

Role of Ict in Education

This short Country Report, a result of a larger infoDev-supported Survey of ICT in Education in Africa, provides a general overview of current activities and issues related to ICT use in education in the country. The data presented here should be regarded as illustrative rather than exhaustive. ICT use in education is at a particularly dynamic stage in Africa; new developments and announcements happening on a daily basis somewhere on the continent. Therefore, these reports should be seen as “snapshots” that were current at the time they were taken; it is expected that certain facts and figures presented may become dated very quickly.

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Overview

The Federal Republic of Nigeria has no specific policy for ICT in education. The Ministry of Education created its ICT department in February 2007, notwithstanding several government agencies and other stakeholders in the private sector having initiated ICT-driven projects and programmes to impact all levels of the educational sector.

The challenge is the lack of electric power and telecommunications infrastructure in a substantial part of the country. Mobile telecommunication currently covers 60% of the national territory, but mobile telephone companies generally power their base stations using electric power generators since the Power Holding Company of Nigeria (PHCN) is unable to supply them with power. This phenomenon is prevalent nationwide and constitutes the bottleneck to effective countrywide deployment of ICT in education.

It is projected that Nigeria will be a net supplier of electric power by the end of 2007 when its massive cross-country electric power grid construction and interconnection projects are completed. It is hoped that mobile operators will introduce technologies that permit Internet access on their networks across the country to facilitate the implementation of e-learning programmes.

Country Profile

The Federal Republic of Nigeria is the most populous black African country in the world. It is located in

West Africa, south of the Sahara. It borders the Gulf of Guinea in the south, Cameroon in the east, Niger and Chad in the north, and Benin in the west. It is a federation of 36 states divided into six geopolitical zones.

Table 1 provides some selected socio-economic indicators for the country.² Table 1: Socio-economic Indicators: Nigeria

Indicator

Population 140 million (2007)³

GDP per capita (US dollars) 393

Phone subscribers per 100 inhabitants (fixed and mobile)

14.5 (2006)

Computers 860,000

Internet hosts 1,094

Internet users 750,000

Radio households 15.3 million

TV households 6.3 million

The Education System

The National Council on Education co-ordinates planning, policy, and finance for the education sector under the federal government. The Council consists of the Commissioners and Ministers SURVEY OF ICT AND EDUCATION IN AFRICA: Nigeria Country Report Nigeria - 3

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of Education and the Joint Consultative Committee on Education. Education administration responsibility is shared with the federal government across the federation by the different administrative structures as follows:

- Primary level: local governments
- Secondary level: state governments
- Tertiary/university level: federal government

The federal Ministry of Education employs several national organs for its standards maintenance role in the specialised aspects of education. These include:

- The Federal Inspectorate Service
- The Nigerian Educational Research and Development Council
- The Science Equipment Centre
- The School Broadcasting Unit

Primary and secondary educations are both six years, and tertiary education may take one to four years depending on the qualification sought. The nine-year compulsory education is a combination of the primary education of six years and three years of junior secondary school education. Table 2 presents some enrolment statistics.⁴

Table 2: Gross Enrolment Ratios (%)*

Level\Year 1995 2000 2004

Primary 93.3 95.5 99.2

Secondary 32.0 24.2 34.6

Tertiary 4.3 6.6 10.2

*Percent of gross is the number enrolled as a percentage of the number in the eligible age group. As at 2004, the ratio of pupils to teachers at the elementary level was 50.3 to 1. The literacy rate was 68% overall, with the female rate at 59%.

Infrastructure

Telecommunication

Presently the two national carriers, Nigeria Telecommunications Company (Nitel) and Globalcom, are both private entities. Nitel was public ally owned until late 2006 when it was privatised. There are four digital mobile (GSM) operators, and 20 other operators have been licensed to provide fixed wireless services at national and regional levels. All six geopolitical zones have Internet access, and efforts are being pursued to increase penetration. In 2000 the penetration rate was 1 in 100 persons; by 2006 the ratio had improved to 14.5 in 100.5 Nigeria is a member of the consortium that runs the SAT-3 submarine fibre optic cable. The country launched its first communication's satellite NIGCOMSAT-1 on 13 May 2007 to provide telecommunications coverage, navigation, television distribution, direct broadcasting system (DBS), digital broadband, etc.

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Nigeria intends to use NIGCOMSAT-1 to create 150,000 jobs, save the country hundreds of millions of dollars a year, provide Internet access to remote rural areas, and to specifically help tele-education (educational television and e-learning) for the distance learning initiative. An agreement has also been signed with Patriot Inc (USA) to invest in VSAT manufacturing within Nigeria as a means to reduce the cost of antenna/VSAT on the local market. Investment in the telecommunications sector exceeded USD\$8 billion in 2006 from the low of USD\$500 million in 2000. MTN, the leading GSM operator, has nearly completed building a 3,500 kilometre, ultra modern nationwide fibre optic transmission network which will help accelerate ICT projects and values in the economy. MTN's extensive transmission infrastructure provides access to approximately 60% of Nigerians. Other private operators are engaged in similar initiatives and projects in the country.

Electrification

The nation generates 3,500 megawatts of electricity against a required minimum of 5,500 megawatts. About 40% of Nigerians enjoy electricity from the national grid. However electric power supply is sporadic, and several communities in urban areas lack electric power. To date, 57 of the 774 local government headquarters are yet to be connected to the grid. The government increased the number and accelerated the development of power generation facilities nationwide after the return to democracy.

Rural communities are worse off because of the absence of infrastructure. In pursuit of the vision to improve access to electric power, most especially by rural dwellers, the government signed into law the Nigerian Electric Power Sector Reform Act (EPSRA) which established the Nigerian Electricity Regulatory Commission (NERC) and the Rural Electrification Agency (REA). The REA is responsible for implementing the rural electrification fund, regulating rural electrification functions not covered by the NERC, and promoting rural electrification. ICT Policies

Nigeria started implementing its ICT policy in April 2001 after the Federal Executive Council approved it by establishing the National Information Technology Development Agency (NITDA),⁸ the implementing body. The policy empowers NITDA to enter into strategic alliances and joint ventures and to collaborate with the private sector to realise the specifics of the country's vision of, "making Nigeria an IT capable country in Africa and a key player in the information society by the year 2005 through using IT as an engine for sustainable development and global competitiveness." This vision is yet to be fulfilled. Outlined 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

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- 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 NYSC, NDE, and other platforms as a train-the-trainer scheme for capacity-building

Telecommunications

Nigeria's telecommunications policy⁹ was briefly stated by its Minister for Communication, Mr. Frank Nweke Jr., during his address at the 4th World Telecommunications Development Conference in Doha on 8 March 2006.

Policy implementation which was initiated as part of the current government's public sector reform agenda was launched in 2000 and focuses on:

- Deregulating, liberalising, and privatising the telecommunications industry
- Providing incentives to telecom investors and operators to facilitate their entry into the Nigerian telecom market by waiving tax and import duties
- Promoting and providing access to telecommunications facilities and services at reduced cost while increasing penetration

Consequently the Nigeria Telecommunications Act was passed by the National Assembly to give autonomy to the Nigeria Communications Commission (NCC) as the telecommunications regulator responsible for the implementation of the policy.

The government has also introduced converged licensing for ISPs for the benefit of the disadvantaged communities and rural populations. Bulk bandwidth purchasing by the Nigeria ISPs association

(NISPA) is currently at 100 naira per hour for broadband Internet access, which is less than USD\$1 at the going exchange rate.

Educational policy

Nigeria's objective for primary education does not elicit the knowledge of ICT. Emphasis is placed on:

- Widening access to basic education
- Eliminating present inequalities in the enrolment between the urban and rural populations
- Ensuring greater retention in schools
- Ensuring long-term permanent literacy for those children who have completed the programme

While ICT knowledge is not evoked in the vision set for primary school pupils, it is abundantly clear that government's new policies and programmes in the telecommunications and ICT policy sectors do address the problem otherwise.

Current ICT Initiatives and Projects

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Nigeria's education ministry is yet to design its ICT policy for education. The Ministry's ICT department was created in February 2007. However several different initiatives by government agencies and the private sector to introduce and promote ICTs in education are underway. The drawback to these programmes is the generally sporadic and insufficient supply of electric power in the urban areas.

ICT in primary education

The energy problem motivated the government to embrace the US\$100 XO laptop computer project for Nigeria's 24 million public primary school children. The government has ordered one million of these laptops, which can be cranked and do not need external power supply, for the primary school children. The laptop has in-built wireless networking, uses a 512 MB flash memory without a hard disk, and has two USB ports to which more memory or devices could be attached. It has a new user interface known as Sugar, and comes with a Web browser and a Web processor.

Given the telecoms and energy landscape described above, it may require a countrywide extension and provision of wireless Internet facilities by the private mobile operators, like MTN, accompanied by the provision of alternate sources of electricity to enable optimum usage of the laptops by Nigerian elementary schools. The laptops are yet to appear in the country as experts continue to debate the appropriateness of that ICT approach for Nigerian primary schools; opinions oscillate between establishing computer laboratories for all schools and instituting probably unsustainable child-per-laptop ownership schemes.

Some private elementary schools, however, have computer laboratories, especially those located in the high-class zones of the big cities.

ICT in secondary-level education

SchoolNet Nigeria is a non-profit organisation created to address the use of ICT in Nigerian secondary schools with the support of several government ministries.¹⁰ It is a public sector initiative geared at mobilising Nigeria's human and financial resources for the purpose of using ICTs in education.

SchoolNet creates learning communities of educators and learners to use ICTs to enhance education

by:

• Implementing, supporting, and co-ordinating ICT development projects in education • Providing and supporting lower-cost, scalable technology solutions and Internet for schools • Providing support mechanisms for schools for technical infrastructure and connectivity SchoolNet Nigeria has, in collaboration with the mobile phone operator MTN, established ICT laboratories/cyber cafés for four schools in four states in each of a four-phase project using local ISPs. SchoolNet has yet to embark on phase four of the project. Similarly, SchoolNet Nigeria, in collaboration with the computer company BusyNet, is setting up ICT laboratories/cyber cafés in four schools in 12 states. Another initiative by Zinox11 Computers, a private computer company, in collaboration with Microsoft, is set to revolutionise ICT usage in education from the primary to the university level. Zinox's strategy is targeted at students, lecturers, and the institutions themselves. The company provides the computers at highly discounted prices and hopes with government support to

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achieve 75% ICT application in Nigerian schools by 2010. First Bank of Nigeria is bankrolling the project. ICT labs are set up for schools that repay in two to three years. Lecturers repay the cost of their laptops in one year.

The ICT revolution has also registered corporate backing not only with computer companies like Zinox but also with the banks. Over 80 schools have benefited from the Zenith Bank's ICT for Youth Empowerment scheme. The scheme focuses on assisting Nigerian youth to bridge the digital divide through early introduction to ICT. Each school receives a minimum of 10 computers.

To encourage the use of ICT, the bank organises an annual ICT empowerment forum for youth that attracts about 2000 secondary- and tertiary-level students. The bank distributed 100 personal digital assistants (PDAs) to the first 100 students to arrive at the venue in 2006. ICT in tertiary-level education

The National Universities Commission (NUC), the government agency responsible for registering and regulating universities, has prescribed PC ownership for universities as follows: one to every four students, one PC to every two lecturers below the grade of Lecturer 1, one PC per Senior Lecturer, and one notebook per Professor/Reader.

While some universities, like the Nnamdi Azikwe University, have achieved a better ratio for their faculty, the same cannot be said for the PC-to-student ratio. However, some universities have made giant strides in campus-wide area networking and e-learning course deliveries. The Obafémi Awolowo University (OAU) boasts of having the best-developed ICT system in the country with its own VSAT access to the Internet and a campus-wide intranet. OAU has embarked on the progressive application of ICT to all its functions and services – academic, research, and administrative. The OAU has more than 6,000 users on more than 1,000 computers distributed in 15 computer laboratories across the campus.

Meanwhile, among the universities, the University of Jos (UNIJOS) is blazing the trail for content development and e-learning in addition to campus networking. UNIJOS, in collaboration with AVOIR (African Virtual Open Initiatives and Resources) and the Carnegie Corporation (USA), has developed e-learning programmes for several departments. One notable achievement is the medicine by e-learning Web site of the Department of Anatomy of UNIJOS that permits students to undertake virtual electronic dissections – a phenomenon believed to be the first of its kind in medical training worldwide. Under a collaborative programme, lecturers from the Universities of Oxford and Cambridge have facilitated courses as part of the ICT initiative sponsored by A.G. Leventis.

The authorities in other universities have organised study tours to the OAU and UNIJOS sites as part of preparatory activities towards the implementation of their own laboratories and campus networks.

The National Open University of Nigeria (NOUN), established in 2002, has created 27 study centres across the country. NOUN's dream is to establish study centres not only in each of the 36 states of the federation but also at local government area in order to make tertiary education available to all citizens. Each NOUN study centre is a computer laboratory/cyber café equipped SURVEY OF ICT AND EDUCATION IN AFRICA: Nigeria Country Report Nigeria - 8

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with a minimum of 25 computers in a local area network (LAN) configuration. The centres are yet to be connected to NOUN's REPRODAhq (repository, reproduction, distribution and administration headquarters) through a wide area network (WAN) to enable the mainstreaming of the following activities:

- Training and learning
- Assessment and testing
- Interactive sessions
- Communications (e-mail, chat, forums)
- Internet access
- Access to virtual library
- Other computer applications

NOUN uses the WAN to deliver distance learning courses to all the study centres. Each study centre has facilitators (instructional and tutorial) and student counsellors responsible for guidance and counselling services to the learners. The facilitators and counsellors are drawn from within the community or nearby communities. NOUN's ICT applications presently cover: • Management of student records (on-line application, admission, registration, and exam procedures)

• Learner management system (e-learning and the virtual library) • Communication (e-mail, SMS, video-conferencing, and Internet) • Delivery of the human resource and finance courses. The pdf files of these two courses are already available on-line. The goal of NOUN is to use the REPRODAhq to eventually reproduce all course materials in electronic form.

In 2007 NOUN will, for the first time, receive government budgetary allocation for its programmes. To date, NOUN essentially obtained funding from other sources to mount its programmes and projects.

Other government agencies employing ICT bemoan the low levels of government subvention.

The NUC started an on-line mandatory continuous professional development (MCPD) programme in pedagogy called the Virtual Institute for Higher Education Pedagogy for lecturers who do not have qualification in education.

The British Council has initiated a Digital Library Project (DLP)¹⁴ project to assist universities to digitise their libraries.

Acquisition of basic ICT skills and capabilities have recently been made mandatory as part of the national minimum standard for teacher education at the Nigeria Certificate of Education and first degree in education levels. Also, some universities in Nigeria have made ICT skills a requirement for continuing and graduating students. Thus, the teacher education colleges have also been impacted by the current ICT revolution. The Federal College of Education (FCE) in Omoku has 130 computers in three e-learning classrooms each with 30 computers and a cyber café with 40 work stations.

Microsoft and CISCO interventions

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In 2003 Microsoft and the Nigerian government signed a three-year agreement intended to enable Nigeria to deploy ICTs in order to accelerate economic growth. This partnership is to help Nigeria build its software development