

Application of ICT to Enhancing Basic Education System in Nigeria

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Abstract - The Basic Education system is the foundation for education all over the world and provides the school age children the needed knowledge for achieving greater heights in their educational pursuits. The recent development of the Internet and the breakthrough in the field of Information and Communication Technology (ICT) coupled with the emergence of the Ubiquitous Technology, the entire world has further re-asserted itself as a global village with rapid transformations in the major sectors of the economy, cultural, educational and political. The use of ICT tools and the application of the Technology to improving educational deliveries have been the major focus of most educational development organizations the world over. The Basic Education system in Nigeria witnessed its first transformation in 1988 with the introduction of the UBE (Universal Basic Education). This structure was revised in 2012 and its implementation in 2014 tailored to respond to the latest development in ICT and its use in enhancing educational delivery services. This article examines the current level of the application of ICT tools and software to Nigeria's Basic education system deliveries and human development in the sector and proposes how the technology could be further applied for the enhancement of the sector.

Keywords: ICT, UBE, NERC, Software, JSS, Courses

I. INTRODUCTION

Education is the major player in both human and national development in both developed and developing Nations. This is the major reason most developed Nations of the world (technologically and economically) budget a substantial part of the National Income for educational development. It is a vital tool for any country since it promotes knowledge, skills, habits, and values. The world today has become highly technological and Information and Communication Technology (ICT) has been identified as one of the basic pillars on which the modern society stands. The curriculum of the UBE programme was restructured and revised in 2012 and its implementation in 2014 tailored to respond to the latest development in ICT and its use in enhancing educational delivery services and equally witnessed the introduction of ICT courses into the system [1]. With the introduction of Information and Communication Technologies (ICT) into the Basic Education curriculum, the Federal Government of Nigeria [2], [3] recognized the need to key-in into the globalization process where ICT has become the driving force all forms of technological advancement the world over. Venezkyin [4] noted that ICT has emerged as an

indispensable tool for teaching and learning as well as a lever that helps to bring about change in schools[4].

II. RELATED WORKS

Thomas *et al.* in [5] presented "Information and Communication Technology (ICT) and the important and significant role it could play in enhancing teacher education as well as its challenges in E-teaching profession in Nigeria". The use of ICT facilities for teaching being hindered due to various reasons such as cost, electricity and access to computer education and teaching infrastructures. Onwuagboke *et al.* in [6], examined the prospects of using ICT tools to enhance educational deliveries in the basic education category and identified "teachers at this level as the principal actors". Onwuagboke *et al.* [6], suggested that it is "important to fully integrate ICT in instruction at the Colleges of Education level as it has become necessary in view of the demand on graduates of the college of education system to be ICT literate in an emerging world that is ICT driven" [6] and concluded that "achieving effective educational delivery through the ICT is an important factor towards improving the standard of basic education in Nigeria" [6]. According to Elahe Sanieifarini [7], "several studies reveal that students using ICT facilities mostly show higher learning gains than those who do not use" [7]. They proposed and discussed ways ICT could be applied beneficially to enhancing basic education and pupils and students learning in Nigeria.

Hassana[8] noted "that ICT education at the basic level of our education system is very low and that there is also a general quest for computer education knowledge among pupils/students and teachers, and that, those who had little knowledge, acquired such through private effort"[8]. In his work, Igbokwe in [1] "focused on the structure, special features and the implementation strategy of the revised 9-year Basic Education Curriculum emphasizing Basic Science and Technology component as one of the cluster subjects prepared with the aim of catching the young learner to love science, learn science and create change in the learner's environment" [1]. The Basic Education Curriculum was divided into Three (3); The Lower, Middle and Upper Basic Education Curricula (Primary 1-3, Primary 4-6 and JSS 1-3 respectively) [9]. In the revised curriculum, the use of ICT was emphasized with the provision of creating "an enabling environment by making computer systems available" in schools [9].

III. RESEARCH METHOD

The research method used for this work was descriptive and included an evaluation of the current state of ICT in respect to its application in enhancing educational system in Nigeria. Visits were conducted to some Junior and Senior Secondary schools in Ibadan to physically assess the usage of ICT resources by both teachers and students through interactive method.

IV. CURRENT ICT LEVEL IN NIGERIA'S BASIC EDUCATIONAL SYSTEM

The introduction of the teaching of Information Technology in the revised curriculum was aimed at creating a high level awareness in the instructional process to both the teachers and the pupils. The importance of ICT Infrastructure for a successful integration of Information and Communication in education cannot be over-emphasized. It does not however guarantee its success. Several factors have been identified as responsible for the low level of success recorded in the application of ICT in the Basic Educational System in Nigeria despite the federal government commitment and the deployment of relevant ICT tools to schools. These are summarized as follows [10] & [11]. Recurring problem of manpower (ICT teachers)

- Epileptic power supply in urban and rural areas
- Most teachers are not literate enough in the use of ICT talk less of teaching the subject
- Teaching environment (Computer laboratories)
- Lack of adequate funding
- Students' competence level
- High cost of computer hardware and software
- Weak infrastructure.
- Limited access to the internet.

The Federal Government of Nigeria published the National Policy on Information Technology and equally established the National Information Technology Development Agency (NITDA) to be responsible for the realization of the goals as stated in the policy paper [12]. In spite of the avowed commitment of the Federal Government of Nigeria to the UBE program, little has been achieved in the area of ICT in Basic Education. Again, improving ICT (skills acquisition and delivery) at the Basic Educational is of utmost importance towards the realization of the 2020 millennium goals of the government. In their report on a descriptive research survey carried out to determine the level of the application of ICT for effective management of secondary schools in Ekiti State, Nigeria, Adeyemi and Olaleye [13], concluded that the level of provision of ICT equipment in schools in the state is very low for effective management of these schools and teaching. The Federal Government has been responsible for implementing policies geared towards advancing educational developments of the basic education system and the control and management of the Federal Unity Schools. Nwangwu et al. in [14], reported in their study to

determine the extent of ICT integration in the curriculum of Federal Secondary Schools in Nigeria "that the utilization of ICT in teaching and learning is very low" [14]. It was equally pointed out that the low level of utilization was as a "result of low level access to ICT facilities" [14]. Therefore, based on the reports of these various studies, it could be safely concluded that ICT has not been deeply rooted in the development and enhancement of the basic educational system in Nigeria.

V. THE PROPOSED WAY FORWARD

Studies have established the gains attainable by students and pupils who have access to ICT in the learning process in advance world both in computer science as a subject and in other science base subjects such as mathematics, chemistry, physics etc. Also access to tutorial software has gone a long way in enhancing the learning and teaching processes. Kozma [15], noted "there is a common belief that the use of ICTs in education contributes to a more constructivist learning and an increase in activity and greater responsibility of students" ([16] cited in [17]).

. It is also consistent with the outcomes of the studies on the current status of ICT usage in Nigeria's Basic Educational system to invest on infrastructure, training and full implementation of the revised curriculum as reviewed in [9] and cited in [1]. So therefore, the Federal Government of Nigeria should be encouraged to invest massively on ICT to enhance the teaching and learning processes in the sector.

VI. RECOMMENDATIONS

The following recommendations are proposed for implementation by the Federal Government of Nigeria:

- i. Provision of electricity and telecommunication services are pre-requisites for effective ICT usage at all levels. It is pertinent to state that a good percentage of these schools are located in the rural arrears where electricity distribution is still being developed and therefore there would be the need to make provision for alternative source of energy such as solar, inverters and power generators.
- ii. Review of the present curriculum to include teaching and practice of simple programming technique in Excel and BASIC (Beginners All-purpose Symbolic Instruction Code) at the upper basic education level (JSS II – JSS III).
- iii. Establishment of well-equipped ICT mini-laboratories in all the schools (Middle and Upper Basic Education) of each state of the federation. Pupils/Students should be involved in computer practical works and also unhindered access to the INTERNET.
- iv. Establishment of mini computer centers with internet access in each ward of each of the local government areas across the thirty-six states as a way of bringing

the technology more nearer to the pupils/students even after the normal school hours.

- v. The revised Basic Education Curriculum (BEC) (2014) as effected by the Federal Government of Nigeria should be diligently pursued as it focuses on the integration of Computer Science/Information Technology (IT) to the teaching of science subjects in these schools (Middle and Upper Basic Education) with a view to improving the performance of students/pupils in these subjects. Despite the Federal Government commitment to improving the teaching and integration of ICT at all levels of the BEC, the manpower requirement to achieve this goal is lacking. Government should improve the infrastructures in the Colleges of Education and other Institutions of higher learning saddled with the task of providing the teachers needed for the teaching and learning processes of the BEC for these schools. Studies have identified dearth or near absence of ICTs in the teaching and learning processes in these institutions. Onwuagboke et., al [6] reported lack of ICTs in Colleges of Education in South-Western Nigeria and as such ICT were not adequately used in teaching and learning.
- vi. The Federal Government should implement measures and policies aimed at nurturing the competency of ICT teachers in the schools for effective integration of ICT. Technological Pedagogical Content Knowledge (TPACK, Lee Shulman, [18] cited by [19] frame argues that effective integration of technologies for teaching and learning in teacher training must begin with teacher's understanding and negotiating the relationship among the three components interacting: technology, pedagogy, and content. The Federal Government should implement training and re-training programs for teachers on the use of ICT tools for the learning and teaching processes.
- vii. Digital tablets should be provided to teachers at subsidized rates to enhance the knowledge of teachers on the use of ICT tools to enhance the teaching and learning processes. The 'Opon-Imo' [20] project of the Osun State government that provided about 150,000 tablets to Senior Secondary School Students is an example of enhancing access to ICT tools by the government

VII. CONCLUSION

It is clearly evident that ICT has become the major driving force for technological development in today's global tech village as its adoption by schools in both developing and developed nations of the world has become increasingly beneficial to the development of their educational system. Despite the achievements and the roles ICT play in education the world over, the Federal Government of Nigeria is yet to tap from the ample of opportunities as provided by ICT tools

to improve its educational learning and teaching process. The government should as a matter of urgency review its ICT policies in line with global best practices in order to improve the basic education in Nigeria and also implement the recommendations stated above.

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