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INFORMATION AND COMMUNICATION TECHNOLOGY A SUPER GAME CHANGER IN EDUCATION SYSTEM

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Abstract

Information and Communication Technology offers new technology in all areas of our lives and the education sector is not left out. In this information age, we can now talk to each other in ways we never imagined. Looking at how technology has affect the world today; information technology will positively affect the educational sectors. The authors discussed the benefits of learning with computing tools when employed into teaching.

INTRODUCTION

Information technology drives innovation and this is the path to education success. Infacts, its hard to imagine any aspect of education today that has not benefited from the digital system world. Information technology has given education the tools to solve complex problems.

Nowadays the formula for learning is ICT enable environment. The incorporation of ICT into educational system has become a process whose implications go far beyond the technological tools nurturing the educational environment. The ideas of teaching construction and the way one can build and consolidate meaningful learning based on technology are now being discussed, or the technological use of education, in strictly educational terms (Díaz-Barriga, 2013).

The transformation of ICT has allowed these to become tools used in education which could further improve the quality of education of the student and revolutionize the way information is received, managed and interpreted (Aguilar, 2012).

Information Communication Technology (ICT) is a broader term for Information Technology (IT), which refers to all communication technologies, including the internet, wireless networks, cell phones, computers, software, middleware, video-conferencing, social networking, and other media applications and services enabling users to access, retrieve, store, transmit, and manipulate information in a digital form.

Characteristics of Information Technology

Information Technology has the following Characteristics

- Acquisition, Storage, manipulation, management, transmission or reception of data or information. Real time access to information.
- Easy availability of updated data
- Connecting Geographically dispersed regions
- Wider range of communication media.

ICT Tools Used in Education

Information Communication tools used in Education include the following

- Drawing and graphics programs.
- Web creation and design.
- Digital video.
- Emails.
- Web searching.
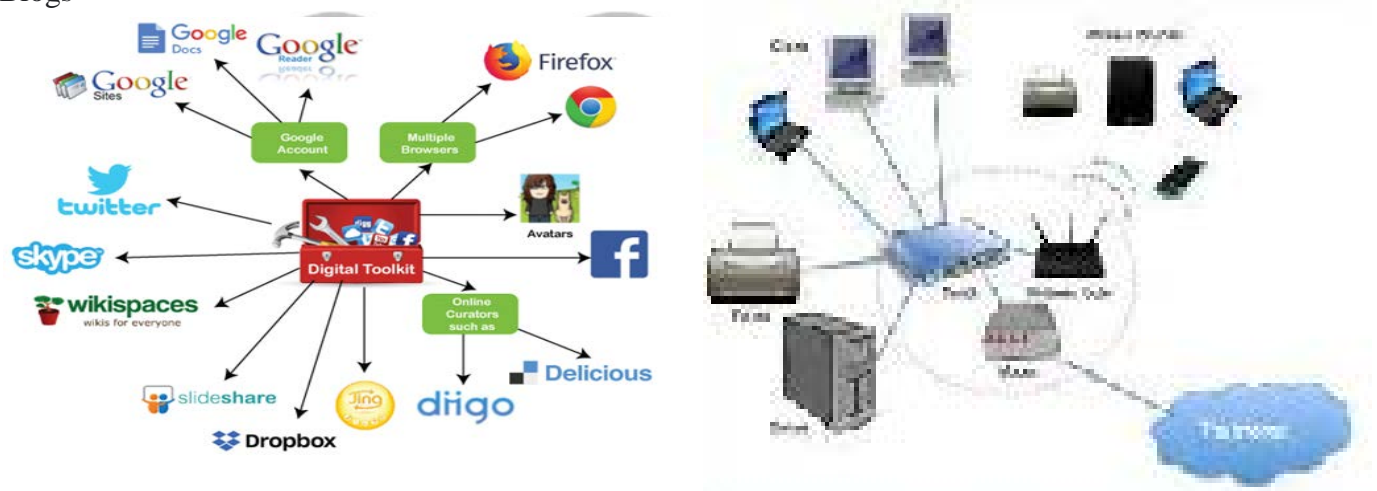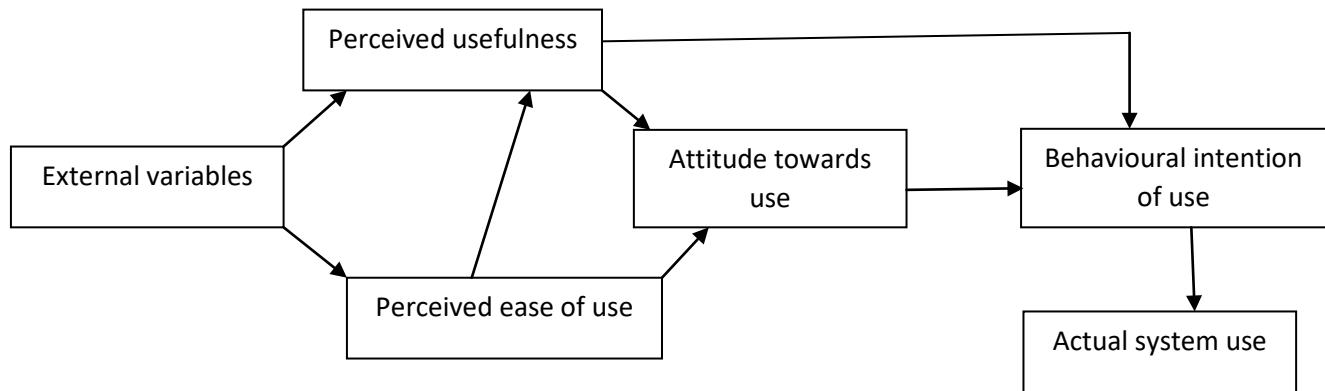- Wikis.
- Word processing.
- Blogs

Fig. 1. Images of ICT tools Used in Education (Source Javapoint.com)

THE RISE OF ICT IN EDUCATION

The rise of ICT in education can be traced to elearning system and this foster innovation in education; which results in the development of apps with faster processing and wider information distribution. With the dawn of COVID 19 lock down, ICT created the following changes in elearning:

    i.   Google class room
    ii.   Teleconferencing
    iii.   Zoom, etc

Today, everybody now prefer cloud computing more than a private computer network. This implies that it is hard to think education today without ict.

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                    ┌─────────────────────┐
                    │ Perceived usefulness │────────────────────────────┐
                    └─────────────────────┘                             │
                         ↗           ↘                                  ↓
┌──────────────────┐              ┌──────────────────┐    ┌──────────────────────┐
│ External variables│             │ Attitude towards │───▶│ Behavioural intention │
└──────────────────┘              │      use         │    │       of use          │
                         ↘           ↗                     └──────────────────────┘
                    ┌─────────────────────┐                             │
                    │ Perceived ease of use│                            ↓
                    └─────────────────────┘                 ┌──────────────────────┐
                                                            │  Actual system use    │
                                                            └──────────────────────┘
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Technology Acceptance Model(source: Davis et al 1989)

Merits of ICT tools Used in Education

The advantages of ICT Tools include

- Cost-efficient
- Provide the facility for easy student management
- Direct classroom teaching
- Improved modes of communication
- Eco-friendly-Eliminate the usage of paper
- Direct classroom teaching
- Minimize cost and saves time
- Improved data and information security
- Web-based LMS tools link teachers, students, researchers, and scholars and education together.
- Teachers are able to teach better with graphics, video and graphics.
- Teachers can create interesting, well-designed and engaging classroom activities.
- Provide better teaching and learning methods
- To spread awareness about the social impact of technological change in education.
- Promoting and improving the digital culture in universities, colleges, and schools.
- Automated solutions to paper-based manual procedures and processes.

As part of the roles played by each educational agent, students currently use technological tools to facilitate learning. This development began early on with the emergence of calculators, TV sets, voice recorders, among other. However, such has been the progress that technological

resources have become educational resources, where efforts to improve learning entail the task of involving technology with education (Ene, 2017).

The use of ICT means breaking with traditional media, boards, pens, etc., and it has given way to a teaching role based on the need for training in and updating one's knowledge of teaching methods based on current requirements (Granados, 2015).

Cabero (2005) states that the emerging technologies were created outside an educational context and were later integrated into it. Suárez and Custodio (2014) state that education, as a relevant aspect in human life, has combined with ICT to create a new learning environment where students take responsibility for their own learning, where time and flexibility play a major role, as education becomes increasingly digital, as digitalization has become a revolution, and as new technologies converge into emerging educational and pedagogical paradigms. (Suárez & Custodio, 2014)

The challenges of information technology (IT) for education have been studied for about 40 years. Due to rapid technological developments the field is continuously changing in intriguing ways. The use of communication technologies has become widespread; education has been attracted by the potential of IT to go beyond classroom walls to provide learning opportunities at any time and at any place. Today while we are conceptualizing the nature of schooling, the common parlance is to describe a curriculum that contains content and is conveyed by a particular set of pedagogies. Its learning outcomes are evaluated by a suite of assessments; and in the case of technology-based instruction various aspects of content, pedagogy, and assessment are instantiated via computer tools and applications, digital media, and virtual environments Cum (2011).

Computer as an ICT Tool in Education

The various uses of computers in education maybe classified into four broad categories:
- Use of computer programming as a developmental or authoring tool.
- Use of computers as means of Programmed instruction.
- Use of computers in stimulating experiments.
- Computers as a productivity tool both in content area and area of study for future use.

Educators look at computers as a strategy that can engage students in some form of learning. Robert Taylor (1980) suggested that a computer could be used in the classroom in three different ways:

Computer as a TUTOR: i.e an aid to the tutor.

Computer as a TOOL: i.e. as a medium of instruction

Computer as a TUTEE: i.e as something to be instructed or programmed.

Computers in Education refer to educational computing. It means the applications of computers in Education. The computer has created a revolution in the content of education and in the nature of the learning process. They have the capability of multiplying the human intellect beyond past conceptions and have tremendous implications in education. They are
- Computer Assisted Instruction (CAI)
- Computer Assisted Learning (CAL)
- Computer Based Teaching (CBT)

- Computer Managed Learning (CML)

Computer-Assisted Instruction

Computer-Assisted Instruction (CAI), a program of instructional material presented by means of a computer or computer systems.CAI is defined as an interaction between a student, a computer controlled display and a response entry for the purpose of achieving educational outcomes.CAI is a method of instruction in which there is a purposeful interaction between a learner and computer device the individual learner to achieve the desired instructional objective with his own pace and ability.

Computer-Assisted Learning

Computer Assisted Learning (CAL) is used to denote the flow of information between the student and computer so as to provide instruction to the student on specific topics.CAL is used to denote a broader function of the computer in mediating the learning environment of the student in different ways.CAI is at times considered to be an aspect of CAL which deals with instruction.

Computer-Based Trainings

Computer-Based Trainings (CBTs) are self-paced learning activities accessible via a computer or handheld device. CBTs typically present content in a linear fashion, much like reading an online book or manual. For this reason they are often used to teach static processes, such as using software or completing mathematical equations. The term Computer-Based Training is often used interchangeably with Web-based training (WBT) with the primary difference being the delivery method. Where CBTs are typically delivered via CD-ROM, WBTs are delivered via the Internet using a web browser.

Computer Managed Learning

Computer Managed Learning (CML) is used to indicate the use of computer to perform the tedious and time consuming tasks of learning. There are four broad areas in CML in which computer provide management support to the teacher. They are:

To construct, score and analyze tests.

To keep record of students performance and progress through courses.

To provide guidance to the student advising him on the choice of next course, and

To report on the performance and progress of the students to individual students and administrators of the institution.

Basic purpose of CML is to relieve the teacher from his time consuming routine tasks so that he can utilize it for more profitable instructional work.

CONCLUSION

For the future, computing has come to play an increasing role in human learning. This means that technical innovation has come to fast in computing that experts can even keep up with.

However with the present situation of things, and considering that information technology afford us a widely available computing power, thousands of teachers, students and parents are beginning to look at power of computing in human learning and the necessary actions they should take.

Looking at the aftermath of Covid 19 lock down and the effect on the educational sector most especially in our country Nigeria. This has greatly exposed the level of funding ICT services in our educational system; therefore there is the need to greatly look at the involvement of ICT in education system in order to build a strong society strong in scientific, infrastructural and environmental development.

This will also curb the effect of transfer of the virus from person to person and will help to maintain social and physical distancing most especially among students

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