Benefits of ICT in Education: Teaching-Learning Process

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Abstract

The use of Information Communications Technology (ICT) in education and training is increasingly becoming a priority in African countries including Uganda. The paper aims at examining the benefits of ICT in education with a specific focus on teaching-learning process. The presenter used both qualitative and quantitative approaches of identifying the uses, application, relevance and impact of ICT in the teaching-learning process with specific cases in Uganda. The paper identifies and explains benefits of ICT in general and in the teaching –learning process in particular like to the learners in terms of general, motivational, independent learning and team work as well as teachers in planning and preparation. The paper identifies the barriers of ICT use as at five levels; political economy, technology, teachers, school and education system. The paper concludes that ICT is important in the teaching-learning process because it greatly enhances comprehension of the language and subject matter of learners as well as easing the work of teachers. It recommends government, education systems, learning institutions and individuals to embrace ICT holistically.

Key Words: Benefits, ICT, Education, Learning, Teaching

INTRODUCTION

The use of ICT in education and training is increasingly becoming a priority in African countries including Uganda. ICT is an acronym that stands for Information Communications Technology**.** However, apart from explaining an acronym, there is not a universally accepted definition of ICT? Why? Because the concepts, methods and applications involved in ICT are constantly evolving on an almost daily basis. It's difficult to keep up with the changes - they happen so fast.

A good way to think about ICT is to consider all the uses of digital technology that already exist to help individuals, businesses and organizations use information. *ICT covers any product that will store, retrieve, manipulate, transmits or receives information electronically in a digital form*, for example, personal computers, digital television, email, robots (Golooba, 2011). ICT is, therefore, concerned with the *storage, retrieval, manipulation, transmission or receipt* of digital data. Importantly, it is also concerned with the way these different uses can work with each other.

MATERIALS AND METHODS

The presenter used both qualitative and quantitative approaches of identifying the uses, application, relevance and impact of ICT in the teaching-learning process with specific cases in primary, secondary and universities as learning institutions in Uganda. Given the

wide population of many students and teachers in the learning institutions, the researcher used a sample size of 50 students in primary schools, 50 students in secondary schools, 50 students in universities, 50 teachers in primary schools, 50 teachers in secondary schools, 50 teachers in universities thus a total of 300 respondents. Stratified simple random sampling method was used to identify the 300 respondents taking care of age, education, experience, socio-economic status, exposure, performance and publication.

In this paper, qualitative data analysis involved the researcher searching for patterns of data in form of recurrent behaviours or events, and then interpreted them moving from description of empirical data to interpretation of meaning. The process of data analysis involved making sense out of text data. It involved further moving deeper and deeper into understanding the data, representing the data and making the interpretation of the larger of amount of data (Amin, 2005; Kaahwa, 2008). Therefore, in this paper, the process of data analysis involved editing, coding, and tabulation plus interpretation of data hence arriving at this complete researched paper.

RESULTS AND DISCUSSIONS

Benefits of Using ICT in General

The value of a network increases as its number of users grows. By participating in the global information network, developing nations not only add value to the rest of the world, but also benefit from the ability to use the network to communicate and trade with all other users. For this reason it becomes ever more important for the developing world to get ready for the Networked World.

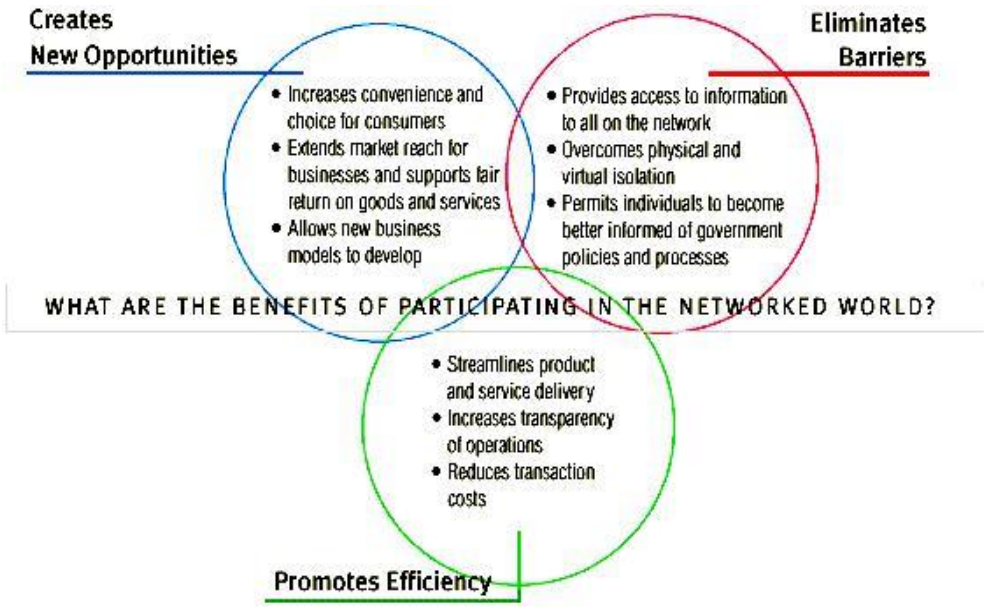

Figure 1. Benefits of participating in the networked world
Source: Talemwa (2011)

Getting ready for the Networked World creates new opportunities for firms and individuals in the developing world, eliminates barriers that have traditionally stifled flows of information and goods to and from developing nations, and promotes efficiency in a host of activities. Students can learn more about the world and about themselves through use of the network. Businesspeople can find new market opportunities and more efficient ways to run their firms. Governments can more effectively provide public services. Individuals can communicate with friends and family and become more informed about virtually anything that is on the network.

Benefits of ICT in the Teaching-Learning Process

1. Broadband is a major factor in increasing collaboration between teachers. Embedded, reliable and high-capacity broadband in the classroom increases the Quality and quantity of educational activities that can be undertaken.
2. ICT can enhance teaching by enhancing what is already practiced or introducing news and better ways of learning and teaching.
3. ICT as object refers to learning about ICT, mostly organized in a specific course unit. What is being learnt depends on the type of education and the level of the students? Education prepares students for the use of ICT in education, future occupation and social life.
4. ICT as an _assisting tool‘. ICT is used as a tool, for example while making assignments, collecting data and documentation, communicating and conducting research. Typically, ICT is used independently from the subject matter.
5. ICT as a medium for teaching and learning. This refers to ICT as a tool for teaching and learning itself, the medium through which teachers can teach and learners can learn. It appears in many different forms, such as drill and practice exercises, in simulations and educational networks.
6. ICT as a tool for organisation and management in schools

Impact of ICT on Learning and the Learners

General

1. Providing structured approaches to Internet research develop students‘ search and research skills which are transferable across the curriculum
2. ICT impacts positively on educational performance in primary schools, particular in English and less in science, mathematics as well as Social studies.
3. Use of ICT improves attainment levels of learners in English language the medium of instruction in Uganda, and enhances their comprehension of others subjects in primary, secondary and tertiary institutions.
4. Schools with higher levels of e-maturity demonstrate a more rapid increase in performance scores than those with lower levels.
5. Schools with good ICT resources achieve better results than those that are poorly equipped.
6. ICT investment impacts on educational standards most when there is fertile ground in schools for making efficient use of it.

7. Pupils, teachers and parents consider that ICT has a positive impact on pupils‘ learning.
8. Pupils‘ subject-related performance and basic skills (calculation, reading and writing) improve with ICT, according to teachers.
9. Teachers are becoming more and more convinced that the educational achievements of pupils improve through the use of ICT.
10. Academically strong students benefit more from ICT use, but ICT serves also weak students

Motivation and skills

1. A very high percentage (86%) of teachers in Europe state that pupils are more motivated and attentive when computers and the Internet are used in class (Empirica, 2006). However, in some countries there is a substantial number of teachers (overall 1/5 of European teachers), who deny that there is much of a pedagogical advantage of computer use in class. This is not any different in Africa and Uganda in particularly.
2. ICT has a strong motivational effect and positive effects on behaviour, communication and processing skills.
3. Multimedia and interactive content on interactive whiteboards is engaging and motivating, particularly for primary pupils, and students pay more attention during lessons.

Independent learning

1. Learners state that they do assignments more on their own way when using a computer and their parents consider that they solve assignments more at their own level
2. Teachers consider that learners work more in cohesion with their own learning styles, resulting in a favourable impact on both academically strong and weak students
3. ICT use at schools can help to minimize the social divide by reducing the digital divide
4. Students assume greater responsibility for their own learning when they use ICT, working more independently and effectively
5. ICT offers learners assignments better suited to individual needs and makes it easier to organize their own learning, through the use of, for example, digital portfolios

Teamwork

1. Collaboration between students is greater when they use ICT for project work as well as teachers and students.
2. ICT promotes child- to- child method of learning in which learners easily assist one another.

Impact of ICT on Teachers and Teaching

There is considerable evidence of the impact of ICT on teachers and teaching:

1. Interactive whiteboards make a difference to aspects of classroom interaction whereby Teachers who perceive a highly positive impact of ICT use ICT in the most project-oriented, collaborative and experimental way. In the end with ICT, the teachers tend to become more of advisors, critical dialogue partners and leaders for specific subject domains.
2. ICT enables teachers to engage students more actively in the production of knowledge. Teachers' use of ICT for communication with and between learners increases learning environments where students are more actively engaged in the creation of knowledge rather than just being passive consumers (UNESCO, 2005).
3. Enthusiasm in terms of positive attitude towards teaching, preparation and research. It is even evident with issuing teachers with their own laptop computer in some European countries increased their attitudes towards work (Becta, 2003, 2004).
4. Efficiency and collaboration evident in Teachers use of ICT to plan and prepare lessons more efficiently and effectively. Further more it increases collaborative approach between teachers. ICT enables teachers to cooperate more and share curriculum plans with colleagues and school managers.

Barriers in Uses and Application of ICT

1. Political economy: The economy of developing countries like Uganda is not yet able to fund the ICT use in terms of harnessing technology, skills; purchase of ICT gargets and engaging in full trade because citizens are limited in purchasing power and application contrary to developed countries like the Netherlands (Wabiga, 2010). In addition, there is limited political will from developing countries to fully fund ICT in comparison to the developed countries (Balanskat *et al*., 2006).
2. Technology: Competence to use and apply ICT is still limited in many citizens and the skills to keep and maintain the technology is inadequate (Wabiga, 2010).
3. Teacher-level: Teachers' poor ICT competence, low motivation and lack of confidence in using new technologies in teaching are significant determinants of their levels of engagement in ICT. These are directly related to the quality and quantity of teacher training programmes.
4. School level: Limited access to ICT (due to a lack or poor organisation of ICT resources), poor quality and inadequate maintenance of hardware as well as Unsuitable educational software are also defining elements in teachers' levels of ICT use. Moreover, the absence of an ICT dimension in the overall schools' strategies and their limited experience with project-oriented activities supported by ICT, are decisive in determining levels of ICT use by teachers.
5. System-level: Like in Uganda it is the educational system itself and its rigid assessment structures that impede the integration of ICT into everyday learning activities.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

ICT is part of globalization in the world‘s development and it is greatly enhancing the knowledge revolution. Its application and availability is low in south compared to the north yet we are in the same global village. The merits of ICT in enhancing the development and teaching –learning process can no longer be underscored because it has become the teacher, module, encyclopedia and library of learners. Therefore in order to benefit from the knowledge revolution, enhance learner‘s achievement and comprehension besides teachers competence, countries in the south, those lagging behind in the north and the entire world must embrace and support ICT at all levels of learning.

Recommendations

1. Include new competencies of ICT in the curricula and in assessment schemes
2. Implement new forms of continuous professional development in workplace environment in general and for schools in particular as part of a culture of lifelong and peer learning.
3. New approaches to teacher training should be much more related to the concept of lifelong learning, knowledge sharing and peer learning. This will enable countries build confident teachers who will be able to upgrade their ICT skills and gain more pedagogical knowledge. Teachers have to become active shapers of their own learning process which requires a professional environment and culture that allows teachers to do so.
4. Build up a clear political will and invest in ICT consolidation in countries like Uganda. A case in point is the countries analyzed in The ICT Impact Report: A review of studies of ICT impact on schools in Europe by the European Schoolnet (Balanskat *et al.*, 2006), which shows how they did benefit from high ICT investments and a strong political will to foster ICT in education.
5. Motivate and reward teachers to use ICT like training them, providing laptops and other ICT scholastic materials that will enhance the teaching – learning process.
6. Integrate the ICT strategy into the national educational system as well as learning institution‘s overall strategies
7. Create closer links between research and practice of ICT for teachers and learners.
8. Make national research into ICT impact given the geographical imbalances in the use and access of ICT across countries and with in districts and schools.
9. Support both large and small scale studies on ICT impact in the teaching – learning process and base decisions on both quantitative and qualitative evidence

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BIO-DATA

Dr. Grace Lubaale is a lecturer in Kyambogo University, the second largest public university in Uganda. He is currently the Head of Department of Teacher Education and Development Studies in the Faculty of Education. He holds four degrees including a Doctorate in Development Studies obtained in 2011 from Uganda Martyrs University. He has presented several papers at local and international conferences as well as authored Higher Education Programmes in Development (2011) and Tertiary Institutions (2012). He is a Member of the European Association for Practitioner Research on Improving Learning (EAPRIL).