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Level : Second Year Master

Module : ICC

Course : Three/ ICTs for teaching and learning enhancement

**Introduction**

ICT as a medium for teaching is becoming more and more acknowledged. It has proved to be positive and stimulating both for students and teachers. It has created an environment which supports student-centered learning, increases student motivation, individualization and cooperation in creating the study-materials, at the same time develops a feeling of “us” and of belonging together. In fact, using e-learning as a support to the teacher’s eye-to-eye classes has proved to be positive. According to Daniels (2002) ICTs have become within a very short time, one of the basic building blocks of modern society. An effective use of ICTs for Education

will continue to grow and develop in the 21st century.

**E-learning Introduction**

Years ago, the University of Tartu started to organize e-learning sessions called “coffee with e-learning”. During the lunch break of the last working day in the week and offering tempting delicacies to coffee, the e-lunches introduced state-of-the-art knowledge about e-learning. The ICTs’ solutions were taught by the IT-support staff who also became the tutors of the teaching staff during building and carrying out the e-courses. In reality, not only computers and their application play a significant role in modern information management, but other technologies and/or systems also comprise of the phenomenon that is commonly regarded as ICTs.

**From IT to ICT**

Pelgrum and Law (2003) state that by the end of the 1980s, the term ‘computers’ was replaced by ‘IT’ (information technology) as a shift of focus from computing technology to the capacity to store and retrieve information. This was followed by the introduction of the term ‘ICT’ (information and communication technology) around 1992, when e-mail started to become available to the general public (Pelgrum, W.J., Law, N., 2003). According to a United Nations report (1999) ICTs cover Internet service provision, telecommunications equipment and services, information technology equipment and services, media and broadcasting, libraries and documentation centers, commercial information providers, network-based information services, and other related information and communication activities.

**Types of ICT Tools**

According to UNESCO (2002) information and communication technology (ICT) may be regarded as the combination of ‘Informatics technology’ with other related technology, specifically communication technology. The various kinds of ICT products available and having relevance to education, such as teleconferencing, email, audio conferencing, television lessons, radio broadcasts, interactive radio counselling, interactive voice response system, audiocassettes and CD ROMs etc have been used in education for different purposes (Sharma, 2003; Sanyal, 2001; Bhattacharya and Sharma, 2007)..

**ICTs’ need in Education**

The introduction of computers started by teaching computer programming, first. However, due to the development of the microprocessor in the early 1970s a quick interest in using microcomputers into schools appeared at a rapid rate. The use of computers and applications of technology increased more and more in society and led to a concern about the need for computing skills in everyday life. Hepp, Hinostroza, Laval and Rehbein (2004) claim in their paper “Technology in Schools: Education, ICT and the Knowledge Society” that ICTs have been utilized in education ever since their inception, but they have not always been massively present. Although at that time computers have not been fully integrated in the learning of traditional subject matter, the commonly accepted rhetoric that education systems would need to prepare citizens for lifelong learning in an information society boosted interest in ICTs (Pelgrum, W.J., Law, N., 2003).

**ICTs’ Impact on Education**

No-one can deny the effect of ICTs on the field of education (Yusuf, 2005). A great deal of research has proven the benefits to the quality of education (Al-Ansari, 2006). ICTs have the potential to innovate, accelerate, enrich, and deepen skills, to motivate and engage students, to help relate school experience to work practices, create economic viability for tomorrow's workers, as well as strengthening teaching and helping schools change (Davis and Tearle, 1999; Lemke and Coughlin, 1998; cited by Yusuf, 2005).As Jhurree (2005) states, much has been said and reported about the impact of technology, especially computers, in education.

**The Spread of ICT Tools**

Communications through computer use and information access increased during the 1990s, especially with the popularity and accessibility of internet-based services such as electronic mail and the World Wide Web (WWW). The CD-ROM became the standard for distributing packaged software (replacing the floppy disk). So educators became more focused on the use of the technology to improve student learning as a rationale for investment. Any discussion about the use of computer systems in schools is built upon an understanding of the link between schools, learning and computer technology. The use ICTs in teaching has been into two broad categories: ICTs for Education and ICTs in Education. ICTs for education refers to the development of information and communications technology specifically for teaching/learning purposes, while the ICTs in education involves the adoption of general components of information and communication technologies in the teaching learning process.

**ICTs for Teaching and Learning Enhancement**

Conventional teaching has emphasized content. For years courses have been written around textbooks. Teachers have taught through tutorial lectures and learning activities designed simply to consolidate and rehearse the content. Contemporary educational settings are now favouring curricula that promote competency and performance. They emphasize capabilities and are more concerned with how the information will be used than with what the information is. The role of ICTs today is to provide strong support for all these requirements and there are now many examples of world class settings for competency and performance-based curricula that make sound use of the affordances of these technologies (Oliver, 2000). They improve and develop the quality of education by providing curricular support in difficult subject areas. Teachers should :

a. believe in the effectiveness of technology,

b. believe that the use of technology will not cause any disturbances,

c. believe that they have control over technology.

Consequently, the use of ICT will not only enhance learning environments but prepare next generation for future lives and careers (Wheeler, 2001). According to Cabero (2001), "the flexibilization time-space accounted for by the integration of ICT into teaching and learning processes contributes to increase the interaction and reception of information. Such possibilities suggest changes in the communication models and the teaching and learning methods used by teachers, giving way to new scenarios which favour both individual and collaborative learning”. Traditional education encouraged teacher-centered methods leading students through a series of instructional sequences to achieve a desired learning outcome. Hence, learner-centered method is independent learning where students use ICTs for learning purposes become immersed in the process of learning (Reeves & Jonassen, 1996).

**Issues of ICTs in Education**

Although ICT in education has the potential to transform teaching, many researchers believe that there are still some challenges and this potential may not easily be realized. Dawes (2001) states, “problems arise when teachers are expected to implement changes in what may well be adverse circumstances” (p. 61)..Balanskat, Blamire, and Kefala (2006) argue that although teachers appear to acknowledge the value of ICT in schools, they continue encountering obstacles during the processes of adopting these technologies into their teaching and learning.

Many studies have been conducted to investigate the challenges to technology integration in

education (Al‐Alwani, 2005; Ghavifekr , Afshari & Amla , 2012; Gomes, 2005; Osborne & Hennessy, 2003; Özden, 2007). According to Venkatesh and Davis (2000) when teachers are presented with a new technology, two key factors would influence their decision from the extended variables around them about how and when they will use it:

**External Variables :** Involve the kind of challenges which teachers face and come from outside their sphere of control when integrating a new technology in their teaching and learning process. These challenges include:

o Limited accessibility and network connection

o Schools with limited ICT facilities

o Lack of effective training

o Limited time

o Lack of teachers’ competency

**Perceived Usefulness (PU) :** Is the degree to which teachers believe that using a particular technology would enhance their job performance. The following factors have been identified as key elements to teachers’ perceived usefulness of ICT tools:

o Work more quickly

o Job performance

o Increased productivity

o Effectiveness

o Useful

**Perceived ease‐of‐use (PEOU)**: It represents the degree to which they believe using a particular system would be free from effort. For instance the Impact project (Watson, 1993) and other studies identified a wide range of skills and competencies which teachers felt they needed in order to find ICT easy to use. Some of these are:

o Easy to learn

o Clear and understandable

o Easy to use

o Controllable

o Easy to remember

**Why invest in ICT for Education ?**

ICT has the potential to “bridge the knowledge gap” in terms of improving quality of education, increasing the quantity of quality educational opportunities, making knowledge building possible through borderless and boundless accessibility to resources and people to meet their basic right to education and in fostering “information literacy”. Information literacy which is recognized as “a basic human right in the digital world” empowers individuals “in all walks of life to seek, evaluate, use, and create information effectively to achieve their personal, social, occupational, and educational goals” (UNESCO 2008a).

**Country Context of ICT for Education**

It is conventional that overall investment in education may differ by stage of development of a country. In low-income countries, basic education is the best investment. For middle-income countries, expansion of secondary education yields the highest social returns, while in high-income countries, the returns may be greatest in higher and/or tertiary education (ADB 2008b). So, investment in ICT for education should support this need for balancing priorities

among education’s subsectors. Plans incorporating ICT for educational improvement must be based on the education development priorities of a country, consequently serving the needs specific to the country context while having the foresight for moving up the next rungs of the development ladder.