

## **PROSPECTS, TRENDS AND ISSUES OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) INTEGRATION IN NIGERIAN EDUCATION CURRICULUM**

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### **Abstract**

*This paper examines the prospects, trends and issues of information and communication technology (ICT) in educational content delivery with regards to the Nigerian educational curriculum. It highlights the various facets of human endeavours where ICT plays significant roles. As the present world changes, there is need for educational stakeholders to follow the trend of events and utilise ICT in the planning, development and implementation of learning programmes. The paper equally considers the trends and issues in ICT which include: decreasing cost of computing and communications, enhanced capacity for collecting scientific data, increasing technology support for collaboration, increasing recognition of the importance of standards, vulnerability of electronic data network. A major aspect of ICT application in education is teleconferencing. The importance of teleconferencing is also elaborately stressed on the course of this research.*

**Key words: Prospects, trends, issues, ICT, curriculum**

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### **Introduction**

The use of computers, internets, open-educational resources (OER) and others have formed an integral part the current educational programme in Nigeria and other parts of the world. Therefore, there seems to be advancement in information collection and dissemination. The educational sector is not left out of this development. There are advantages in the application of ICT facilities in educational activities delivery. This has also witnessed robust speed and rapid improvement.

Looking at the classroom setting, the teaching-learning process can be made easy by the available technologies that aid to acquire, refine, analyse and transmit information and other data. Many state governments in Nigeria have adopted the use of ICT in schools and colleges. Importantly, the federal and the Local governments are not left out of this plan. This is evident in the fact that many teachers, public and civil servants are sent on training and re-training to

acquire the basic knowledge on the application of ICT facilitates to teaching and other job delivery.

The educational sector is presently receiving a boost. Many public schools are provided with sets of computers and other electronic materials to enhance effective teaching and learning. Some state governments like Akwa Ibom have built electronic library (e-library) all in an attempt to align with the global best practice in information and communication technology development.

### **Prospects of ICT Integration in Education**

The success ICT has done in education is tremendous. The use of internet for instance, via cellular phones and computers, helps to equip people with important tools of communication that break all sorts of barriers. Indeed our lives have been made much easier with internet, bringing a thought of how difficult life would be without technology. Zorkoczy (1984) says that ICT in the education sector plays a very crucial role in offering easy access to knowledge. As the saying goes, you can't teach an old dog new tricks. The government has seen this and now it has embarked on a comprehensive programme to impart ICT knowledge to learners from primary school level. There are practices of applying the technology into education activities. Meanwhile, ICT allows teachers to connect and work with their students anywhere and anytime. Martin (1995) declares that ICT also provides e-content delivery system in early grade – classrooms and provides the means of sharing information from researcher to practitioners.

Today's world and society is changing very fast with the help of ICT (information communication technology). Everyday new technologies are developed to simplify the everyday work. In time past, the systems of communication used in Nigeria were the traditional media; these were considered the best forms of communication then. It involved the use of town criers, gong, ivory horn etc. to pass information across to the people. According to Wald, (2004), ICT tools have helped people find explore, analyse, exchange and present information.

Ifueko (2011) submitted that ICT has been in Nigeria for a very long time now just that as time goes on it keeps getting better though it does not have all it takes yet but it has witnessed encouraging development in various sectors of the countries. Looking at the communication sector of Nigeria for instance, when ICT was still at its primitive stage in the country, devices, like gong, town criers were used to disseminate information to the people but these media faced setbacks because they were only confined to a state, that is, the information could not reach a scattered audience but with time as ICT developed, devices like radio, television, books etc. are used to communicate to a large and scatter audience bringing an advancement in the communication process. Also, the medical sector in time past lacked devices to enhance proper medical delivery but with time technological devices have reached the sector thereby bringing development to it. There are now robotic devices that perform surgical operations in hospitals. It fastens professionalism and perfectionism. Thus, we can say that ICT has been very relevant to the medical sector.

More so, the educational sector in Nigeria has developed due to ICT. Now we can boldly say gone were the days when Nigerians were illiterate due to their lack of exposure to these devices. Now, it keeps getting better; there are books, journals, internet, etc. Students can learn from there to improve on their level of education. Furthermore, the economic sector has witnessed great

change also due to ICT. Some Nigerian resources such as coal, steel, and cotton, are now refined and produced in Nigeria because there are devices to enhance them.

According to National Research Council (1995), ICT is currently undergoing development in Nigeria because several steps have already been taken by government agencies to improve ICT in Nigeria. Many world organisations such as the U.N. and other international groups are working on projects to deal with the financial problems in developing countries like Nigeria. For example, the one laptop per child (OPC) project is working to deliver an affordable personal computer to every child in the developing nation at low cost, thereby, making kids digitally inclined to ICT devices at tender ages. Thus, increasing the possibility of ICT development in Nigeria. Farotimi (2001) expresses that the success of ICT integration has led to the improvement of electricity of Nigeria, since most of these devices require electrical power to function and are being tackled by the government of Nigeria.

There is now an improvement in the power supply nationwide which has boosted the use of these technological devices. The government is now involved in the advancement of the educational sector in the use of ICT by including it in the curriculum of schools in the country starting from the primary to tertiary stage of learning. For instance, in Kogi State University, the course CSC has been adopted as part of their curriculum and it is compulsory for every student to offer. This has added to the students' knowledge on computer as well as the internet, thus enhancing their knowledge of ICT.

The government of Nigeria from time to time creates awareness where intelligent students who want to advance in ICT knowledge are sent to developed countries to study in order to impact Nigeria with the knowledge of ICT. For instance, Nigerian secondary schools embark on competitions after which successful candidates are sent abroad to further their ICT related studies. Farotimi (2001) explains on the issues of internet access, network providing companies are beginning to take their services to the grass-root to enhance internet access. For example, in Anyigba, masts are now being mounted to improve service delivery unlike before when there was poor network delivery because of the absence or inadequate network masts in the community. Government institutions, ministries, even private firms in Nigeria are encouraging their staff to be literate in ICT. For example, in Akwa Ibom State, the government sponsors many civil servants on the use of ICT devices e.g laptops, computer operations, internet surfing, website facilities and others.

### **Trends and Issues In ICT**

Advances in information technology offer unprecedented opportunities as well as new changes in the international exchange of scientific data. Rapid improvements have led to ever greater computational speed, communication bandwidth, and storage capacity at costs within reach of even small scale-users, a trend that appears likely to continue well into the future. Moreover, technical advances in satellites, sensors, robotics and fiber-optics and wireless telecommunications are extending the range of technologies affecting the acquisition, refinement, analysis, transmission and sharing of scientific data.

### **These Are Some of the Trends and Issues in ICT that Enhance Capacities for Collecting Scientific Data**

Zucker, (2008) explains that the natural sciences produce prodigious amounts of data. Earth observation and weather systems lead the way with the potential for collecting terabytes per day. The same trends in low cost microelectronics that are fuelling the information and network revolutions also are driving the development of low-cost sensors and (relatively) low cost storage systems. Effort such as the international Geosphere – Biosphere programme (IGBP) and then human genome project involve the collection and distribution of large volumes of data.

### **Increasing Technical Support for Collaboration**

Watson, H. & White G. (2006) states that scientists are increasingly aware of the importance of information technologies that facilitate collaborative work. The electronic messaging capabilities of operating systems are used widely in the context of the ARPANET and in private commercial messaging system. In recent years, electronic mail (e-mail) system, mailing list and bulletin boards have enabled rapid information sharing among groups of people distributed throughout the world. Available computer base tools and technologies have enhanced collaborative work by facilitating cooperative research. For example, the use of remote instruments and electronic data publishing that speed the dissemination of research result. Video conferencing system based on Integrated Services Digital Network (ISDN) services and Asynchronous Transfer Mode (ATM) are now available commercially, offering high quality images and advanced application sharing features. Investment in commercial products that support information sharing and workflow have accelerated as vendors recognise the importance of multiuser support to acquiring and sustaining market share.

### **Increasing Recognitions of the Importance of Standards**

Standard plays a major role in the evolution of tele-communication network because of the importance of interoperability of these networks, which also must provide for continuous paths for improvement without disruption of existing infrastructure. The marketplace today often converges rapidly on one or a few standards, the standard for a high density CD-ROM (and more recently, digital versatile disks (DVD) being an excellent example.

Sharing of analysis software and commercially developed computing tools among the different systems are encouraged. The need for standards for effective data exchange is not confined to telecommunications, computer languages, and storage media, even within a narrow discipline or sub discipline. True data exchange with proper interpretation of numbers, symbols, words and graphics depend on standard for data structures, database management system and even terminology.

### **Cooperation in monitoring and Controlling of Network Activity**

The rapid growth in networks over the last 15 years has led to the need for appropriate levels of cooperative monitoring and control. Initial and hoc activities in developing protocols has given way to more elaborate standard and networks can now account for specific activities of users and can support flexible billing systems. Public key encryption technology is increasingly accepted as a means of protecting data and authenticating users.

### **Internet Congestion Becoming A Serious Problem**

This is one of the issues whereby scientific activities are disrupted through lack of control of network capability. High bandwidth applications are impeded or blocked, and urgent communications are slowed.

### **Vulnerability of Electronic Data Network**

Some scientific data must be treated with special care to ensure their dissemination only within a prescribed community (e.g. to protect the privacy of individuals, to allow for verification of results, or maintain the proprietary advantage of a private enterprise). Today, tools for authentication and for protecting privacy of data are difficult to use. They do not allow wide spread standard and in some cases, involve encryption technologies that cannot be universally disputed.

### **Tele-Conferencing and Educational Curriculum Delivery**

A teleconferencing is a telephone meeting among two or more participants involving technology more sophisticated than a simple two-way phone connection. At its simplest, a teleconference can be audio conference with one or both ends of the conference sharing a speaker phone (Becta, 2006). With considerably more equipment and special arrangements, a teleconference can be a conference called a video conference, in which the participants can see still or motion video images of each other because of the high bandwidth of video and the opportunity for larger and multiple display screens.

#### **Importance of Teleconferencing**

1. **Enhance Productivity:** Teleconferencing allows dispersed employees to communicate with co-workers at headquarters, conducts long-distance meetings and strategic discussion and share grievances and other human resources issues.
2. **Remote Learning:** This is one of the importance of teleconferencing (Ainley, 2007). In education, students no longer have to feel confined to their classrooms. With teleconferencing, they can reap the benefit of knowledge from all over the globe. They can interact with experts students from other schools and places they have never visited at the push of a button. With conferencing, educators can make themselves available even when they are not at the school. This means they can lecture students who might need their help outside office hours, or collaborate with other experts and specialists without them having to be in the same classroom.
3. **No Need for Field Trip:** (Bosco, 2006) states that teleconferencing can be conducted anywhere in the world between different classrooms. Students no longer need to go on field trips as much. This will save the time and energy. Cost reductions can also be significant. Being able to teleconference with hundreds of students will certainly reduce expenses. Compared to the conventional method of cost of bus, train and meals. Teleconferencing offer many cost saving. You can take your students on a trip thousand of miles away with only a push of a button. The school management can use the time and cost saved from reduced trips more productively.
4. **Attend Class From Home:** Another use of teleconferencing in education is that it allows students attend classes from home. Sometimes students may miss classes due to illness or challenges related to living in remote areas. Teleconferencing gives these students a real chance to attend classes from their homes, meaning they would not fall behind in class. This also works perfect for educators as staff meetings can be done through teleconferencing. This simply means that staff members can cut straight to the live meeting and eliminate the unnecessary travelling and stress. The meeting can also be recorded and passed to staff members who were unable to take part in the live meeting.

5. **Invite Expert to the Class:** With teleconferencing in education, boring classroom learning is a thing of the past. The technology gives educators new and existing ways to their students, for instance, the technology allows teachers to invite guest speakers into the class to help illustrate important points in their lesson. This allows for an interactive experience for students with experts that boast a wealth of skills in the field being discussed. Teleconferencing is a better option as it can reduce travel time.
  
6. **Strengthen Exchange Among Schools:** With the uses of technology, students share terrifying experiences, messages of hope and encouragements, as they bounded over a video conference initiated by the Global Nomads Group (Curriki, 2008). Most students are using the technology to connect with students from other schools. This presents a great opportunity for students to connect with other students that they would possibly never meet otherwise.

### **Conclusion**

The cost of owning and operating increasingly powerful computers has dropped dramatically over the past few decades. Zittrain (2008) highlights issues in today's personal computers. For example they offer the processing speed of workstations of fewer than 5 years ago at a fraction of the cost. The availability of information technology products with ever-increasing computing, communication and storage ability have contributed to the ubiquitous assimilation of computers into modern daily life, and complex application taking advantages of continually improving computer performance. Information technology is being applied increasingly to product development, manufacturing and distribution, as well as to new financial services such as debit/credit transaction and investment portfolio management. One effect on this phenomenon is an opportunity for "technology leapfrogging". Late entrants to the use of information technology can enjoy the immediate advantage of low cost system. Modern computing technology is thus increasingly accessible to low-budget endeavours as prices fall also to the press of mass-production and competition. In general, it should become easier and cheaper with time to obtain technology to participate in the global sharing of scientific information.

### **Recommendations**

The following recommendations are hereby made:

1. Every Nigerian should have prerequisite computer and ICT knowledge to function effectively.
2. Schools and colleges needs to expand their scope of ICT.
3. Government at all levels should provide training and re-training for its workers on ICT based programmes.
4. Teachers should teach using computer and internet mediated programmes.
5. There is need for standardisation and improvement in ICT service provisions.



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