NEEDED ICT AND EDUCATIONAL TECHNOLOGY RESOURCES IN NON-FORMAL EDUCATION FOR MEETING THE MILLENNIUM DEVELOPMENT GOALS

Dr. Sabina Nwana

Abstract
ICT is the fastest form of technology in meeting the millennium development goals. It has substantially changed the world by creating new communications technologies, new patterns of social interactions and economic transactions. It has networked educational institutions including non-formal education. This paper explores the concepts of ICT, educational technology, millennium development goals, and non-formal education. It outlines and discusses the ICT and educational technology resources needed in non-formal education for meeting the Millennium Development Goals. Some of the resources include: Internet and e-mail, telephones and wireless application protocols, radio and microwaves, television and satellites, multimedia computer and multi-media projector to mention but a few. This paper recommends among other things that the ICT should be made to have increasing importance within the curriculum of non-formal education by making it a compulsory subject that would help in achieving the Millennium Development Goals.

Introduction
Education is the key that unlocks the door to development. It is education that defines, designs and redesigns the socio-political and economic life of a nation. Without adequate education of the citizenry or the masses, the development of a nation becomes a sham or bubble. A nation cannot meaningfully develop in a situation of mass illiteracy hence, the need for mass literacy and non-formal education. In the words of Martin Luther King Jnr. as cited in Ikejiani (1964:8).

The prosperity of a country does not depend on the abundance of its revenue, not on the strength of its fortifications, not on the beauty of its public buildings. It consists in the number of its cultivated citizens, its men of education and enlightened character.

It is in recognition of the importance of the above assertion that the Federal Government of Nigeria in the National Policy on Education, adopted Education as an installment par excellence for effective national development (FRN, 2004). Consequently, education was extended to the illiterate masses, school drop-outs and adults who for various reasons, did not have the opportunity of formal schooling. This was well articulated in the National Policy on Education in what is called "Mass Literacy, Adult and Non-Formal Education" (FRN, 2004). Various educational technology resources such as radio, television, overhead and opaque projectors etc are materials for their teaching-learning effectiveness (Ogunmilade, 1984).

In this age of Information and Communication Technology (ICT), there is growing concern for the use of ICT resources such as the Internet and e-mail, videophone system, computer, diskettes, flash drives, CD-ROM, scanner, printer, telephones and wireless application protocols etc to meet the Millennium Development Goals. The Millennium Development Goals were issued as road map to deal with the problems of illiteracy, ignorance, disease, poverty, unemployment and dependency, health and nutrition and for meeting the commitment for promoting better living conditions for human kind and equal access to education.

What is ICT?
ICT means Information and Communication Technology. The concept has been variously defined because it is a relatively new field of computing which has brought the world into a global village. ICT can be defined as the science of information processing which deals with the use of computers and terminals, modems and interface, digital pagers, satellites, microwaves and wireless application protocols etc to collect, process, store, retrieve and transmit or disseminate information to any parts of the world. It can also be understood as the science of collecting and processing information, facts, values, skills, thoughts, texts, graphics, pictures, cards, sounds, news and all other forms of data in digital form for dissemination in both immediate and remote locations. For instance, in bank transactions, the Automated Teller Machine (ATM) is used both in immediate and remote locations.
According to Hall and Smith (1991), the US Department of Trade and Industry defined ICT as the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numeric information by a micro-electronic-based combination of computing and telecommunications. Deans and Jurison (1996) pointed out that ICT is the technology applied to capturing information in its place of origin, processing, storing and transmitting information by electronic means. In the words of Uzoigwe (2001), ICT involves all the technologies employed in order to facilitate the collection, storage, retrieval and communication of information by the fastest means.

**Concept of Educational Technology**

Educational technology is technology in the context of education which permeates or cuts across every subject of learning. It is the systematic management of resources and application of techniques to solve all problems in human learning. It is the use of electronic media viz: radio, television, camera, computer, video cassette recorder, overhead and opaque projectors etc; and non-electronic media such as pictures and posters in solving all problems in human learning (Agun and Imogie, 1988; Onyejemezi, 1988; Adewoyin, 1991 and Nwosu, 2002).

**What are the Millennium Development Goals?**

The Millennium Development Goals (MDGs) are the goals set out by the United Nations as strategies on how to help the developing countries on the achievement of education for all, eradication of poverty, improvement on health and nutrition, curbing environmental degradation and promotion of gender equality etc by the year 2015.

**The MDGs are**

1. Eradication of extreme poverty and hunger.
2. Achievement of Free Universal Primary Education (UPE).
3. Reduction of child mortality rate.
4. Improvement of maternal health.
6. Promotion of gender equality.
7. Ensuring environmental sustainability.
8. Establishing global partnerships for development.

Nigeria developed its own strategy for attaining the Millennium Development Goals (MDGs) in the acronym NEEDS which stands for National Economic Empowerment and Development Strategy (National Planning Commission, 2004).

**Meaning of Non-Formal Education**

Non-Formal Education is the education outside the formal school system. It is the flexible and diverse education programmes meant to achieve the particular needs, interests and aspirations of a society at a particular point in time. The programme changes with the changing socio-political and economic circumstances. In non-formal education, the rigid forms of formal schooling such as regimented curricular, syllabus and scheme of work etc are not strictly followed. It is partly a war against illiteracy and numeracy. The National Policy on Education (2004) defined non-formal education as the education which encourages all forms of functional education given to youths and adults outside the formal schools system (FRN, 2004). Non-formal education is the out-of-school education. It covers training and instruction outside the formal school system (Anyanwu, 1987; Akinpelu, 1979; Omolewa, 1981; and Imhabekhai, 1998). To UNESCO (1978:20), non-formal education is:

> An integral part of the entire system of education, lying institutionally and significantly outside the formal system of education, and very much a supplement as well as a complement to it. It is the product of change and development in society and it covers a wide range of activities, depending on the prevailing social, economic and political circumstances.

**ICT and Educational Technology Resources for Meeting the Millennium Development Goals**

The resources are as follows:
1. Computer literacy
2. Acquisition of ICT skills and competencies
3. Communication of information using the Internet.
4. Communication of information using the E-mail.
5. Use of telephones and wireless application protocols.
6. Radio and microwaves.
7. Television and Satellites.
8. Videophone system.
9. Online library.
10. Use of software devices viz:
    a) Diskettes.
    b) Flash drives.
    c) CD-ROM.

**Computer Literacy**

Today's world is that of Information and Communication Technology (ICT) which requires computer literacy for all. The Millennium Development Goals (MDGs) cannot be achieved in a situation of mass illiteracy. There is need for computer literacy for the masses because the world has gone advanced and sophisticated in technologies. In particular, the ICT has brought the world into a global village. Computer literacy is the acquisition of requisite knowledge and skills in computer. It is the training in computer to enable the trainee to use the acquired knowledge to operate computer on daily basis -to solve problems or perform certain tasks. Computer literacy is beyond typing on the keyboard and using the printer to produce paper copies. Generally, computer literacy involves reading computer pamphlets, textbooks, journals and magazines, discussing computer with friends, joining computer clubs and associations, attending computer seminars, workshops and conferences, attending computer hardware, software and book exhibitions etc (Nwosu, 2002). Global trends are driven by technology therefore; there is need for computer literacy for the masses so as to make everybody a productive member of the society. Fay and Funk (1995) pointed out that, computer technology has opened a new world of learning which has drastically increased output.

**Acquisition of ICT Skills and Competencies**

For the millennium development goals to be achieved, there is need for the masses to acquire ICT skills and competencies. This can be done as part of non-formal education which is not subject to the rigid forms of formal schooling such as regimented curricular, syllabus and scheme of work etc. The Acquisition of requisite skills, knowledge and technical know-how in ICT increases the productive power of a person. With or without the white-collar job, he can be self-employed. This means self-reliance or self-economic sustainability which goes a long way to reduce unemployment to the barest minimum. The Danish Ministry of Education (2001) pointed out that, knowledge and skills in computer are the key factors for production in the 21st century.

This goes to stress that the ICT skills and competencies are imperative for all especially young school-leavers and graduates who face competitive employment hassles in the labour market.

**Communication of Information using the Internet**

The Internet stands for International Network for Communications. It has brought the world into a global dot. There are millions of computer networks and websites connected to the Internet. A lot of things can be done in the Internet viz: e-mail, e-commerce, e-banking, library visits, downloading and uploading of files etc. Therefore, to achieve the Millennium Development Goals which is in line with globalization, there is need to educate the masses in using the Internet. The world of work today in both public and private sectors is technology-based. The advance and sophisticated technology have forced businesses, organizations, industries, companies and institutions to redesign and redefine their operational technologies and management and to be connected to the Internet. For instance, banks are connected to the Internet and transactions are getting more and more complex with the use of Automated Teller Machine (ATM). Even (o pay electric bills in the PHCN (Former NEPA) requires the use of electronic cards. Therefore, there is need for mass education in the use of ICT resources to achieve the MDGs.

**Communication of Information Using the E-mail**

E-mail means Electronic mail. It is the electronic version of the post office box. It is one of the
most popular ICT resources. Letters and binary attachments such as pictures, sounds, graphics, files and programs can be sent from one computer to another to people in various geographical distances. To send the non-text materials such as pictures and sounds, the Multi-purpose Internet Mail Extension (MIME) are used. Through the use of e-mail, the millennium development goals such as reduction of child mortality, improvement of maternal health, combating HIV/AIDS and malaria can be achieved. This is because the solutions to the problems or the preventive and curative measures can be sent to people through e-mail.

**Use of Telephones and Wireless Application Protocols**

Telephones of various types can be used as effective communication channels for the achievement of Millennium Development Goals. There are mobile or cellular phones, land phones and fixed wireless phones. Phones are equipped with a Wireless Application Protocol (WAP) browser. The WAP browser makes it possible to access the wireless web. Therefore, in emergency situations as experienced in Nanka, Ekwulobia and Alor erosion sites in Anambra State, the Commissioner for Environment and the State Emergency Relief Agency can be called on phone to map out strategies to arrest the situation so as to avoid further environmental degradation. This is a way of ensuring environmental sustainability which is one of the MDGs.

**Radio and Microwaves**

Radio is an audio medium. It is the most extensively used of all the electronic medium in reaching the masses. It has the advantages of being cheap, portable; and of using both electricity and battery. Microwaves transmit high-speed radio signals which travel in straight lines, in the air. Both radio and microwaves can be used for promotion of gender equality which is one of the objectives of the MDGs.

**Television and Satellites**

The television is one of the electronic media for capturing mass audience. The signals travel from the transmitter tower to various geographical distances. Its greatest advantage is that it combines or synchronizes sound and vision that is, sounds are heard and pictures shown at the same time. This is why it is called audio-visual medium. Satellites are powered by solar panels and they can transmit signals at a rate of several hundred million bits per second. They can therefore, be used for enlightenment and awareness on the dangers of HIV/AIDS, malaria and other killer diseases which are part of the MDGs.

**Videophone System**

The videophone system is a combination of computer and television devices which enable people in various geographical locations to see each other face-face while they speak. According to Galo and Nenno (1985), it was first tried out by the German government and it succeeded. The videophone system can now serve as a teleconferencing device in promoting the Millennium Development goals. For instance, it can be used for establishing global partnerships for development and for promotion of gender equality which are aspects of the MDGs.

**Online Library**

The Library is the greatest reservoir of knowledge which can be used for the achievement of MDGs. With the ICT, library can be visited online. Books of various sizes, journals, magazines, newspapers etc can be read online. For instance, ‘Thisday’ Newspaper can be read at www.thisdayonline.com while the Vanguard newspaper can be read at http://www.vanguardngr.com. Informations in these papers can be downloaded and printed out. It may be information on job opportunities/vacancies. Apart from newspapers, there are books specially written on occupations which people can lay hands on. For instance, handbook on occupational education arc found in the libraries. Also, the National Standard Classification of Occupations is a book published by the Federal Ministry of Labour and Productivity. It is available in various libraries. With informations in these books, one can get a job and become a wage-earner.

**Use of Software Devices**

Softwares are the materials on which information or data have been recorded for use on the hardwares. They are secondary storage devices. Examples arc: audio and video tapes, audio cards, films, slides and transparencies. Others are disks e.g. floppy disk/diskette, magnetic disk, optical disk, flash drives and CD-ROMs (Nwosu, 2002). They are found in various software libraries. They can be used to achieve the millennium development goals. This is because they contain a lot of information that
boarder on MDGs such as education, health and nutrition, gender equality, environmental sustainability, occupational information and job vacancies.

Recommendations

This paper recommends as follows:

1. That the government should make ICT a compulsory subject within the curriculum of non-formal education so as to achieve the millennium development goals particularly on education for all.

2. The government should procure and equip the schools with computer and its accessories for effective and efficient teaching and learning of ICT as a subject.

3. The government should call on installation and maintenance company known as the Internet Service Provider (ISP) to construct ICT centers, websites and networks in all non-formal education centers for accessibility of information in the Internet at all times.

4. The government should encourage indigenous authors to write books on ICT as a subject for the school curriculum. This should be done by giving the authors research allowances and incentives; and by recommending their textbooks to be used as learning materials for the masses.

5. Since one of the cardinal objectives of MDGs is eradication of poverty and hunger, the National Directorate of Employment (NDE) should procure computers and give reasonable discount to the people who want to purchase the computers for self-employment. This will in no small measure, eradicate poverty and hunger.

6. Seminars, conferences and workshops should be organized from time to time to enable teachers update their knowledge in ICT and to keep on with the modern global trends in technology.

Conclusion

Millennium Development Goals are the goals born out of general global problems particularly in developing countries. Some of them are the problem of illiteracy and numeracy, disease, poverty, hunger and economic dependency. Others are promotion of gender equality and curbing of environmental degradation to mention but a few. Some ICT and educational technology resources such as the Internet, e-mail, telephones and wireless application protocols, radio and microwaves, television and satellites, videophone system, library, diskettes, flash drives and CD-ROMs etc were outlined and discussed as veritable tools for achieving the millennium development goals.

References


