EDUCATION IN THE INFORMATION AGE: GLOBAL CHALLENGES AND ENHANCEMENT STRATEGIES FOR ACHIEVEMENT OF VISION 2020 IN NIGERIA

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Abstract

This paper discusses education in the information Age, highlights the Global Challenges and enhancement of Vision 2020 in Nigeria. Education in the Information Age brings together the experience of academics, school officials and representatives from business, government and other participants and this has been observed to enhance the quality of graduates from all sectors of education. The paper identifies application of some tools and packages that would enhance achievement of education in Vision 2020 in Nigeria to include policies, programmes and projects that would improve education and the experts involvements in the development process. It was recommended among others that there should be review of curriculum and active involvement of the students, parents, teachers, shareholders and all those that are interested in the growth of education so as to benefit maximally in terms of the increased productivity, teamwork, collaboration and socio-cultural integration.

Introduction

Countries are facing daunting challenges in the global environment that have significant implications for human development, some universal and some unique to developing countries. These challenges have raised serious questions about the purpose, mode and operation of tertiary education, and are leading to earnest political, structural, institutional and dialogue, readjustment and transformation. Education today, like other economic and societal sectors is in a state of disequilibrium, flux and dynamic evolution, amplified by its multifaceted nature, the diversity of its providers and clients and the multiplicity of its shareholders. The tertiary education institutions find themselves to varying degrees at the point of convergence of three powerful factors namely: global trends, global agendas and global constraints (Cox 2007 and Deng 2003).

Technology is not a magic solution, not everything works and nothing is easy. There are no push button solutions. To be effective, specific technology must be carefully matched to the need and the environment. These two principles: the promise of technology and the need for caution in its application were the topics of a 1997 seminar sponsored by the later-American Development Bank and the Global Information Infrastructure Commission. Education in the Information Age brings together the experience of academics, school officials and representatives from business, government and other participants. Their presentations are not about new ideas or theoretical formulations but rather about the more pedestrian but often more arduous task of finding out what works in putting information technology to use in education.

The global economy for achievement of Vision 2020 in Nigeria is currently undergoing an information revolution whose significance will equal that of the Industrial Revolution of the 19th century. At the moment, having coal and iron ore and the ability to harness them in steel mills was the critical step. Using this raw material to build better looms and spinning machines established the comparative advantages which put some European countries ahead of the rest of the world. Clearly applying knowledge to everyday business means that the people working in this business must
understand and master the requisite technologies. This requires creating a labour force that is capable of dealing with information technology, (Gatier and Joel, 2007 and Dale 2009).

Information Communication Technology as asserted by (Dusen 2007 in Garson 2007) that it will transform education from faculty-centred to learner-centre making instruction better by replacing the “scope on the stage” with interactive, individualized learning possibilities, will improve scholar research by enabling far greater collaborations as well as information access, and will improve educational organisation by facilitating interdisciplinary connections and encouraging academic “total quality management”. Moreover, on-line education potentially may be disseminated to millions who previously could not have hoped for a college education due to circumstance with the erosion of job tenure and job security, and the challenge of twenty-first century university education will more and more have to do with dispersed adult learners who must remain at work but re-tool for career changes.

Hamilton and Miller (2007) viewed the Information Communication Technology era as possible to deliver education on a mass based without the need to process the expenses of physical infrastructure once though necessary. Many others also believe that enormous salary cost could be saved by restriction high paid experts facility to content while actual mass online course delivery is mediated by technicians graduate students, part-timers and other lower-paid staff. Thus, the Information Communication Technology (ICT) has cost-cutting motives.

Current Global Challenges
The world now faces a series of challenges and crisis such as climate changes, food, water, peace, finances and so on. According to the Millennium Project, there are 15 interdependent global challenges facing humanity, which they believe are crucial questions for policy action now and in the next decade and if timely and wise decisions about them are taken, will set the course of global development and societal achievements in the years immediately ahead. These are typified as follows:

According to the Millennium Project, the internet and mobile phones are merging. The internet is evolving from a passive information repository, through user-generated and participatory system to a more intelligent partner with a collective intelligence and just-in-time knowledge, thus making it the most powerful force for globalization, democratization, economic growth and education in history. Its feature that qualifies the above description includes:

- Its ability to transmit wirelessly, making it possible to be mobile, while covering wider range;
- Its access in local and remote areas in developed world as a result of (a) above;
- The manufacture of cell phones with internet facilities making it possible to be mobile for e-mails, instant messaging and collaborative software (video-conferencing etc) to link groups of people in humanitarian, scientific and business projects;
- Multimedia growth in the internet which has given birth to multimedia approach to learning (using several different ways of giving information).

The features above is a true reflection “the information revolution and extraordinary increase in the spread of knowledge have given birth to a new era-one of knowledge and information which effects directly on economic, social, cultural and political and political activities in all regions of the world, including Africa” (Ogunsola, 2005). Governments worldwide have consequently recognized the role that ICTs could play in socio-economic development. According to Ogunsola (2005), a number of countries especially those in the developed world and some in the developing countries are
putting in place policies and plans designed to transform their economies into an information and knowledge one (in the words of the global challenge, making the convergence of ICT work for everyone), which in the case of most developing countries like Nigeria, must start with an improved educational usage of ICT tools. This is, because, ICTs can help in the management of current global challenges in the following ways:

(i) ICTs help expand access to education: ICTs are a potentially powerful tool for extending educational opportunities, both formal and non-formal, to previously underserved constituencies – scattered and rural populations, groups traditionally excluded from education due to cultural or social reasons such as ethnic minorities, girls and women, persons with disabilities, and the elderly, as well as all others who for reasons of cost or because of time constraints, are unable to enroll on campus. This is as a result of two distinct features of ICTs viz:

- their ability to transcend time and space (Anytime, anywhere)
- access to remote learning resources, as teachers and learners no longer have to rely solely on printed books and other materials in physical media housed in libraries (with restricted access and available in limited quantities) for their educational needs. With the Internet and the World Wide Web, a wealth of learning materials in almost every subject and in a variety of media, can now be accessed from anywhere at any time of the day and by an unlimited number of people.

(ii) ICTs helps improve the quality of education: ICTs can enhance the quality of education in several ways.

(iii) ICTs help prepare individuals for the workplace: One of the most commonly cited reason for using ICTs in the classroom has been to better prepare the current generation of students for a workplace where ICTs, particularly computers, the Internet and related technologies, are becoming more and more ubiquitous. According to Tinmio (2003), EnGuage of the North Central Regional Educational Laboratory (U.S.) has identified what it calls “21st Century Skills,” which includes digital age literacy (consisting of functional literacy, visual literacy, scientific literacy, technological literacy, information literacy, cultural literacy, and global awareness), inventive thinking, higher-order thinking and sound reasoning, effective communication, and high productivity. The table below shows a brief explanation of each skill.

<table>
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<tr>
<th>Table 1: Skills needed in the Workplace of the Future</th>
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<tr>
<td><strong>Digital Age Literacy</strong></td>
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<tr>
<td>Functional Literacy</td>
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<tr>
<td>Ability to decipher meaning and express ideas in a range of media; this includes the use of images, graphics, video, charts and graphs of visual literacy</td>
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<tr>
<td>Scientific Literacy</td>
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<td>Understanding of both the theoretical and applied aspects of science and mathematics</td>
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<tr>
<td>Technological Literacy</td>
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<tr>
<td>Competence in the use of information and communication technologies</td>
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<td>Information literacy</td>
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<tr>
<td>Ability to find, evaluate and make appropriate use of information, including via the use of ICTs</td>
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Cultural Literacy  | Appreciation of the diversity of cultures
Global Awareness  | Understanding of how nations, corporations and communities all over the world are interrelated.

**Inventive thinking**
Adaptability  | Ability to adapt and manage in a complex, interdependent world
Curiosity  | Desire to know
Creativity  | Ability to use imagination to create new things
Risk-taking  | Ability to take risks
High-Order Thinking  | Creative problem-solving and logical thinking that result in sound judgment

**Effective communication**
Teaming  | Ability to work in a team
Collaboration & Interpersonal Skills  | Ability to interact smoothly and work effectively with others
Personal & Social Responsibility  | Be accountable for the way they use ICTs and learn to use ICTs for the public good
Interactive Communication  | Competence in conveying, transmitting, accessing and understanding information
High Productivity  | Ability to prioritize, plan and manage programs and projects to achieve the desired result: ability to apply what they learn in the classroom to real-life contexts to create relevant, high-quality products

**Source:** Adapted from Tinio (2003). The ICT in Education

The potential of ICTs to promote the acquisition of these skills is tied to its use as a tool for raising educational quality.

**Education in Information Age Enhancement Strategies**
To achieve the anticipated Education Vision by the year 2020 in Nigeria, Government and all education shareholders must work towards the following:

1) Imperative to transform the nature of Education toward building higher-order cognitive skills, more inquiry and project-focused modes of operation and more collaborative working styles and toward creating “smart learners”.

2) An important role in the process of educational change by opening access to a wealth of information, by facilitating the process and by engaging the interest and attention of the learner.

3) “Technological fluency” may stand alongside reading and Mathematics as one of the essential skills for a successful life. Word processors become the paper and pencil of the information age. Spreadsheets replace the slide rule of engineers and the calculating machines of the office workers. Data bases replace cabinets full of papers. Those unable to operate these new tools are handicapped in the modern world.

4) Yet, technology provides no “Magic bullet”. Indeed, the introduction of technology on a large scale often creates new problems to be addressed. There is a price to be paid. The ticket for admission to information technology is expensive. In addition to resources, it requires concerted effort on the part of many actors in society. This is no minor challenge.
5) The goal should be the “Mindful Introduction” of technology into education not flooding the mind and the school system with every thing that technology can offer, (Cook and Kirkpatrick 2007, Iwuudu 2009).

Supply-driven initiatives, the result of enthusiastic salesmanship on the part of technology zealots do not work, not all the things work in all contexts. Selectivity is essential. Understanding what the new media can offer in each case is vital. Successful experiments start with a well-identified need for which new technologies may be the appropriate answer, (Cabezas 2008, Ibe-Bassey 2002).

What is the Information Age?
There has been four major socio-economic epochs or ages in the history of human civilization. These are defined by the primary activities that humans engaged in during the respective age. The ages are:

- **Stone Age**: 100,000 B.C. - 6000 B.C.
- **Agricultural Age**: 6,000 BC - 1750 A.D.
- **Industrial Age**: 1750 A.D. - 1975 A.D.
- **Information Age**: 1975 A.D. - to date

Most experiments to introduce information technology have taken place in mature and rich economies, where the resources are ample and the teachers well qualified. But the path for developing countries which lack those resources remain largely uncharted, (Cheema and Rendanelli, 2003).

Several countries have had ample experience with the use of interactive radio with broadcast television and satellites. Indeed, broadcast radio and television have respectable and predictable cost-effectiveness in many areas of basic education. They tend to enhance equity since they can reach a large pool of students and youth at modest per participant costs. These initiatives have been created and supported by the private sector in burdening the state from their everyday operations and their costs, (Calendon and Oyerao 2008).

We live in an information age in which there is a rapid pace of change being brought about developments in Science and technology, for example;

- **Information and Communication technology**: This includes computer and information science and a host of application areas including areas like cell phones, robotics, digital cameras, computer games and the web.
- **Nanotechnology**: This is the Science and Technology of matter approximately on the scale of 1-100 nanometers (billionths of a matter) in size.
- **Geonomics**: the Science and Technology of genes, a leading edge component of the study of biology and medicine.

A good informal and formal education helps people to meet their current and potential future needs in this rapidly changing world. (Demery et al 2005).

**Globalization of Demand for Education as an Achievement of Vision 2020**
There is now a solid recognition among decision-makers and beneficiaries that education is crucial for economic development, human welfare, societal advancement and environmental protection. Looking into the future, the demand for education is going to escalate. We have already entered the 21st century with a basic education deficiency gap of an estimated 50 million children out
of school and about 850 million illiterate youth and adults. Equally pressing will be the demand for higher levels of education, triggered by more completers of first-level education, higher ambitions of parents and students, and more sophisticated requirements for the market place. As developing countries are forced to compete with more developed countries in a competitive knowledge-based global economy, they are far behind in providing educational opportunities at the post-basic levels. Moreover, the fast changes in knowledge and skills will require further education and upgrading and reorientation of a significant segment of the population. If only 20% of the adults population needs such educational services we are talking about more than 600 million participants, Economic Commission for Latin America and the Caribbean (ECLAC) (2005).

**Globalisation of Culture and Global Social Concerns**

There is a growing consciousness all over the world about such issues as democracy, citizen empowerment, freedom of communication, culture, civic participation, gender equality, human rights, civil justice, peace and general quality of life. Likewise, development goals are no more restricted to economic growth Canadian International Development Agency, United Nations Research Institute for Social Development, International Development Research Centre (CIDA-UNRISD-IDRC) (2004). The International Development Goals (IDGs) target a world Free of poverty and free of the misery that poverty breeds. The goals are set in terms of reducing poverty, improving health and education and protecting the environment. They have been adopted by the World Bank, the International Monetary Fund, members of the Development Assurance Committee of the Organisation of Education Central Development (OECD) and many other agencies. They found a new expression in the Millennium Declaration of the United Nations, adopted by the General Assembly in September 2000.

A major challenge for the achievement of Vision 2020 in Nigeria in the face of existing and potential strife, exploitation, and human rights violations is to instill in the minds of the citizens at all levels the principles of tolerance, democracy, human rights, responsibility, accountability and peace among countries, within countries and among people. Since wars begin in the minds of men, it is in the minds of men that the defenses of peace must be constructed. Meanwhile and despite advances in health and medicine, massive human suffering continues due to ravaging diseases, bad health conditions, lack of understanding of health issues and limited use of health services, Corporation de Investigaciones Economicas, para Latinoamerica de Ciencias Sociales- Sede (CIEPLAN-CORSAPS – FLACS) (2006).

The challenges of social development conflict resolution, peace and better quality of life are not only formidable, but they belong to a category with which we do not have much experience. Unlike economic development, physical construction and technological advancement, these categories are not straightforward. Many of their elements are contextual, fluid and controversial (NSP 2008). It is in the interest of everybody – governments, business, committees, to draw on the best minds, approaches and technologies, to face the challenge and create stable societies that are essential for political sustainability, social development and economic prosperity.

**Impact of Global Media**

Global media and Information Communication Technologies have the capacity to enhance two cultural developments viz:

- International Culture. We are witnessing three major development.
- Extended Home Culture.
The near universal availability of a wide range of powerful media, including television, literature, cinema, music, video, internet and other digital technologies.

The presence of a strong cultural content to these technologies dominated by rich and powerful entities manifested by Hollywood, BBC, CNN, Disney and the like and

Free global flow of information and culture leading to common concerns, shared values and enhanced social discernment.

These developments are creating a unique international culture that is global in nature, a belonging to a “global village” and a virtual identity that is seemingly neutral vis-à-vis traditional identities – state, ethnicity, religion etc. This media enhanced culture offers people particularly the youth, the opportunity to come into contact with other cultures without leaving home and to belong to “interest communities” without leaving one’s own community.

**Extended Home Culture**

The same technologies as part of cultural development should have the capacity to enhance and promote dominant domestic cultures as well as sub-cultures in the home country and abroad. It is estimated that more than 100 million people live outside their country of origin. As a result, the cities all over the world have become multi-cultural and homogeneous populations are now experiencing a significant infusion of cultural, ethnic and language diversity. Migration is expected to increase in the years ahead due to rapid globalization of the economy and easing of barriers. This mobility is transforming societies and creating Diaspora that are struggling with cultural identity. These Diaspora can now remain connected with their original cultures through mass media and Information Communication Technologies.

Experiencing these two cultural developments is exciting and enriching. However, it may lead to an identity crisis created by an apparent conflict between the present cultural identity and the foreign cultural forces and cultures to which one is exposed. Some make a clear-cut decision, they either adhere to their original culture and resist any influences that they perceive to be in conflict with it or endorse the dominant international culture in its entirety – or at least its behavioural manifestations. Most people however, go through an auto-liberation process. When they are exposed to new cultural elements, they experience disequilibrium, an internal conflict of ideas and belonging. They can go through cycles of analysis adjustment, partial assimilations, testing – until they reach a new internal cultural equilibrium with which they are comfortable. The result is a new identity imitation.

This process of imitation is difficult in cultures dominated by the concept of unitary identity. In most countries, though, multi-identity is a well accepted and practiced concept. A person does not belong to one exclusive set, but to an intersection of many sets – state, culture, ethnicity, religion, gender, profession, so there is for example, a composite identity of an Avah-American-Christian-woman-lawyer. The important issue here is not only the defined boundaries between cultural communities, but also the relative strengths of simultaneous belonging to different communities. In such an environment, the process of auto-equilibaration, identity imitation and even the acquisition of additional identities becomes a lifelong process.

The impact of global media on the process of identity conflict and imitation is moderated and constrained by other cultural sources – local, domestic, regional and transnational. First, global media are no monolithic nor do they promote one and consistent message, they carry different and conflicting messages. Second, contextual factors such as social pressure for conformity, state
structures, economic incentives, communal connections, societal attitude towards cultural diversity and education, constrain, dilute or reinforce the impact of global media.

**Internet**

The most recent trend is internet use for gathering information and the role of information itself as a tool for cognitive development and improving problem solving skill. The internet can be used as a major medium for accessing learning software and for networking with other learners. Through the Web, teachers and students can access curricular, teacher training, and other learning materials, some provided by their own central administration and others through private providers. Information Communication Technology ICT is being used in distance education to replace earlier correspondence school and educational television which is usually Web based.

However, an important career in all these conclusions is that there is relatively little research on the academic effects of students Internet use, and this is becoming the dominant form of ICT in schools. There is a little doubt that the internet allows for more student independence in learning. But does this benefit all the students in similar fashion? Are the effects on learning significant? These are important questions for future research. Rutrowski (1997) as in Dabels, Mamman and Mafual (2007) described internet as basically made up of a large group of computers allows any computer on the network to access any information stores in any of the other computers. Today internet links millions of computers from all over the world, they share information and various resources. These exports asserted that the use of internet have expended through the years to include teaching and learning skills, on-line in what is known as e-learning. Wagner (2007) identified some ways by which students of vocational and technical education can use the internet to enhance teaching and learning, these are:

- Student can sign up for listeners which are automated mailing lists of people with a similar interest. They are used for transmitting news, searching for information and networking. All the messages are sent to the members’ mail boxes. Through this kind of facility, students can obtain personalized instructions on a wide range of course entirely on-line.
- Large industrial corporations can use the internet to distribute technology-based training application, come skill acquisition and reinforcement, knowledge transfer, sharing and the use of job-specific smart applications that perform lower-level tasks and provide on demand expertise.
- Students can communicate with others in other countries to share information on any given technological or vocational issue.
- The internet provides opportunities for business contacts, to buy and sell products on-line. if this is well arranged and made natural it is a sure way of developing self and economic emancipation.
- It is possible for students to make friends and converse with each other in real time over the internet. They can learn about cultures, lifestyles, Arts and Philosophies of other lands including goods and services that are in demand in those lands. This is a way of opening up not just business cont acts but opportunities for further training.

**Financial Resources**

The demand for more and different tertiary and other categories of education is increasing yet the financial resources are not increasing in the same proportion. Part of this constraint is self-inflicted because the conventional model for tertiary education, for example is not sustainable.
Some mechanisms to deal with the financial constraints are:

- Mobilization of funds from diverse sources
- Experimenting with and developing sustainable tertiary education models, including collaborative schemes.
- Extensive use of Information Communication Technologies and multimedia materials to achieve efficiencies and realize economies of scale and expertise.

**How Does Information Age Differ from Industrial Age**

The Information Age is characterized by the value of information rather than raw materials and physical labour. For example, one of the main products of the industrial age is the automobile. Sixty percent of the cost of an automobile is due to the raw materials like steel and physical labour needed to produce it.

This is a sharp contrast to one of the main products of the information Age – the computer. Only two percent of the cost of a computer is due to the raw materials and physical labour needed to produce it. What are you paying for? The information (software and patents) necessary to produce it. In the information Age, information – not raw materials and physical labour – is power.

**Some Starting facts about Education in the Information Age of Vision 2020 for Nigeria**

- More Information was produced in the last 20 years than the previous 5,000
- Information is doubling every 4 years
- 80% of new jobs require sophisticated information handling skills
- Jobs that involve the internet pay about 50% more than jobs that do not.
- In the next 5 years, 80% of workers will be doing jobs differently from the way they have done them over the past 50 years, (Okeke 2004).

Thus, to survive, individuals, organisations and nations must acquire, analyse and communicate information more quickly than their competitors.

**Conclusion**

Information Age Education is a project with a goal of helping to improve the education of all ages throughout the world. It assumes that every person is both a lifelong learner and a lifelong teacher, as a teacher; each person helps himself and others to learn. One of the major activities of the information Age Education is to develop and maintain an Information Age Education (IAE) Encyclopaedia. This is an open source collection of document designed to help improve education because a good informal and formal education helps people to meet their current and potential future needs in the rapidly changing world. Many countries and institutions lack the expertise to identify issues, formulate and evaluate policy opinions, generate plans and implement measures. Even when such expertise is available, the connection with global trends, agendas, and experiences is “ad hoc” and weak. Such capacity needs to be built and connected with international networks for access to and exchange of knowledge, experience and expertise. Thus, to survive, individuals organisations and nations must acquire, analyze, and communicate information more quickly than their competitors so as to meet the strategies for achievement of Vision 2020 which is fast approaching and which everyone believes would make things better and place people on awareness and consciousness of development.
**Recommendations**

The changes in economic and technological developments are producing a new world wide economy that is global, high speed, knowledge driven, disciplinarians and competitive. Nigeria has to meet the competitive challenges in terms of agility, networking, learning and to arrange production to achieve quality, productivity and flexibility towards enhancement strategies for achievement of Vision 2020.

Nigerians must embrace a holistic and radical approach to a workforce that has a foundation to enhance the quality and efficiency of product and development, production and maintenance and the flexibility to acquire the new skills required for new jobs and thus develop their skills for the achievement of Vision 2020 in Nigeria.

A cadre of highly trained scientific, technological, and processing personnel that is, experts who can understand fully material, scientific, technological, managerial and social developments and who can lead in their assessment, adaptation and local application are necessary for the present pressing challenges.

Rapid technological change and growth in knowledge and information will require constant learning. The government should embark on lifelong learning which provides opportunities for those who are unemployed to re-enter the workforce.

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