country is generally associated with the availability of highly educated workers. Consequently, to ensure this potential in Nigeria, all parties responsible for effective education policy, legal, regulatory and ICT framework must uphold their responsibilities to guarantee successful implementation.

Nigeria of today should stop using her troubled past, history of tribalism, civil war, military dictatorship, political/ethnic/religion persecution and colonization to justify its failure to adopt and deploy modern technologies that would improve its education system and economy.

References

- Adomi, E.E., & Anie, S.O. (2006). An assessment of computer literacy skills of professionals in Nigerian university libraries. *Library Hi Tech News* 23 (2): 10-14.
- Anderson, N. (2009). *Equity and Information Communication Technology (ICT) in Education*. Peter Lang Publishers, New York.
- Bambanota, G. M. (2006). L'école congolaise de demain: quelles chances et quels défis? *L'école Démocratique*. Retrieved February 14, 2010 from <http://www.skolo.org/spip.php?article355&lang=fr>
- Benhabib, J. and M.M. Spiegel, (1994), The role of human capital in economic development – evidence from aggregate cross-country data, *Journal of Monetary Economics*, 34 (2), October.
- Berthelemy, G.C. and A. Varoudakis, (1996), Policies for economic take-off, Policy Brief no 12, OECD, Paris.
- Esque, S. (2009). Technology in education: transforming teaching & learning. Intel Corporation. *Global Symposium on ICT in Education*. Co-organized by the World Bank, the Korean Ministry of Education, Science, and Technology (MEST) and Korea Education & Research Information Service (KERIS), November 9-11, 2009. Seoul, South Korea.

- Evoch, C.J. (2007) Policy networks and the transformation of secondary education Through ICTs in Africa: The prospects and challenges of the NEPAD E-schools Initiative. *International Journal of Education and Development Using Information and Communication Technology (IJEDICT)* 3 (1), 64-84.
Available:
<http://ijedict.dec.uwi.edu/include/getdoc.php?id=2198&article=272&mode=pdf>
- Gwang-Jo, K. (2009). ICT in education: issues & questions. *Global Symposium on ICT in Education*. Co-organized by the World Bank, the Korean Ministry of Education, Science, and Technology (MEST) and Korea Education & Research Information Service (KERIS), November 9-11, 2009. Seoul, South Korea. Retrieved from December 20, 2009 from
<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTEDUCATION/0,,contentMDK:22284657~menuPK:617610~pagePK:148956~piPK:216618~theSitePK:282386,00.html>
- International Telecommunication Union (ITU). (2007). Telecommunication/ICT markets and trends in africa 2007. ITU. Geneva: Switzerland. Retrieved March 5, 2010 from http://www.itu.int/ITU-D/ict/statistics/material/af_report07.pdf
- Kodakanchi, V, Abuelyaman E, Kuofie, M.H.S and Qaddour, J. (2006) An Economic Development Model for IT in Developing Countries, *Electronic Journal of Information Systems in Developing Countries*, **28**, 7, 1-9.
- NITDA (2007) Nigeria ICT in Education Policy. Retrieved July, 2011 from
http://www.nitda.gov.ng/index.php?option=com_content&view=article&id=176&Itemid=157
- OECD. (2009). Education at a Glance 2009 – Summary of key findings – Embargoed until 11 September 11:00 Paris time. Retrieved March 17, 2010 from
<http://www.oecd.org/dataoecd/41/25/43636332.pdf>
- Office of Budget of the Federal Government of Nigeria (2011) Education and other Budgets <http://www.budgetoffice.gov.ng/EDUCATION.pdf>
- Song, K., Heo, H., & Lee, H. (2009). Measuring ICT in education readiness. *Global Symposium on ICT in Education*. Co-organized by the World Bank, the Korean Ministry of Education, Science, and Technology (MEST) and Korea Education & Research Information Service (KERIS), November 9-11, 2009. Seoul, South Korea. ICT in Education: Catalyst for Economic Growth in the Congo 28
- Tinio, V.T. (2009). ICT in education. *United Nations Development Programme*. Bureau for Development Policy, New York, NY.

- Torero, M. & Braun, J.V. (2006). Information and communication technologies for development and poverty reduction: The potential of telecommunications. *International Food Policy Research Institute*. Washington, DC.
- Tyler, K.D. (1998). The problem in computer literacy training.
Available: <http://www.ccs.new.edu/home/romulus/papers/mywu/report.htm> .
- Unwin, T. (ed.). (2009). ICT4D. Information and communication technology for development. *Cambridge*: Cambridge University Press.
- Wagner, D.A., Day, B., James, T., Kozma, R.B., Miller, J. & Unwin, T. (2005).
Monitoring and Evaluation of ICT in Education Projects. A Handbook for Developing Countries. Washington DC: *Information for Development Program (InfoDev)*. Retrieved February 04, 2010 from
http://www.infodev.org/files/2942_file_M_E_ICT_Education_draft_WSIS_optimized.pdf
- World Bank Report No 127. (2008). Governance, Management, and Accountability in Secondary Education in Sub-Saharan Africa. *Africa Human Development Series*. The International Bank for Reconstruction and Development. The World Bank. Washington, D.C.