

DEVELOPMENT OF MATHEMATICAL-BASED LECTURERS IN ERA OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

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Abstract

Mathematical-based lecturers are essential human resource needed in fostering teaching of mathematics and statistics in tertiary institutions. The lecturers need to be developed for effective and efficient performance of their career in this era of Information and Communication Technology (ICT). The paper dealt on development of Mathematical-based lecturers using ICT for quality output delivery in their lecturing profession. Issues discussed on the paper are: mathematical-based lecturers as essential human resource, value of information and communication technology (ICT), use of information and communication technology (ICT) in development of mathematical-based lecturers. The paper pointed out that computer and internet are useful products of ICT that are vital in enhancing the productivity, and human development of mathematical-based lecturers. Recommendations and conclusions were drawn, encouraging and supporting the use of ICT for the development of mathematical-based lecturers to ensure national development.

Keywords: Information and Communication Technology (ICT), computer, internet, mathematical-based lecturers, development.

The world has turned out to be a global village as a result of Information and Communication Technology (ICT). At this present era, information can be obtained and sent among people even from any part of the world irrespective of distance and time as a result of emergence of ICT. Thus, ICT can be seen as a resource for wide range of communication essential for development. Development is greatly needed in tertiary institutions. Part of the development needed in tertiary institutions is empowerment of lecturers. Lecturers are the human resource that works for intellectual enhancement in the various courses or discipline in the tertiary institution.

Among the courses/disciplines in the tertiary institutions are mathematical-based courses. So, Mathematical-based lecturers are inevitable in tertiary institutions. For empowerment of mathematical-based lecturers information and communication technology is essential. This paper discusses the role and importance of ICT in development of mathematical-based lecturers.

Mathematical-based Lecturers as Essential Human Resource

Lecturers play some roles in the economy by being workers. Workers are human resources that provide the labour required in production activity for development of human society. Usually, lecturers can be regarded as human resource needed in the lecture rooms for the intellectual development of students in higher institutions. There are great roles which lecturers play for them to be the most essential human resource in the impartation of knowledge and skills in the students being lectured. Akinseye (2004) acknowledged that no educational system can rise above the levels of its

teachers for they actually determine what is to be learned, control the learning experiences that go on in the classrooms and have their own personal values with notions about how education should be oriented.

Mathematical-based lecturers, as workers, are those academic staff responsible for teaching of mathematical-based courses in higher institutions such as universities, polytechnics, and colleges of educations. The lecturers are usually trained to acquire knowledge and skills in mathematics and statistics. Talking about mathematical-based lecturers, the mind should focus mainly on those lecturers that are based in the Department of Mathematics and Statistics in tertiary institutions. The mathematical-based lecturers, in addition to teaching in their based department, teach mathematics and statistics, by way of servicing courses, in some other departments in tertiary institution.

Part of efforts to achieve the objectives or gains of tertiary education, especially science and technology education, is to ensure availability of well qualified, dedicated and competent mathematical-based lecturers with spirit of diligence. Mathematical-based lecturers are essential human resource because of relevance of mathematics in development. Iji, Ogbale and Uka (2014) pointed out that everybody uses mathematics in one way or the other in solving life problems. According to Eraikhuemen (2003), a disciplined and ordered pattern of life can only be achieved through a culture of mathematics. Thus, mathematics permeates in every nooks and crannies of the society and its role would appear to be one of ever-increasing importance as its help is sought in handling various situations and problems arising from field of life. Most often, relevance of mathematics is greatly noticed in science and technology, which has greatly and positively enhanced man's activities towards having a comfortable and pleasant environment. Actually, mathematics is a field of study that involves arithmetic, algebra and geometry and so can be regarded as language of science and technology. Any nation that wishes to be well rooted and respected in science and technology must provide her people with sound knowledge of mathematics. Nwosu, Oguagbaka and Akunna (2015) asserted that mathematics has wide applications in science and technology which include determination of unknown parameter, plotting and interpreting of graphs, derivation of formula, simulation and modelling, analysis and interpretation of raw data, and drawing of shapes. It can be said that mathematical-based lecturers are essential human resource in educational system because they help in human development of students. According to Nwosu (2007), development of the parameters and structures for civilization and modernization are assured through human development - human development deals with instilling or imparting in man those attributes that enable him function well in the cognitive, psychomotive and affective domain. Development of the spirit and the skill of innovation, the knowledge and attitude to make people self-reliance and self-conscious instruments of change are based on human development (Chike-Okoli, 2004). Based on the kind of responsibilities expected of mathematics and statistics lecturers, there is need for them to make adequate use of systems involved in information and communication technology, such as computer system and internet in their career.

Value of Information and Communication Technology (ICT)

Information and communication technology (ICT) is concerned with gathering, storing, processing and disseminating information through electronic and print (non electronic) media. Ezekoka in Abdulkarim and Boyi (2012) asserted that information and communication technology is the collection, storage, processing, dissemination and use of information and it includes telecommunication services used together with computer hardware and software for range of services

including internet. Most often, the term ICT draws the mind on the use of electronic system for information purpose. This has resulted to the term Information and Communication Technology being often taken to be synonymous with the term Information Technology (IT). Strictly viewed, ICT is concerned with all technologies (both electronic and non-electronic) concerned with information; but IT is concerned with electronic technology in that it is the integration of computer and telecommunication system in generating, storing, processing and dissemination of information.

Information and Communication Technology (ICT) is a technology which has influenced human life and activities because its central focus is on information. It is an axiom that information is very much needed for a meaningful interactions and decisions in human activities; and so, ICT serves as a valuable technological resource in human environment. Talking about the value of ICT in the economy, the mind easily focuses on the gain of computer and the internet. It is an axiom that internet exists because of existence of computer technology bearing in mind that internet is the largest computer network that enables people communicate from any part of the globe.

Computer as an essential part of ICT can process data with a high speed and accuracy to generate a desirable result, thereby making work easier for man. Thus, computer system is an electronic system that can speed up problem solving and increase productivity such that it is helpful in man's activities towards personal welfare and national development. Nwosu (2008) pointed out that utilization of computer makes the advances in Information Technology possible; and electronic gadgets used in Information Technology have greatly revolutionized office and business procedures such that there are "paperless" office transactions and significant relief from monotonous and cumbersome task.

Nwosu (2005) opined that Information Technology promotes socio-economic activities because it facilitates communication, improves business activities, minimizes transportation hazards, creates employment opportunities and facilitates acquisition of education. ICT is a tool for enhancing productive power of human resource. Acquisition of requisite knowledge and skills in ICT enhances the productive power of a person to the extent of being self-employed; and this means self-reliance or self-economic sustainability which goes a long way to reduce unemployment to the barest minimum (Nwana, 2009).

Ogbonma (2003: page 7) outlined some of the advantages of ICT as:

- *Provision of speed and easy access to information*
- *Provision of round-the-clock access to users*
- *Provision of access to unlimited information from different sources*
- *Provision of information flexibility to be used by any individual according to his or her higher requirements*
- *Facilitation of reformatting and combing of data from different sources of remote access to users*

Inyiama (2004) asserted that information technology has the advantage of transforming the world into a "global village" where people can easily communicate with one another in multimedia electronically, from any point in the globe and the technology affects socio-economic activities. Available in the internet (as a form of ICT) are e-learning, e-library, e-mail, e-commerce e.t.c. which can be utilized for national development for it provides information that enhances the socio-economic development of its users (Nwosu and Chijioke, 2005). Based on the relevance ICT in personal and national development, mathematical-based lecturers can get empowered using the technology.

Use of Information and Communication Technology (ICT) in Developing Mathematical-based Lecturers

Observations have shown that some mathematical-based lecturers are not yet well exposed in area of modern communication. In this 21st century, mathematical-based lectures need adequate exposure on the use of electronic systems that are concerned with communication such as television, radio, telephone, computer, and internet. However, the use of computer and the internet seems to be more prominent in the field of Information and Communication Technology (ICT).

Computer system can be useful to the lecturers for they can use mathematical-oriented education software which can be installed in the computer to enhance their intellectual ability in preparation for the lecture they want to impact on their students. Computer system can also serve educational purpose by slotting into it educative films relating to mathematics and statistics and then watch the films for acquisition of knowledge and skill.

Lecturers in mathematics and statistics can use computer for analytical exercise. Usually, the lecturers engage in calculations and drawings. Using appropriate computer package, it is possible to use computer for calculations and drawings to be done neatly with little or no error, lesser stress and in a shorter time than analysis made manually. Nwosu & Chijioke (2004) averred that it is well known that economy of energy and time enhances productivity. During the analysis, the lecturers can use computer system for simulation. Simulation is building a mathematical model of real-life object or situation and thoroughly testing it to know the likely behaviour or performance of the real-life system when it is built.

Computer system can also enable mathematical-based lecturers handle their students' academic records with less stress. For instance, computation of students' result can be done easier, faster, and accurately using computer system. Thus, there is economy of time and energy necessary for high productivity. Computer system can also be used to store the students' academic records, such that the lecturers can later retrieve and use them. Nwosu (2007) noted that the storage ability of a computer enables it store vital information thereby preventing over powering of human brain since the brain cannot store all experiences and knowledge.

High productivity can be achieved by the mathematical-based lecturers when they are sound. A means of achieving this is through recreation. Nwosu (2007) pointed out that adequate relaxation of the body and mind through entertainment or recreational activities such as playing games, watching film, and playing music promotes healthy living required for productivity and development. Fortunately, computer system serves as a recreational device that can be used for playing music and games as well as watching films.

The advent of computer has brought about the emergence of the internet as a prominent part of information and communication technology. The internet can provide some facilities for mathematics and statistics lecturers to enhance their intellectual ability. For instance, by browsing through the internet, the lecturers can obtain educative information relating to mathematics and statistics. Internet has brought about the existence of electronic learning (e-learning) usually employed in distance education. E-learning is a technology that makes information available to learners, researchers, etc. irrespective of the distance and the technology replaces the presence of a physical teacher with a virtual teacher. E-learning can lead to cost reduction in instructional delivery. The internet makes virtual library, which is a computerized library, possible. Inyama (2004) asserted that a computerized library has important advantages over the conventional library for it is easily accessible, richer in context and cheaper.

The use of internet is a means of avoiding delay in communication of information, and minimizing transportation hazards which might be encountered by the mathematical-based lecturers in an effort to obtain or sending information. The lecturers can stay in their residences or working places and communicate with people on issues pertaining to their career without travelling. With the use of communication facilities such as electronic mail (e-mail), e-conferencing, e-chatting, online phone, communication of mathematical-based idea is possible using the Internet. Thus, there is avoidance of slow communication, and transportation hazards like traffic congestions and road accidents.

Conclusion

Mathematical operations are part of activities in human society, especially in area of science and technology. So, mathematical-based courses should be highly cherished and promoted in Nigeria for national development. However, a means for fostering mathematical-based courses in Nigeria is through development of mathematical-based lecturers.

The use of Information and Communication Technology (ICT) can enable the lecturers get developed in their career. It should be recalled that modern society is being influenced by the use of ICT. So, mathematical-based lecturers in Nigeria should not neglect the use of ICT for productivity in their career required for national development. In fact, great efforts need to be made in Nigeria to encourage and promote the use of ICT facilities, especially computer and Internet, by mathematical-based lecturers.

Recommendations

For development of mathematical-based lecturers using Information and Communication Technology (ICT) to foster national development, it is recommended that:

1. Government and all stakeholders concerned with higher education should ensure provision of ICT systems in the tertiary institutions.
2. Mathematical-based lecturers should develop high interest and good aptitude in the use of ICT facilities.
3. Mathematical-based lecturers should participate in conferences, seminars and worktops for updating their knowledge and skill in ICT.
4. Mathematical-based lecturers should always apply ICT in their academic and administrative activities in the tertiary institution.
5. Mathematical-based lecturers should always apply virtue in the use of ICT facilities because immoral acts retard national development.

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