

Ict pervades modern society



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Information and Communication Technology (ICT) pervades modern society to the extent that many countries now regard the mastery of ICT as a core element of basic education. ICT is more than just another subject for students to study; ICT particularly e-learning has the potential to be a valuable tool in enhancing the quality of teaching and learning (DfES, 2003). Especially in recent years, there is abundant literature on the importance and benefits/impacts of ICT in education concentrating mainly upon the benefits for students and teachers who are the subjects of the proposed study.

This literature review looks at the effectiveness of e-learning in secondary education for teachers and students. The following aspects are considered as important:

What is information and communication technology (ICT)?

What is e-learning?

E-learning in education

The effectiveness of e-learning for students

The effectiveness of e-learning for teachers

Information and Communication Technology (ICT)

The end of the 1980s, the term 'computers' was replaced by 'IT' (information Technology) that indicating a shift from computing technology to the capacity to store and retrieve information (Pelgrum and Law, 2003).

This was followed by the introduction of the term ' ICT' (Information and Communication Technology) around 1992 (ibid).

Kumar (2008) defines information and communication technology (ICT) is an umbrella term that contains any communication device and application such as computer, television, radio, network hardware and software, videoconferencing, and distance learning. When these technologies are used for educational purpose to support the teaching of teachers and improve the learning of students and to develop learning environments, ICT can be considered as a subfield of Educational technology.

According to the government of the Republic of Trinidad and Tobago (2009), ICT is an umbrella term that integration of information and digital communication tools as well as telecommunications infrastructure. It includes a variety of application and technologies such as radio, television, cellular communications, computer, computer hardware and software, graphic design, to name a few. The use of ICT improves the quality of education. Therefore, it improves and supports the teaching and learning process.

In this review, the term ICT assigns as e-learning technologies that are using in the schools as learning and teaching tools.

E-learning

E-learning is generally taken to be computer mediated learning with no in-person or face-to-face interaction taking place. In recent years, many people consider e-learning as learning by anyone, any time and any place over the internet. There are many definitions of e-learning depending on the context

in the literature. In this study e-learning is taken to mean ‘ the use of new multi-media [interactive] technologies and the internet to improve quality of learning’ (European Commission, 2005: p. 5). More specifically, these new multi-media technologies include audio/video tapes, interactive TV/CD-ROM, intranets, virtual learning environment (VLE), interactive whiteboard, the use of digital cameras (Govindasamy, 2000).

In the context of this study, e-learning where the courses are blended with internet, VLE, interactive TV/CD-ROM, interactive whiteboard and digital cameras in secondary schools will be evaluated about its effectiveness on teaching and learning process based on head teachers’, teachers’ and students’ perspectives about

Benefits of e-learning

The introduction of e-learning technologies in teaching has been given importance as it may ‘ change the role of the teacher, make the students responsible for their own learning, prepare the students for the life-long learning paradigm and generally lead to individualised learning’ (European Commission 2005: p. viii).

The benefits/impacts of ICT for students

There are six significant benefits/impacts of ICT for students which are given in the literature.

These are:

ICT improves students’ attainment (achievement) and performance

ICT increases students’ motivation and concentration

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ICT increases students' self-confidence

ICT increases collaboration between students (teamwork)

ICT provide students work independently

These benefits/impacts of ICT on students will be explained in the below.

ICT increases students' motivation

An effective teaching and learning process should stimulate intellectual curiosity and offer a sense of enjoyment that will move the students from the passive role of recipients of information to the active role of builders of knowledge (Papert, 1993). Yet, engaging the learner in this process can be the most challenging task for teachers. ICTs are effective instructional aides to engage students in the learning process.

The survey study of Emprica (2006), which carried out in European countries, reveals that the majority of European teachers (86%) believe the benefits of ICT use in schools. They state that when they use computers and internet in class, their students are more motivated. Also, the case studies of the ImpaCT2 study, specify that the most of the teachers think ICT has a motivational effect on students and this linked to a greater engagement in learning activities (Comber, 2002). The students were reported that computers have motivated them to learn. (Jarvis et al., 2005)

The pilot evaluation of six local education authorities on the impact of the use of interactive whiteboards in literacy and mathematics lesson was conducted by Higgins et al. (2005). They indicate that teachers and students were positive about this technology, with reports of increased motivation of

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students. Moreover, the evaluation shows that multimedia and interactive content on interactive whiteboards is engaging and motivating students and that students pay more attention during lessons. The above results are also supported by the result from other UK studies, such as the evaluation of the ICT Test Bed Project (Underwood, et al., 2007), study on ' the Motivational Effect of ICT on Pupils' commissioned by DfES which confirm that ICT has a strong motivational effect (Passey et al., 2004) and the study on ' Tablet PCs in schools' examined by Sheehy et al. (2005) who are reviewed the literature and selected projects for this study and as a result of their review they indicate that the students' motivation increase by using technology in particularly tablet PCs. The same result found by Twining, P. et al. (2005) in their case study on ' Tablet PCs in schools'. Haddad and Jurich (cited in Haddad and Draxler, 2002) indicate that the attraction of students in rural areas of developing countries are maintained and attracted by using radio programs, even though they do not have the visual appeal of computer.

The e-learning Nordic 2006 study also places a strong emphasis on ICT impact on students' motivation and engagement. According to the teachers, when ICT is used, students participate the lessons more actively. The students themselves consider that they pay more attention during class (Ramboll Management, 2006). As Naismith et al. (2004) indicate that, a mathematics video game used to supplement traditional curricula and teaching methods and it was motivated student to complete there exercise. ICT is seen as increasing students' motivation by making school work more enjoyable, considered as fun and not as regular education. In other words,

students' attitudes and engagement in the learning activities change by using ICT in classroom.

More engagement and increased effectiveness of learning (by motivation) is also key impact of the ICT identified by the ERNIST ICT school portraits (European Schoolnet, 2004).

ICT increases students' self-confidence

Students' self-confidence is increased by using ICT. According to Software and Information Industry Association report (2000), students who used educational technology in school felt more successful in school, have increased self-confidence.

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ICT increases collaboration between students (teamwork)

ICT provide students work independently

The most important benefit of using ICT in classroom is that it enhances a more student-centre learning approach. The majority of teachers who involved in the e-learning Nordic study reported that ICT provides them with the opportunity to provide various learning task within the same classroom, thus they tailor the programmes to individual students' needs (Ramboll

Management, 2006). Also, in this study students stated that they undertake assignments more ‘ their own way’ when using a computer and that their parents consider they solve assignments at ‘ their own level’.

Students assume greater responsibility for their own learning when they use ICT, working more independently and effectively: “ students receive more individualised tasks and greater insight into teachers’ aims, and are able to work at their own tempo with tasks appropriate for their level of study” (ITU, 2004). Diverse learning situations equip students with a range of skills and work techniques; they develop confidence in their own capacity to learn that eventually enables them to perform better in their subjects (ITU, *ibid*).

The benefits/impacts of ICT for teachers

Effective teaching

Effective teaching with ICT has been also demonstrated by Haddad and Draxler (2002). According to their study, the introduction of ICT for educational purposes has the potential to bring positive changes to teaching practices. In a survey, more than 2, 000 teachers stated that the technology helped them to become more effective (92 % of respondents) and creative (88%).

Research indicates that the introduction of ICTs for education purposes has the potential to bring positive changes to teaching practices. In a survey of more than 2, 000 teachers stated that the technology helped them to become more effective (92 % of respondents) and creative (88%). Both teachers and administrators agreed that technology had reinforced

instruction, and functioned as a motivator for the students, who were more prone to ask questions and participate in the lessons.