

RE-ENGINEERING TEACHING AND LEARNING IN EDUCATIONAL PSYCHOLOGY USING INFORMATION AND COMMUNICATION TECHNOLOGY

N. A. Onyekwere

Abstract

One of the most significant forces influencing change in teaching and learning in the present century is the emergence of information and communication technology. There is the need to change the traditional teaching method as we enter the 21st century. This paper examined the ways of re-engineering teaching and learning in educational psychology using information and communication technology. It highlighted the contribution that ICT can make to quality teaching and learning through improvement in cognition, pedagogies and the potential benefit to learners through using ICT.

There is universal recognition of the need to use information and communication technology (ICT) in education as we enter the era of globalization where the free flow of information via satellite hold sway in global information dissemination (Yin, Cheong, 2005). There is no doubt that ICT provides productive teaching and learning in order to increase people's creative and intellectual resources especially in today's information society (Woodland, 2007). Through the use of audio, text, multicolor images, graphics, motion, etc, ICT gives ample opportunities to the students to develop the capacities for high quality learning and it also increases their ability to innovate.

ICT is the learning and teaching tool of the 21st century and should be integrated in educational psychology which is the study of how humans learn in educational setting. ICT is a valuable tool for supporting learning as it extends teaching and learning in many ways. It is very essential in educational psychology as it enables teachers and students to use visual and auditory media to extend learning and encourages students to become actively involved.

According to Gavin (2000), ICT encourages access to a wide range of information and communications opportunities and enable students to store and retrieve, draft and re-draft, test and analyze data. Through using ICT in different course in tertiary institution, students can apply what they know in a range of situation. This means that they can see what different technologies and softwares can do along side their other learning.

Use of Computer

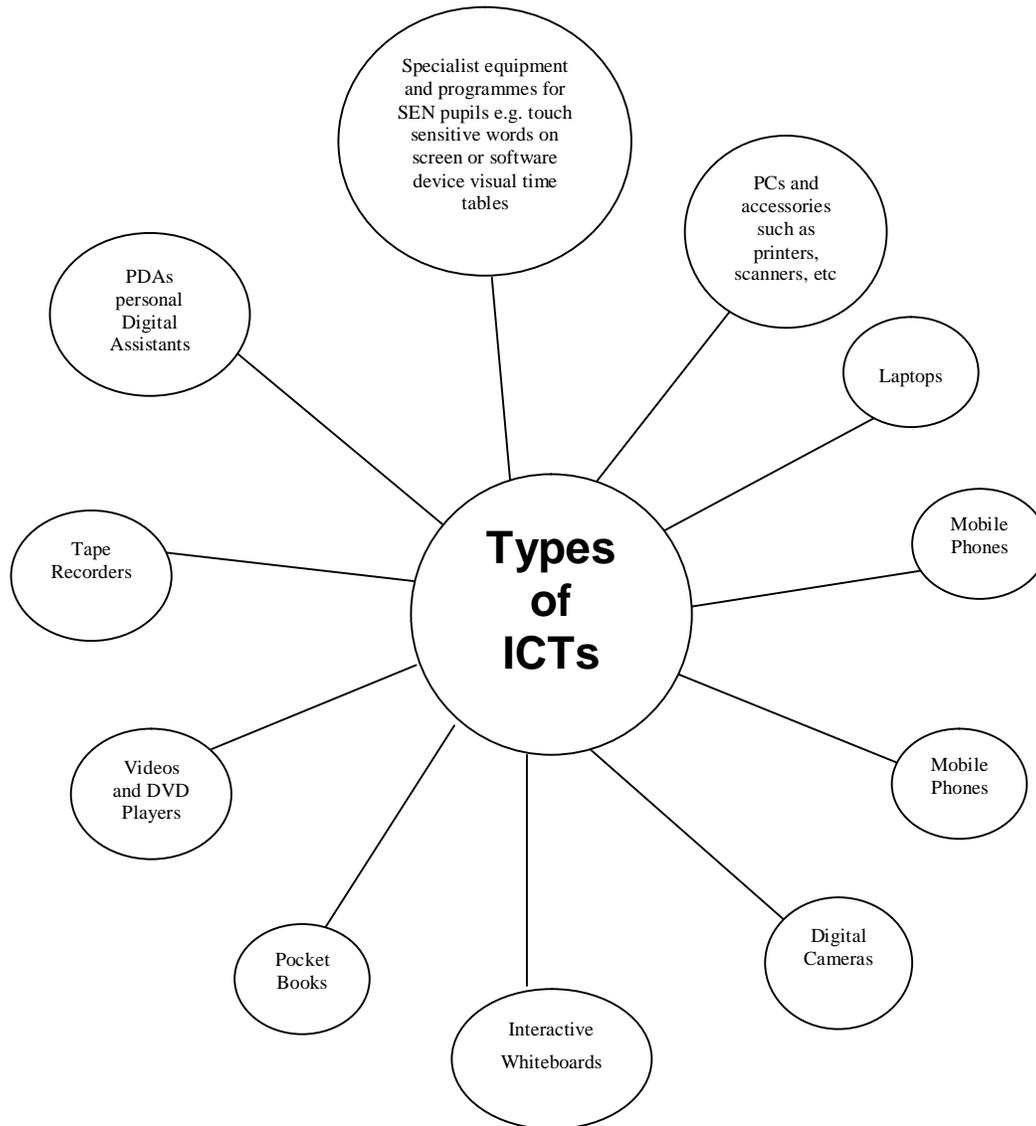
This is the age of information dominated by the digital technology. The digital technology has influenced all aspects of human life, educational psychology is not an exception. Now technology is in the process of change from digital to photon. Shortly, photonic technology will be available for the use of the society. At present, majority of devices are based on digital technology; one such device is computer. The computer is an electronic device that has the capacity to store, retrieve and process both qualitative and quantitative information fast and accurately. The computers were never developed for improving quality of teaching-learning process. But researchers started using computers for teaching purpose. It gave birth to Computer Assisted Instruction (CAI), Computer Managed Instruction (CMI), Computer Based Instruction (CBI), etc. People started developing CAI for teaching different subjects at secondary school as well as at higher education level.

Information and Communication Technology

Information Technology (IT) was limited only to the textual mode of transmission of information with ease and fast. But Information and Communication Technology (ICT) covers any product that will store, retrieve, manipulate or retrieve information electronically in a digit form for example personal computers, digital television, e-mail, robots etc. ICT is concerned with storage,

retrieval, manipulation, transmission or receipt of digital data. Importantly, it is also concerned with the way these different user can work with each other.

ICT has opened new avenues like online learning, e-learning, virtual university, e-coaching, e-education, e-journal, etc. this general modules are also part of ICT. Mobile is used in imparting information fast and cost effective. ICT brings more rich materials in the classrooms and libraries for teachers and students. Information communication technology has broken the monotony and provided variety in the teaching-learning situation.



ICT as a Viable Tool for Teaching and Learning

The importance of ICT is quite evident from the educational perspective. Though the chalkboard, textbooks, radio/television and film have been used for teaching and learning over the years, it has not quite impacted on the educational process like the computer, while television and radio have impact only on the audiovisual facilities of the users, the computer is capable of activating the senses of sight, hearing and touch of the users. ICT has the capability to provide higher interactive potential for users to develop their individual, intellectual and creative ability. The major purpose of ICT according to Sharinina (2001) consists in the development of human mental resources which allow people to both successfully apply their existing knowledge and produce new knowledge.

The collective and rigid nature of the learning associated with the use of radio, television and film do not contribute any innovative changes to traditional methods in education system. Information and communication technologies are being used in the developed world for instruction functions. Today, computers perform a host of function in teaching and learning as many nations are adding computer literacy, reading and writing literacy as skills students will need to succeed in a technologically developed world. There is no doubt that ICT provides productive teaching and learning in order to increase people's creative and intellectual resources especially in today's information society.

Cognition and ICT

The use of ICTs requires an understanding on how they are used in the classroom and what learning goals are held by educators involved. There are several levels on which ICTs can push the cognition boundaries. New media allows the learner to represent data in rich and diverse ways. This is not simply a matter of learning styles although diverse learning styles can be supported by ICT. New media enables the learner to transverse the boundaries of art, science and language.

ICT allows the learner to accelerate or decelerate processes for purposes of understanding. The best cognitive understanding and practice can be captured and communicated by ICTs and applied to the task of growing minds in ways that improve the quality of learning for many, rather than few students. ICTs can give teachers access to great conceptualizers that are inside and outside their own ranks, which assists them in planning and programming cognitive development. Best of all the interactive capability of ICTs provides more opportunities for students to engage as creators and manipulators in the learning process (Jefferies, 2003).

ICTs support us in bringing together aesthetic as well as scientific considerations, allowing us to overlay knowledge and meaning with skill competence. Brain research now available to all teachers with internet connection enables them to stimulate specific brain cells and be more targeted in their efforts to stimulate cognition in individual students.

Educational psychology can in short be re-engineered using ICTs to qualitatively improve cognition by conceptualizing more creatively, improving teacher's knowledge and by tailoring learning resources to meet the particular needs of a child at every stage of his education.

Pedagogical Integration of ICT into Teaching and Learning

It has been widely recognized that harnessing the power of modern technologies for learning purposes requires that appropriate learning strategies be developed that harmonize effectiveness in learning with the help of technology. This recognition underpins the UFI/National Grid for learning relationship, a general interest in fostering innovation in learning strategies (Kearns & Papadopoulos, 2002).

ICTs provides many opportunities to use a variety of pedagogies. As a tool, ICTs can support didactic or facilitative approaches, collaboration and across time and distance, enquiry or interrogation open or closed research, lock step or mind-map. Online technologies support and make easier constructivist approaches, just as they make behaviourists approaches easier. The capacity of ICT to deliver information or to communicate with a mass of students in quite individual ways opens up the

possibility of tailoring pedagogy to the needs of a student in time and place without limitations imposed by peer groups. This provides the opportunity for software that utilizes, for example multiple intelligence theory. Information technology can only contribute substantially to the improvement of schooling if it is appropriately embedded in powerful and interactive learning environments (established within) the broader context of (supported) pedagogy, curriculum and school organization (DEETYA, 1996) when it is so embedded, the improvement could be sustained.

ICTs for example lend themselves very readily to holistic learning, collaborative grouping, problem-oriented activities and integrated thematic units. Teachers wishing to teach in this way will be both more efficient and effective if they employ ICTs to reach their goals.

Potential Learning Benefits of Using ICT

Information and communication technology (ICT) can be used in many ways to benefit student learning as it is cross-curricular as well as being an individual subject areas. ICT is very ideal for problem solving and finding things out and can support sustained thinking and group work.

Most students enjoy learning through ICT and it is an area which is constantly changing, they will benefit from new and innovative technologies as they come into school. Examples of how ICT can be used to support learning and student development include:

- **Whole Class Session**

The use of interactive whiteboard (IWB) in recent years has transformed whole class teaching. Student and adults are able to use this technology and many of the programmes available encourage participation. The use of IWB technology also enable teachers to display files downloaded from the internet as well as CD-ROMs and builds interactivity to encourage active learning.

- **Group Work**

ICT is effective during group work as it can be used to enhance learning and encourage students to develop their technological skills. Student s can collectively plan, email outside and use the internet for research and then create a basic power point activity to present their project.

- **Individual Work**

Individual students can be given opportunities to experiment with different technologies, for example using digital cameras during project work, or specific resources can be used with students who have special educational (ASL) needs.

Conclusion

Education is an information and communications based industry and ICTs gives us the incentive to achieve better outcomes. Applied with intelligence, diligent research and commitment, ICT provide powerful means of improving data for diagnosis and formative evaluation. This potential can be realized if educators in all sectors take up the challenge and hard work of adaptation and change required if we are to develop ICTs in teaching and learning.

Presently, the way technology is used in teaching and learning in educational psychology is still low. There is the need for a wholesale re-engineering of teaching and learning using information and communication technology. Benson and Herkavy (2002) is of the view that ICT could offer a chance for radically re-engineering and saving the soul of the higher institutions in the changing global educational context.

References

- Benson, L. & Harkavy, I. (2002). *Saving the soul of the university*. In *the virtual university* (ed. K. Robins & F. Webster). Oxford, UK: University Press.
- Carl, S; Hawkins, C. (2009). *Teaching ICT*. New Delhi: Sage Publication Asiatic Pacific Plc Ltd.
- Deetya (1996). *Information technology in the learning process*. Canberra, Singapore: Gateways.
- Kearns, P. & Papadopoulos, G. (2000). Building a learning and training culture: The experience of five OECD countries. Retrieved online <http://www.icliteracy.info>. Date retrieved 25th January 2012.
- Jefferies, P. (2003). ICT in supporting collaborative learning: pedagogy and practice. *Journal of Educational Media*, 28(1): 35-48.
- Wolland, J. (2007). *Learning and teaching using ICT in secondary school*. United Kingdom: Exeter Learning Matters Ltd.
- Newhouse, C.P. (2002). *Impact of ICT on learning and teaching*. Western Australia, Perth: Specialist Educational Services Ltd.
- Perkins, D.N. (1992). *Constructivism and the technology of instruction*. New Jersey: Lawrence Erlbaum Associates.
- Sharininia, L.V. (2001). *ICT as an aid to teaching and learning*. Oxford Press.
- Singh, Y.K; Sharma, T.K; Upadhya, B. (2009). *Educational technology: teaching and learning*. New Delhi: A.P.H Publishing Corporation:
- Yin Cheong Chang (2005). *New paradigm for re-engineering education: globalization localization*. Dordrecht, Springer Publishers, Netherlands.