

CREATIVITY AND INVENTION IN E-EDUCATION IN NIGERIA: CHALLENGES AND THE WAY FORWARD

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Abstract

Creativity is characterized by the ability to think divergently, and is the bedrock of every development. Information and Communication Technologies (ICTs) have become key tools of creativity and invention and have revolutionized the way we live and perceive the world. Education can be acquired electronically thus giving birth to the contemporary e-education which is the application of Internet technology to the delivery of learning experiences. This paper attempts to look at the concept of creativity and invention in e-education in Nigeria. Both challenges and the way forward to technology based learning are holistically discussed. The paper highlights an overview of the Nigerian educational policy and their organizational structures, initiatives undertaken by government, civil society or the private sector on e-education were discussed. The paper further reviewed government initiatives in particular on e-education at various stages of development being carried out by the National universities network (NUNet), National Open University (NOU) of Nigeria and National Virtual library. On the basis of this, recommendations were made for government, policy makers, civil society and the private sector to mainstream ICT in the overall development of e-education in Nigeria. Government should also increase funding for the entire educational sector with emphasis on ICT, among others.

Keywords: Creativity, Invention, e-education, Nigeria, Challenges, Way Forward.

Information and Communication Technologies (ICTs) have become key tools of creativity and invention and have revolutionized the way we live and perceive the world. These have given birth to the contemporary e-government, e-commerce, e-medicine and “e-education”- which is the main focus of this paper.

The role of education in human development cannot be over emphasized. It has been described as an important tool in any human society, which makes man to develop faster than other creatures. Education is the bedrock of all human sectors – political, medical, agriculture and security, etc. This perhaps makes true the saying that, no nation can rise above the quality of education its citizens receive. Generally, Education aims at: careful observation of the given conditions to see what are the means available for reaching the end and to discover the hindrances in the way; it suggests the proper order or sequence in the use of the means; it makes choice of alternatives possible, because man can predict the outcome of acting this way or that way and then compare the value of the two courses of action before; and it is an instrument of innovation and invention. The creativity, resourcefulness and imaginative abilities of learners are sharpened as they go through various educational programs (Whawo, 1997).

The ability of human beings to find creative solutions to problems is essential for the wellbeing of human

race. Creativity can help people break out of routines they dislike and get incorporated into desired lifestyle. However, Omeke (2011) opined that creativity is a mental process involved in the generation of new ideas or an association between existing ideas and devising alternative ways of solving human problems. Although properly associated with art and literature, creativity is an essential part of innovation and invention, and is important in professions such as architecture, industrial design, advertising, sculpture, music, engineering and humanities. Holt (2006) defined creativity as the ability to bring something new into existence. This emphasizes the ability, not the activity of bringing something new into existence, but a phenomenon whereby a person creates something new (a product, a solution, a work of art among others) that has some kind of value. Creativity is inherent in all humans, and therefore has a universal distribution. It is likened to a driving force that drives human behaviours to shape their lives, and calls for talent, an innate ability which can be developed. It utilizes time and space to fashion out something that will fill in the gap or solve problems. Creativity in this context refers to the generation of ideas that result in the improved efficiency and effectiveness of a system or organization. One is therefore, said to be creative or have creative thinking, if he has the skill and ability to produce something new for self-reliance.

Creativity is characterized by the ability to think divergently or differently, and is the bedrock of every development. Kaur (1998) contended that one should not confuse creativity with talent. While talent is a specific aptitude in specific area, creativity happens when various forces, be they environmental, motivational or psychological, interact to create something unique. It is obvious that new and good methods of creativity would ensure changes, break new grounds, make alterations, modernize and remould things within the society. Creativity has been used in the past to solve human problems, like the provision of computer, light, transport, electricity, construction of class rooms and lecture theatres among others. With creativity, education can be acquired electronically. Creativity therefore, will continue to revolutionize educational methodology globally. However, this revolution is not widespread and needs to be strengthened to reach a large percentage of the population.

The main focus of this paper is the review of the use of ICT for education in Nigeria, both problems and solutions to technology based learning are holistically discussed. ICT has a key role to play as an enabler to help people better manages complex information flow and to integrate them towards effective policy formulation and planning towards the maximization of human capacity and potential. This includes the development of effective and integrated tools as well as training

modules to enable their application and replication in the country.

The goal here is to address ICT in relation to education, and relate it to governance and health care, and explore the redesigning of contemporary socioeconomic systems to create a socially and economically sustainable society for Nigeria. If Nigerian succeeds at this level, Nigeria can be a role model for effective utilization of ICT for education and sustainable development not only in Africa but also in the world.

Meaning and Description of e-Education

The term "e-education" refers to the application of Internet technology to the delivery of learning experiences. e-education takes place in formal electronic classrooms, on corporate intranets used for just-in-time training, audio and video teleconferencing and in a variety of other technology mediated learning spaces. The primary tools of e-education are e-mail, e-meetings, e-expeditions, and the methodologies of a pedagogy known as e-learning (Gail Terry Grimes and Claude Whitmyer, 2009). e-Education is electronic mode of knowledge sharing and transmission, which may not necessarily involve physical contact between teacher and student (Mac-Ikemenjima, 2003).

The concepts computer-aided teaching and computer-aided learning have given birth to computer-aided instruction, which represents a combination of both teaching and learning (Osah-Ogulu and Mac-

Ikemenjima, 2004). Accessing information through the internet is flexible. It gives a broad viability and availability of educational opportunities. e-Education as a cost effective system of instruction and learning material can be accessed irrespective of time and space. This includes an interdisciplinary approach that considers the impact that all fields and phenomenon with both human and non-human life have on each other. This paper focus not only on memorization and learning but also on training the student so that he/she can effectively address any problem that he/she faces as an individual, while also maximizing their contribution to civil society, their communities and the institutions that they involve themselves in. This tool can be of great value to the young people of this generation.

An Overview of the Nigerian Educational Policy and their Organizational Structures

The Nigerian educational sector is guided by the National Policy on Education, several coordination mechanisms have been put in place to ensure that standards are maintained in: curriculum, infrastructure and manpower requirements. The Primary and secondary schools are directly under the ministry of education either at the state or federal levels, the universities are under the National Universities commission (NUC), the polytechnics under the National Board for vocational colleges and Technical education (NABTECH), and the National

commission for colleges of education (NCCE) oversees the activities of the Colleges of Education.

The institutions under each of these coordinating mechanisms are enormous and diverse in many respects; however, for the purpose of classification, the following statistics would be necessary. There are 58 University Institutions (Aminu, 2003), 48 Polytechnic Institutions (Yakubu, 2003) and 67 Colleges of Education (Isyaku, 2003). Other institutions are 44,000 primary schools, 9,000 secondary schools, 3 specialist postgraduate institutions, 26 federal vocational colleges and schools, 15 University teaching hospitals and 61 research institutions.

The Nigerian educational system has undergone major structural changes over the last 30 years, in 1973, the educational system was updated to the 6-3-3-4 (6 years primary, 3 years junior secondary, 3 years of senior secondary and 4 years tertiary education).

In 1982 the first National Policy on education was developed and adopted, since this period, the educational system has witnessed a lot of changes and modifications at various levels.

The current phase of evolution is the most relevant to this paper as it focuses on the transition from traditional pedagogical methodology to more sophisticated, but user friendly and technology based instructional methodology.

Present Initiatives on E-Education in Nigeria

Nigeria is a country of over 120 million people and it is considered a major hub for commerce, culture and education in Africa. Therefore, it is no surprise that Nigeria is leading the way in the development of ICT infrastructure and training. There are several ICTs for education initiatives in Nigeria. These initiatives are either being undertaken by government, civil society or the private sector. It is very important that we develop programs that ensure coordination between government, non-profit and private institutions towards policy reform and the development of effective national ICT policies for rapid replication of best practices.

Government initiatives on E-Education

There are presently at least nine ICTs for education initiatives at various stages of development being carried out by the education coordinating agencies of government and the ministry of education. They include:

1. The Nigerian Universities Network (NUNet) Project
2. The Polytechnics Network (PolyNet) Project
3. The School Net Project
4. The Nigerian Education, Academic and Research Network (NEARNet)
5. The Teachers Network (TeachNet) Project
6. National Open University

7. National Virtual (Digital) Library (Ministry of Education/ NUC)
8. National Virtual Library (Ministry of Science and Technology/NITDA)
9. National Information, communication and education programme of the Presidency.

For the purpose of these review work however, this paper will look at only three: NUNet, NOU and the VLs.

National Universities Network (NUNet)

Russel & Dlamini, (2002) said the origins of NUNet dates back to 1994 when it was realized that it was increasingly becoming necessary for Universities to be connected electronically at least through email. However, it was later realized that interconnectivity issues for institutions of higher learning were far greater than emails. Following this, several partnerships were built with various institutions and NUC staff were trained in various IT related skills.

In 1996, the NUC signed a MOU with the International Centre for Theoretical Physics in Italy and secured 3 IDD and 9 telephone lines for NUNet, procured equipment, registered a domain name and introduced dial-up email services.

The Objectives of NUNET are:

1. To end isolation of Nigerian academic staff and students from each

other and from the global academic community;

2. To ameliorate staff shortages arising from the brain-drain, by providing the ICT facility required by Nigerian academic staff-in-Diaspora to make their contributions regardless of where they live or work;

3. To encourage the sharing of resources, foster academic and research collaborations among Nigerian Universities, and with their counterparts throughout the world;

4. To provide universities with access to electronic databases, journals and books many of which are increasingly available only in digital formats;

5. To serve as vehicle to expand access to education at minimal cost of capital building expenditure; and

6. To place Nigerian universities at the forefront of the information revolution, that they might serve their proper roles as foci for national development.

There are currently 52 university centres and colleges of education who have their domain names registered while 15 are active email users.

The National Open University (NOU) of Nigeria

The NOUN first began in 1983 but was suspended in 1985 by the then military government. The resuscitation of NOUN is part of the commitment of the present government towards Universal Basic Education. The justifications for the establishment of the Open University are clear; there are approximately 1.5 million applications per year for a place to attend university. However, the University system can only accommodate 20% of this number. The course delivery will be through a combination of web-based modules, textual materials, audio and video tapes as well as CD ROMs.

In addition to the broad vision and mission statements, the university has eight major objectives which are listed below; To:

- i. Provide wider access to education generally but specifically in University education in Nigeria.
- ii. Ensure equity and equality of opportunities in education
- iii. Enhance education for all and life-long learning
- iv. Provide the entrenchment of global learning culture
- v. Provide instructional resources via an intensive use of ICTs
- vi. Provide flexible, but qualitative education
- vii. Reduce the cost, inconveniences, hassles of and access to education and its delivery

viii. Enhance more access to education. (Ifeanyi, 2014)

Presently, NOUN has 28 study centres spread across the length and breadth of the country as against the initial 18 temporary study centres approved by the Federal Government for take-off of the University in the year 2002. In addition, the university has special study centres which cater for specialized groups, such as the Prison inmates and Armed Forces personnel. Projection of the university is to have a study centre in every state capital and at every local government of the federation. It runs programmes in education, arts and humanities, business and human resource management and science and technology.

Virtual Library Initiatives

In summary, the objectives of the national virtual library include: improving the quality of teaching and research institutions through the provision of current books, journal and other library resources; enhancing access of academic libraries to global library and information resources; enhancing scholarship and lifelong learning through the establishment of permanent access to shared digital archival collections; provision of guidance to academic libraries on ways of applying appropriate technologies for production of digital library resources; and to advance the use and usability of globally distributed network library

resources. Virtual library initiatives in Nigeria include:

- The National Virtual (Digital) Library Project of the Ministry of Education, which is supervised by the National Universities Commission.
- The National Virtual Library Project of the Ministry of Science and Technology is supervised by the National IT Development Agency.
- An ongoing effort by UNESCO to develop a virtual Library for all Nigerian Higher Education Institutions in Nigeria.

Civil Society (NGO led) Initiatives on E-Education

In Nigeria, several NGOs have had a notable impact on the development of telecentres. Telecentres are places that usually have rudimentary ICT facilities designed to acquaint people with these technologies and to begin educational programs to teach people in marginalized regions about how to use them. The focus is often on the youth because they represent the hope for the future and are open to new ideas.

Challenges of E-Education in Nigeria

ICT holds great potentials in supporting and augmenting existing educational as well as National development efforts in Nigeria, several challenges remain. These challenges include:

1. Inadequate ICT infrastructure including computer hardware and software high, and bandwidth/access;
2. Lack of skilled manpower to manage available systems and inadequate training facilities for ICT education at the tertiary level;
3. Resistance to change from traditional pedagogical methods to more creative and innovative technology based teaching and learning methods, by both students and academics;
4. The underfunding of the overall educational system. hence, the available funds are used to solve more urgent and important survival needs by the institutions;
5. The over-dependence of educational institutions on government for everything. This limits institutions ability to collaborate with the private sector or seek alternative funding sources for ICT educational initiatives.
6. Ineffective coordination of all the various ICT for education initiatives. These are some among many major problems faced in the development of ICT for education in Nigeria. It is believed that when adequately addressed, the chances that e-education will thrive in Nigeria will increase dramatically. It is also believed that this will have larger and much desired impacts on development and modernization of the Nigerian society.

Way forward

Wise men say, discovery of a problem is half way to its solution. Finding the way forward entails the correction of the anomalies highlighted in this paper, and this in effect means a practical and determined confrontation aimed at eliminating or minimizing the gravity of the above challenges. The recommendations contained in this paper point to how policy makers and government can work with civil society and the private sector to mainstream ICT in the overall development of e-education in Nigeria. The following recommendations were forwarded for consideration.

Recommendations:

1. e-Education has great potentials to assist achieve Nigeria's goal of achieving education for all and therefore should be maximally harnessed by every possible avenue;
2. IT education should be included in the educational curriculum including the provision of necessary infrastructural support and massive training and deployment of skilled manpower into both secondary and tertiary institutions;
3. Young software developers should be trained and supported with the necessary equipment to develop usable e-education software;
4. The various government education coordinating agencies should work together to develop an integrated

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broad-based model/ strategy for e-education;

5. Government should increase funding for the entire educational sector with emphasis on ICT;

6. Government should work with the private sector and civil society to ensure affordable and sustainable access to ICT infrastructure;

7. A policy which encourages investment in ICT should be put in place including reduction in tariffs on import of ICT infrastructure, in order to promote affordability and wide range usage at all levels of the educational system.

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