

ICT in Nigerian Educational System: Challenges and The Way Forward

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Abstract

The deployment of Information and Communication Technology (ICT) in education has changed the traditional approach to teaching and learning processes by exposing both teachers and learners to contemporary learning experiences that were not possible before now. The utilization of ICT at all levels of education is unavoidable if individuals are to be adequately equipped for their roles in the modern society. It is when ICT is integrated into education that such education can better prepare learners for lifelong learning. Nations, globally have recognized the potential of ICT in education and have continued to consistently deploy it in their national educational systems for human and societal development. However, most developing countries, including Nigeria have continued to struggle with ICT integration into their educational sector. Despite the key roles and potentials of ICT in education, its utilization in the Nigerian education system has not been encouraging and this has affected the quality of the products from such learning institutions negatively. This paper examines the Nigeria ICT policy, its current implementation in education and factors militating against its effective integration, diffusion and sustainability in education as well as recommendations to improve its deployment and sustainability in the country's educational system.

Keyword: Information Communication Technology (ICT); ICT utilization; Educational system



Introduction

The advancement in Information and Communication Technology (ICT) has affected every facet of human endeavours. It is becoming increasingly more powerful and relevant in human activities as it is spreading and dominating many aspects of human endeavour. It has permeated into almost all areas of human activities including tourism, health, commerce, agriculture, education, etc. ICT plays a major role as it enables organizations to better handle the complex information flow and to use such information for effective formulation of policy and planning to ensure human and societal development. 21st century requires basic skills and competencies which an individual is required to possess for optimal functioning and survival in the digital age. The acquisition of these skills depends on the effective integration of ICT in teaching and learning processes in order to empower individuals for lifelong learning [1]. Higher education institutions globally are adopting ICT teaching and learning technologies to create an environment for both students and teachers to engage in collaborative learning and gain access to more robust information [2]. ICT can be extensively harnessed and deployed to improve the pace and level of development in teaching and learning processes [3, 4, 5]. This has made the developed nations to adequately deploy it in their educational systems. Europe, United States of America and other developed nations have continued to witness integration of digital and technological networks in classroom, leading to rampant utilization of interactive whiteboards, educational computer games, virtual learning context, more reliance on internet integration for both classroom and individual study [6,7].

As the developed nations continue to enrich their educational systems with ICT through comprehensive ICT policies, the developing countries are struggling with the political will to formulate and implement adequate policies that will promote its integration into their educational sectors [8, 9]. While the developed nations use high speed, cost effective fibre-optic technology for connectivity, most African institutions of higher learning are still on satellite connectivity which is very costly and has narrow bandwidth [10, 11, 12, 13]. Studies have shown that in spite of the potential of ICT in improving both quality and access to education, its utilization in the Nigerian educational system is very low [14, 15, 16]. Nigerian government policies and the regulatory agency have not demonstrated enough commitment to integrate ICT into its educational system thereby failing to compete favourably in the new knowledge economy and the competences required to stimulate national development [17,

18]. In addition, the challenges confronting the Nigerian educational sector are occasioned by absence of ICT usage, integration and diffusion in the sector [19].

[20] noted that until the country takes decisive steps to integrate ICT into its higher education, the challenges that currently characterize the system will remain. All these remarks underscore the fact that the National Information Technology Development Agency (NITDA), an agency charged with the responsibility of formulating and implementing ICT policy in Nigeria has failed in its constitutional responsibility. It is against this background that this paper examines the challenges of the Nigerian ICT policy implementation in education.

Nigerian ICT policy

Nigeria, like many other countries, has recognized the importance of ICT in education with the goal to provide the necessary basic infrastructure and training [21].

Nigeria introduced its ICT policy in April 2001. This was followed up with the establishment of the National Information Technology Development Agency (NITDA) as the agency charged with the formulation and implementation of the policy. The policy empowers NITDA to enter into strategic alliances and joint ventures as well as to collaborate with the private sector to accomplish the specifics of the country's vision of becoming an Information Technology (IT) compliant country in Africa and a major player in the information society by the year 2005 through using IT as a tool for sustainable development and global competitiveness.

Below are some of the objectives of Nigeria's ICT policy:

- To ensure that ICT resources are readily available to promote efficient national development
 - To guarantee that the country benefits maximally, and contributes meaningfully, by providing the global solutions to the challenges of the Information Age.
 - To empower Nigerians to participate in software and ICT development
 - To encourage local production and manufacture of ICT components in a competitive manner
 - To establish and develop ICT infrastructure and maximise its use nationwide
 - To empower the youth with ICT skills and prepare them for global competitiveness



- To integrate ICT into the mainstream of education and training
- To create ICT awareness and ensure universal access in promoting ICT diffusion in all sectors of national life.
- To create an enabling environment and facilitate private sector (national and multinational) investment in the ICT sector.
- To encourage government and private sector joint venture collaboration
- To develop human capital with emphasis on creating and supporting a knowledge-based society.
- To build a mass pool of ICT literate manpower using the National Youth Service Corps (NYSC), National Directorate of Employment (NDE), and other platforms as a train-the-trainer scheme for capacity-building.

Almost two decades of the policy, the Nigerian educational institutions including higher education sub-sector are still faced with challenges in terms of lack of modern ICT infrastructure and low bandwidth [22, 23, 24]. The utilization of ICT in education requires comprehensive policy framework and the political appetite to provide funds for acquisition, installation, maintenance, training and sustainability. Most African countries, including Nigeria, are yet to come up with a comprehensive ICT policy and the political will to adequately deploy ICT in their educational sectors as most of the universities are not sufficiently empowered to effectively integrate modern technology into their teaching and learning processes [25, 26,27], this has made [16] to conclude that the policy is yet to achieve the desired outcome.

At a time ICT is most needed to enrich the Nigerian declining education and economy, the sector is bedeviled with political and regulatory pressure, with the country sliding down global indices and some notable players in the sector even threatening to exit, resulting in negligible network investment [28].

The state of ICT utilization in the Nigerian education system

Despite the Nigerian government's recognition of the importance of ICT in education in her various policies [29, 30], the present state of ICT utilization in education at all levels is not commensurate to the public attention generated over the years [1] as various studies have reported that the rate of ICT utilization in the teaching and learning processes

in Nigerian schools is at low ebb [31, 32].

The benefits of ICT in education, especially higher education, seem unrealizable in Nigeria owing to poor policies that manifests in inadequacies in telecommunication infrastructure, power supply, funding, ICT literacy, among others [18].

Notwithstanding the high penetration of mobile devices in Nigeria, the country is far from being near the digital age as there are no government determined efforts to integrate ICT in its educational system even as the country ranks as one of the highest in mobile phone penetration [18]. Furthermore, [20] report on Networked Readiness Index (NRI) found that the lack of access to the internet is depriving Nigerian higher education institutions the opportunity to benefit from the advantages of blended learning and other web-based services to enhance teaching and learning processes.

Moreover, beside the supply and assemblage of computers in the Federal Government Unity schools only, the project was not actually implemented. [33] emphasized that the benefit of ICT in education cannot be realized by the mere introduction of ICT hardware and software in schools. [15, 34] concluded that computer is not part of classroom technology in over 90% of public schools in Nigeria. From observation, one can conveniently say ICT is not in the Nigerian education system as even those that study academic courses such as computer science or computer engineering are hardly exposed to the machines for proper training. Effective implementation and integration of new ICT trends into Nigeria's higher education is what is required [35]. When introducing innovation, every component of such innovation needs to be examined, the supply of ICT hardware and software does not guarantee the utilization where the required competence is not available. [36] stressed the need to pay adequate attention to the entire process of ICT integration in education, from policy formation to implementation phase.

In most schools in developing countries including Nigeria, ICT is taught as a subject and researchers have argued that this approach to ICT in education limits its impact in education [37] and is at variance with what is obtainable in the world outside where ICT is considered as an indispensable economic, social, and cultural tool [38, 33].



Regardless of the efforts of various levels of government in Nigeria to guarantee the use and penetration of ICT in education, such efforts have not yielded the desired outcome. [8] claimed that it is obvious that Nigeria is not yet ready to integrate ICT in education. Study conducted by [39] applied the Networked Readiness Index (NRI), involving a total of 115 economies in 2005-2006, to measure the level of preparedness of a nation to participate in and benefit from ICT developments. Nigeria was ranked 90th out of the 115 countries surveyed. United States of America topped the list, followed by Singapore, Denmark, Iceland, Finland, Canada, Taiwan, Sweden, Switzerland and the United Kingdom etc. Likewise, Nigeria was ranked 86th out of 104 countries surveyed in 2004 which shows a decline in Nigeria's preparedness to participate in and benefit from ICT developments. Similarly, a study by Nigerian Information Technology Professionals in America in 2002 indicated that given current ICT penetration it may take Nigeria 50 years to catch up with America on the aspect of PC count per household [40].

Challenges of ICT utilization in the Nigerian educational sector

Policy formulation from research findings is one thing and implementation of such policy is entirely a different ballgame. Changes in government, absence of technocrats within the government, incomprehensive policy, poor power supply, and lack of diligent implementation as well as qualified personnel have been the factors responsible for poor ICT integration in Nigerian education [16, 41, 42].

Whenever there is a change in government in Nigeria, the policies of the previous government are often jettisoned, this does not provide for continuity in government policies as the new government usually come up with its own policies. This practice has led to the abandonment of many laudable schemes including ICT integration. In addition, most of the politicians lack the requisite knowledge to formulate and implement ICT policy that would transform the educational sector to better position it for global competitiveness.

Another bane of poor ICT utilization in Nigerian education is the formulation of incomprehensive policy. ICT policy as stated by [43, 44] should be vertical, infrastructural and horizontal in order to be comprehensive enough to address the desired changes. According to them, the ICT policy is vertical when it covers the various sectoral needs like health, education, agriculture, tourism, etc. The idea of ICT policy to be infrastructural is related to telecommunication that is the foundation for its effectiveness. And the horizontal aspect

addresses the effect on larger scope of the society with regard to privacy, security, pricing, freedom of information. These three components are not sufficiently covered in the Nigerian Information Technology (IT) policy as far as education is concerned [44]. Though the policy stresses the importance of ICT to education, it does not offer specific sectoral (vertical) provisions for education, as issues that have to do with education are embedded as subheads under the sectoral provision for human resources development in the policy. There are no adequate policy provisions to address ICT integration in education.

Among the 31 general objectives of the Nigerian policy for ICT in education, objective 3 subsections xv, xvi and xxiv highlighted that ICT must be applied to: (xv) empower the youth with IT skills and prepare them for global competitiveness; (xvi) integrate IT into the mainstream of education and training; and xxiv) establish new multifaceted IT institutions as centres of excellence to ensure Nigeria's competitiveness in international markets [29]. One of the strategies to accomplish these was stated thus "Restructuring the education system at all levels to respond effectively to the challenges and imagined impact of the information age and in particular, the allocation of a special IT development fund to education at all levels" [29]. Under the sectoral provisions for human resources development the first four objectives relate to education, they are: a) to develop a pool of IT engineers, scientists, technicians, and software developers; b) to increase the availability of trained personnel; c) to provide attractive career opportunities; and d) to develop requisite skills in various aspects of IT. [44, 45] argued that regardless of these objectives and strategies relating to ICT in education, the policy is not detailed enough to adequately address the needs of the Nigerian educational system in relation to ICT.

Limited ICT infrastructure in Africa is making it difficult for institutions of higher learning to achieve their educational objectives [23, 46, 47]. Access to ICT facilities in higher education institutions in Africa is low because the institutions, teachers and students cannot provide the infrastructure upon which ICT in education can strive. Internet connectivity is expensive unlike in the developed countries where internet access is almost free of charge. There is also a significant ICT infrastructure gap between educational institutions in rural and urban areas in Africa [48, 47].



Allied with the above is the problem of poor power supply, electricity is the bedrock for ICT integration, diffusion and sustainability in education. Power supply in Nigeria has been a persistent challenge as the supply is epileptic and unstable [34]. The poor power supply has continued to affect every sector of the economy development negatively including education.

The required competencies to integrate, diffuse and sustain the utilization of ICT in the Nigerian education sector is also not available. Most teachers do not have the pedagogical understanding no how to deploy ICT as teaching and learning tools to improve the processes [49, 50]. Even schools that struggle to procure ICT facilities, the teacher lack pedagogical knowledge to utilize them in teaching and learning.

Another factor that impedes ICT Policy implementation in education in Nigeria is inadequate funding of ICT initiatives, which hinders the effective integration of ICTs in teaching and learning activities [11, 51, 52, 46]. As ICT integration into education in Nigeria continues to suffer setbacks, annual budgetary allocation to education has regrettably continued to shrink annually. In 2016 the government allocated 7.92% of its annual budget to education and in 2017 allocation to education was 7.4%, while in 2018 and 2019 the funds allocated were 7.04% and 7.05% respectively [53, 54]. This shows that the annual budgetary allocation to education in Nigeria over the years is grossly inadequate in line with the UNESCO recommendation of 26% of the total budget of a nation to its educational sector in order to comprehensively address the issues in the educational sector. Poor financial support from government is the major challenge of the National Open University of Nigeria (NOUN) to build the necessary infrastructure to adequately provide its students with learning materials online [55].

These challenges are not insurmountable with sincere political will to integrate ICT in Nigerian educational system.

The way forward

Teaching and learning process that does not involve the utilization technology cannot equip individuals for lifelong learning. In order to overcome the above-mentioned challenges, the following are suggested: Educational and ICT stakeholders in Nigeria should



as a matter of urgency come up with a more robust, comprehensive and feasible policy framework that will deeply entrench modern technology into its educational sector as a means of correcting the existing abnormality in the system.

The government should faithfully depart from lip-service funding to education and give education its desired attention by funding the sector adequately. This will help to revamp the deteriorated existing facilities and upgrade them to meet the requirements of education in the 21st century. The government should make efforts to comply with the UNESCO recommendation of 26% of the total budget of a nation to its educational sector in order to comprehensively integrate technological innovations and address the rot in the educational sector

With the provision of adequate funding, technology can be deployed to the educational sector to improve access and achieve inclusive education as well as improving its quality. The integration of technology into the education sector will go a long way in addressing the challenge of excluded children from education in Nigeria which has assumed an alarming proportion. Comprehensive integration of technology into the educational system will eliminate the challenge of poor standards which has ridiculed the quality of graduates that passed out from these institutions.

Collaborative efforts should be made by the three tiers of governments (federal, state and local governments) to initiate a massive and continuous professional development scheme for teachers in order to equip them with the attributes expected of 21st century teachers as well overhauling of the various teacher training institutions across the country with a view to repositioning them for up-to-date training of teachers. such professional development should equip the teachers with the ability to use ICT facilities as pedagogical tools. There should be partnership between schools that are experienced in educational technology and those that are less experienced. Such partnership will enable the experienced schools to mentor those that are making efforts to integrate innovations into their teaching and learning processes.

The deployment of technology will also help to address the problem of poor monitoring of educational activities by the various agencies that are charged with such



responsibilities.

Above all, the government should expedite action to provide adequate electricity supply in the country. Power supply is the bedrock of ICT integration in all sectors of any economy. Even when other challenges are addressed, without power supply in the schools, the integration of ICT will be a mirage.

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