



Impacts of information and communication technology (ICT) in facilitating the education of students with visual impairment

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ABSTRACT

This research focused on the impacts of information and communication technology in facilitating the education of students with visual impairment. This work reviews the existence of information and communication technology (ICT) in educating the students with visual impairment in Federal College of Education (Sp.), Oyo, Oyo State, Nigeria, and to investigate further, the impact of ICT on academic performance of students with visually impaired. Fifty (50) students with visual impairment at the Federal College of Education (Sp.), Oyo, State, Nigeria were randomly selected and questionnaires were administered to them. Data were extracted from the questionnaires and analyzed. The results showed that students with visual impairment greatly benefited from integration of ICT with visually impaired education. Integration of ICT with visually impaired education significantly enhanced the academic performance of students with visual impairment. Government should support education of students with visually impaired so that they can have independent and meaningful lives and to put a stop to roaming about the streets begging for survival.

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Introduction

All over the world, the condition of persons with visual impairment (PVI) had been precarious in terms of access to information and opportunities; in Nigeria, especially in Oyo, Oyo State, where in the opinion of Belay (2005), the students with visually impaired (VI) were not only the victims of physical circumstances, but also the objects of the deliberate and inadvertent discrimination. They enjoy very little access to all forms of social participation.

ICT has also provided the opportunity for PVI to take advantage of today's globalization. It could provide the means for blind and partially sighted persons to overcome barriers such as need to read, use computer, take notes and communicate both on paper and electronically (Brophy and Craven, 2007) in 'Niran Adetoro (2008). Person with visual impairment according to Elaydi and Shehada (2007) could now compete on equal footing with sighted persons on the basis of knowledge and technological competence.

In Nigeria, PVI are everywhere and the extent to which information materials are available and accessible to them be lamentable. PVI in Nigeria are constrained to read only what is available and not what they want to read. ICT and other assistive technologies have given the VI the realistic possibility of achieving equality in terms of access to information. The access question had consistently thrown open ethical, equity and standards issues and debates all over the world. This had led to legislations in many countries supporting the right of PVI and other disabled persons to have access to information, ICT and information services.

Nigeria's PVI need to take advantage of ICT as a driving force and the primary tool for all their progressive development skill oriented activities. The challenges are intractable given the socio-economic realities that have enveloped persons with disabilities in Nigeria. Nevertheless, the future looks promising.

Advances in Information and Communication Technologies have significantly contributed to the creation of a global society in which economic, political, environmental and educational events in one part of the world become quickly known and simultaneously influence events in other parts of the world. The world today is a networked and a knowledge society. ICT has not only led to globalization, it has also been described as the wheel upon which globalization revolves. Globalization and rapid technological change process that have accelerated in tandem over the past fifteen years have created a global economy that is powered by technology, fuelled by information and driven by knowledge. Wikimedia (2007)

Information, its management and dissemination by appropriate communication technologies were the critical elements in the ICT field. There was an urgent quest to be part of this information explosion in an information society on the part of governments, institutions, corporate bodies and individuals; persons with visual impairment must be assisted to be part of this bandwagon. The demand for ICT and their services are insatiable. On the part of corporate bodies, including government, the over-riding goal was to increase institutional efficiency and cost saving. Essentially, ICT literacy was the front burner on the part of the individuals. It follows that ICT illiteracy was a terrible double disease and disadvantage in this century in which ICT had been used to redefine the concept of illiteracy as not being unable to read and write, but according to Alvin Toffler being unable to learn, unlearn and relearn. Wikimedia foundation, 2007. The world today is knowledge and skill society. Inaccessibility to ICT makes persons with disability less knowledgeable about and less competitive in the society they live. Person with visual impairment were capable of learning, unlearning and relearning and therefore should be assisted to become ICT literate, knowledgeable and skill competent. Special needs education should begin to think of

how to reform its curricula, infrastructure, teaching and learning resources to respond to ICT demands.

The world today is experiencing dramatic changes brought about by the use of Information and Communication Technology especially computers.

Information and Communication Technology (ICT) had profoundly influenced the way we as human being interact and manipulate information.

The role of Information and Communication Technology education in the march towards the development and modernization of any society could not be ignored. Science and technology were very important components of the wall dividing poverty and prosperity. Information Technologies were so intimately linked, either could be the results of the other. Information Technologies were therefore, indispensable components of the development challenge. Integrating culture with information and technology require a merging of school and society, especially where the social and cultural values plus technological orientations are absorbed into the school system. Such had been the practice of developed countries in Europe and America.

There was no doubt that Information and Communication Technology (ICT) had revolutionized virtually all facets of human endeavour. This new technology was changing and we were also transforming many organizations.

The importance of ICT and the invaluable role it plays in the practice of information dissemination to the appropriate targets. The Internet was a major part of current and future growth of Information and Communication Technology that would impact the 21st century information society on creation of new worlds. Re-define the way we lived, worked and thought. We therefore owed it a duty, not only to ourselves as well as to future generations of Nigerians to recognize the place and importance of information and communication technology in tertiary institutions

The introduction of ICT in education had brought about a number of pedagogical revolutions, benefits and challenges to teachers and learners in general. However, it was important to see ICT from four viewpoints to actually appreciate what it was used for in education:

1. ICT as objects: it refers to learning about ICT. This prepares students to use ICT in education, future occupation and personal life. Above all, learning about ICT is learning about its literacy and the many things it can be put to use to better one's life.
2. ICT as an assisting tool: it refers to the use of ICT as a tool, for example, while making assignment, collecting data and documentation. Typically, ICT is used independently from the subject matter. It becomes instrumental to problem solving.
3. ICT as a medium for teaching and learning: it refers to ICT as a tool for teaching and learning itself, the medium through which teachers can teach and learners can learn e.g. drill and practice exercise, simulation and educational network.
4. ICT as a tool for organization and management in school e.g. online registrations, payment of tuition fees etc

Visually impaired computer user all over the world heaved a sigh of relief with the introduction of the 'Dolphin Pen' a thumb drive device that makes it easy for users to have their full magnification software, screen reader or Braille software on a personal computer where they are. Dolphin Pen runs from a USB pen drive, which plugs straight into a USB port of a computer. Users have a choice of screen reader, magnification software or the world's only combined full screen reader/magnifier. This service allows VI users to carry in their

pocket their choice of assistive software and personal settings that suits their sight loss. (Adaptech Inc, 2006, in Ozoji (2008).

The importance of ICT to the persons with visually impaired could

Not be over emphasized. ICT and indeed digital technology had revolutionized library and information services for PVI. An emerging trend in recent years has been for the importance of accessibility issues to be recognized by mainstream libraries and organizations providing service to PVI (Braizer, 2007). Access to information using ICT and other assistive technology had been critical to say the least. This revolution had presented to PVI, immensely interesting opportunities. Roos (2007) argued that digital revolution for PVI had offered libraries opportunities to improve their Braille book production outputs; it gave rise to fascinating techniques for making talking books more accessible. PVI also gained almost full access to computers, which changed radically not only the manner in which they did things, the way they thought and also especially the manner in which they read.

For PVI, computer could enable access to information by providing alternative methods of reading and recording (Becta, 2000). For the partially sighted and the low vision, the following ICT devices and technologies had brought about unprecedented access to information.

- Glare protected computer screens are now available
- Special software could present large prints on normal monitors; and they could come with high-resolution displays. Computer screens of this nature could allow for good contrast presentation. Many of these were possible through standard windows but were also offered by a range of other packages.
- Mouse pointer's shape and size could be altered to suit the partially sighted and low vision such that it showed mouse trails which made it easier to locate the cursor on the screen. This also possible through windows.
- Computer based keyboard orientation: aids would allow for better mastery of the keyboard for inputting.

At this juncture, it was pertinent to note that light behind text on screen made it easier for someone with visual impairment to read text on screen. Some colour combination was easier to read for particular sight condition and PVI found it beneficial to be able to change the text or the background colour or both. Many also found it useful to be able to select a particular font and avoid fixed spaced fonts, which might be difficult to read (Becta, 2000).

Tele-communicating and home-working were becoming popular and accepted by most employers, as an alternative to going into the work space everyday, five days a week. That, it was unnecessary to be present in a physical location to perform a job this addresses practical issues of mobility. Similarly, it might address psychological problems that organizations could have in terms of employing visually impaired staff. It might not ideal in Nigeria because of the belief of our people concerning people that were visually impaired.

Another aspect was the issue of training. Distance training becoming a significant source of revenue for many educational institutions and a growing number of courses were being offered via Internet. The facts that students could receive course materials, interact with teachers and instructors and submit assignments over the Internet without being physically present were appealing to many. Having access to the Internet would broaden the range of educational opportunities for the blind and visually impaired.

ICT gave students with visually impaired access to a wide variety of resources, helps reduce barriers to information,

provides expanded opportunities for efficient communication with the faculty and other students and reduces the need to unnecessarily move about the campus.

For people that were visually impaired, computer was essential to the control and operation of most modern scientific instrumentation. The information obtained from these instruments was usually digital and thus, has become accessible that over networks and serve as digital input to assistive devices that change text into audio or Braille.

Methodology

Fifty (50) students with visual impairment at the Federal College of Education (Sp.), Oyo, Oyo State, Nigeria were randomly selected and questionnaires were administered to them. Data were extracted from the questionnaires, presented into Contingency table and subjected into analysis.

Results

The Chi-square test showed that ICT in facilitating the education of students with visual impairment was statistically significant (P -value < 0.05). The needs of computer education for students with visual impairment in the schools supported them to achieve the objective of self-reliance in the society.

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