A Theoretical Overview on the Utilization of Information and Communication Technology (ICT) in the Educational Settings

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***Abstract*—-** Among all the changes that have been taking place in the world, the information technology revolution is making the greatest impact on the 21st century, and thus the world is fast becoming a global village, as a result of the developments of ICTs within all the sectors (economic, industry, education, tourism, health and social development). There is a great deal of interest to learn more about the potential use of information and communication technologies (ICTs) in the educational settings. ICT in education have a significant history. Due to the increasing demands on ICT use in education and the advancement of ICT, researchers, educators, and policy makers start seriously to bring ICT into the education system. Furthermore, there is a large amount of literature which examines the relationships between ICTs and the process of learning and teaching.

***Keywords*—** ICT, Educational Settings, Teachers, Students, Factors affecting ICT Use.

I. Introduction

INTEGRATING technology in teaching practices is often found to be at best inconclusive in its benefits for better teaching and learning processes. Pierson [1] defined technology integration as teachers utilizing content and technological and pedagogical expertise effectively for the benefit of a student's learning. According to Byrom and Bingham [2], the presence of ICT in education allows new teaching and learning experiences; promotes deep processing of ideas; increases student interaction with subject matter; promotes teacher and student enthusiasm for teaching and learning; frees up time for quality classroom interaction, in sum; and improves the pedagogy.

Pelgrum [3] identified several reasons why technologies in general and computers in particular might be important to schools. These included rationales relating to social and economic interests, such as reducing the costs of education, supporting the computer industry, preparing students for work and for living in a society permeated with technology, and making the school more attractive to its potential clients. Public initiatives have intended to spread the use of computer technology in schools by implementing computer laboratories and embedding actual classrooms with digital technologies to assist and support current classroom learning [4].

A. The Use of Technologies in Schools

In order to understand ICT uses in classroom, researchers have identified the basic rationales why schools are using computers and the other related technologies. Plomp et al. [5] identify three objectives which distinguished for the use of ICT in education such as, the use of ICT as object of study, the use of ICT as aspect of a discipline or profession; and the use of ICT as medium for teaching and learning.

Peck and Domcott [6] outlined ten reasons that computers should be used in schools:

1. Technology enables teachers to individualize instruction, which allows students to learn and develop at their own pace in a non-threatening environment;

2. Students need to be proficient at accessing, evaluating and communicating, and information;

3. Technology can increase the quantity and quality of students' thinking and writing through the use of word processors;

4. Technology can develop students' critical thinking and allowing them to organize, analyze, interpret, develop, and evaluate their own work;

5. Technology can encourage students' artistic expression;

6. Technology enables students to access resources outside the school;

7. Technology can bring new and exciting learning experiences to students;

8. Students need to feel comfortable using computer, since they will become an increasingly important part of students' world, and;

10. Schools need to increase their productivity and efficiency.

According to Hawkridge [7], there are four rationales for the use of technologies in classrooms including, social rationale, the vocational rationale, the pedagogic rationale

and the catalytic rationale. He summarized the four rationales in the below Table

Table 2.4 Rationales for the Use of Technologies in Classrooms

Rationale	Focus
Social	Deals with student's place in society and hence policy makers want to be sure that learners are prepared to be unafraid of how technology works and to understand their role in society.
Vocational	Proposes that learning to operate technology is important because it enhances students' opportunities.
Pedagogic	Calls for improved teaching and learning presuppose that technology can enhance traditional instruction methods.
Catalytic	Supposes technologies as catalysts to enable desired change to take place in schools.

The rhetoric associated to ICT usually revolves around accounts and descriptions of how ICT use can revolutionize teaching and learning by enabling new ways of knowing, thinking, communicating and meaning making [8]. During the past decades some researchers divided the ways of using ICT in the process of teaching and learning. For example, [9] divided technology use in teaching according to the degree of involvement into three levels: no use, familiarization and use, and integration. Also, Helen [8] cited the following five points regarding the use of ICT in the process of teaching and learning:

1. Excitement and preparation for the future;
2. More interesting lessons for students;
3. Access to students with learning difficulties;
4. Attention problems, and;
5. Teachers enjoy using technology as they become more competent.

Recently, many studies were conducted to investigate the level ICT use for educational purposes in schools. In a study conducted by the U.S Department of Education (2004), it was found that only 10% of teachers reported feeling "very well prepared" for the use of ICT in the classroom, while the majority, 53% reported feeling "somewhat prepared," and 13% reported feeling "not at all prepared" (p. 66). Lynch [10] conducted a qualitative study in four government funded secondary schools in Australia, and found that teachers' were not making regular use of information and communication technologies in their teaching activities. Almusalam [11] found investigated the level of computer use among 168 teachers in Saudi Arabia and found that there was a low level of use of computer technologies by teachers in Saudi Arabia.

Pelgrum and Plomp [12] study the use of computers in 18 countries and found that the percentage of using computers by teachers was low, and only few teachers used computers in a substantial way. Plomp et al. [13] study the policies and practices of technologies in education in well over 30 countries and found that the percentage of using computers by teachers was low, and only few teachers used computers in a substantial way. Asan [14] investigates the computer availability, computer usage and the level of computer interest among 252 teachers working in basic education schools in Turkey. She found that many teachers were not computer users and the computer literacy level of teachers is very low. Other studies found that teachers' levels of ICT use for educational purposes were varied, but the use of ICT in general tended to be low [15].

B. Factors Affecting the Use of ICT in the Educational Settings

The main goal of introducing ICT in the field of education is to help creating constructive, supportive, and rich learning environment in schools in general and classrooms in particular. Today's ICT, if used differently, could bring advances that would improve education dramatically. As technology emerged in schools, researchers identified a large number of factors affecting the use of ICT tools the educational practices.

Therefore, in an effort to reform education, many administrators and researchers have begun to examine various factors affect the use of ICT by teachers. Identifying the factors which facilitate and prevent the use of ICT by teachers is an important issue to have more successful ICT integration in the classrooms. Such work could lead to developing targeted advice on increasing the use of these technologies in the classroom [16]. Due to the increasing demands on ICT use in education and the advancement of technology, expertise in this field is needed to help bringing ICT into the system of education [17].

Teacher is the key factors in the use of ICT tools in classroom. The social context for teachers today, both inside and outside education, is clearly influenced by new technologies [18], because teachers are the most important agents of change in the educational process. There are many factors facing teachers in their use of ICT, researchers classify these factors as internal and external factors [19]. Since the appearance of ICT use in education, attitudes towards ICT, ICT competencies of teachers, ICT self-efficacy, ICT anxiety and perceived ICT support have been in the domains of interest of researchers, because they appeared to be an important factors in the decision to use ICT in educational practice.

IV. Conclusion

Networks in education offer many ways to access knowledge, offer various possibilities for networking people and developing collaborative work and enhancing the collective intelligence [20]. Therefore, considerable claims have been made about the potential contribution of ICT to students' outcomes in particular and the process of teaching and learning in general by policy makers and researchers. It has been stated that the emergence of computers and information systems is certainly the single biggest factor impacting education during the past couple of decades. In fact, technologies have become a powerful catalyst in promoting learning, communications, and life skills for economic survival in today's life [21].

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