Integration of ICT in Classroom: Some Reflections

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Abstract

Many studies have been conducted to investigate barriers to the integration of ICT in education. This paper provides a meta-analysis of this literature that aims to present the perceived barriers of technology integration in education and particularly teacher level barriers are highlighted here.

Keywords- ICT, Educator, Sustainable, Ambience

Introduction

ICT have become within a very short time, one of the basic building blocks of modern society. Many countries of the world, now regard understanding ICT and mastering the basic skill and concepts of ICT as a part of core education along with reading, writing and arithmetic. However there is a misconception that ICT generally refers to "computers and computing activities". This is fortunately not the case, although computers play a significant role in modern information management, but other technologies and/or systems also comprise the phenomenon that is commonly known as ICTs. Near the 1980s the term "computers" was replaced by "IT" (information technology) signifying a shift of focus from computing technology to the capacity to store and retrieve information whenever required. This transformation was followed by the introduction of term "ICT" (information and communication technology).around 1990, when e-mail started to become available to the general public. According to a UN report (1999) ICTs covers internet service, telecommunications equipments and services, information technology equipments and services, media and broadcasting, libraries and documentations centers, commercial information providers, network based information services and other related information and communication activities. According to UNESCO (2002) information and communication

technology (ICT) may be regarded as the combination of "informatics technology" with other related technologies, especially communication technology. There are various kinds of ICT products available and having relevance to education, such as tele-conferencing, e-mail, audio conferencing, television lessons, radio broadcasts, interactive radio and tele-counseling interactive voice response system, audio cassettes and CD- ROMs etc. have been used in education for different purpose. New technologies have the potentials to support education across the curriculum and provide opportunities for effective communication between teachers and students in many ways that have not been possible before. ICT in education has the potentials to bring about changes in ways of teaching. However, this potential may not easily be realize Due to importance of ICT in society and possibly in the future of education, identifying the possible obstacles to the integration of these technologies in schools/ colleges would be an important step-in improving the quality of teaching and learning. Although educators appears to acknowledge the value of ICT in education, but difficulties are continue to encounter during the process of adapting it.

The purpose of this paper

This analysis aims to bring together the findings and key points from a review of a significant part of the available literature associated with teachers' integration of ICT into their teaching. Studying the obstacles to the use of ICT in teaching and learning environments is crucial because this knowledge could provide guidance for ways to enhance technology integration and encourage greater use of ICT on the part of teachers themselves. Identifying the fundamental barriers may assists teachers and educators to overcome these barriers and become successful technology adapters.

Education and ICT

Quality of education is directly proportionate to the quality of teacher that includes competency and efficiency. Teaching is really a challenging job. The classroom environment is very dynamic. Methodology and technique adapted by the teachers in the classroom needs frequent change as the students' attitude and aptitude vary. Effective teaching thus depends upon tactfully design methodology as well as technology. ICT enhance this and upgrade the classroom with other means available ranging from, audio-visual display, films, CD-ROMs and the internet.

Technology has fabulous impact on education. In the past few decades, school curriculum has changed to match the new aims of education and it will continue to change. Teaching rather than teaching its content, will require significant change in its mode of teaching and an improved knowledge and understanding in teachers. Osborne and Hennessay (2003) emphasize that along with the change in views on the nature of education and the role of education, the increase in the use of ICT offers challenge to teaching.

Barriers to integration of ICT into education

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The act of integrating ICT into teaching and learning is a complex process and one may encounter a number of difficulties. These difficulties are known as "barriers". A barrier is defined as "any condition that makes it difficult to make progress or to achieve an objective" (Word Net, 1997, as cited by Schoepp, 2005, p.2). The objective being analyzed in this paper is successful ICT integration in education.

Classification of barriers

Different categories have been used by researchers and educators to classify barriers to use of ICT in education. Classification given by Becta (2004), is teacher level and school level barriers. He grouped the barriers according to whether they are related to the individual, as teacher level barriers or to institution, as school level barriers.

However, since the purpose of this paper is to determine the present and future barriers that is faced by teachers in their schools, this analysis focuses on the teacher level barriers only as discussed in the following sections.

Teacher level barriers

1. **Lack of teacher Confidence**

Several researches indicate that one barrier that prevents teachers from using ICT in their teaching is lack of confidence. Some studies have investigated the reasons for teachers' lack of confidence with the use of ICT is that teachers "fear of failure" (Beggs, 2000). On the other hand Blanskat et al. (2006) found that limitations in teachers' ICT knowledge makes them feel anxious about using ICT in the classroom and thus not confident to use it in their teaching. Becta conclude his study with the statement: "many teachers who do not consider themselves to be well skilled in using ICT feel anxious about using it infront of a class of children who perhaps know more than they do". Many teachers identified their low confidence as a barrier and afraid of entering the class room with limited knowledge in the area of ICT. As a result lack of confidence and experience with technology influence teachers' motivation to use ICT in the classroom.

2. **Lack of teacher competence**

Another barrier which is directly related to teacher confidence is teachers' competence in integrating ICT into pedagogical practice. It is found that many teachers lack the knowledge and skills to use computers and were not enthusiastic about changes and bringing computers into their teaching.

Current researches have shown that the level of this barrier differs from country to country. In the developing countries like India, researchers reported that teachers' lack of technological competence is a main barrier to their acceptance and adaptation of ICT (Plegrum,2001). In many European countries teacher who do not use computers in classroom claims that "lack of skills" are a constraining factor preventing them from using ICT for

teaching. On the other hand in Netherlands, teachers' ICT knowledge and skills is not regarded as a main barrier to ICT use any more.

3. Resistance to change and negative attitude

Research into the barriers to the integration of ICT into education found that teachers attitudes and an inherent resistance to change was a significant barrier. Watson an Australian researcher, (1999) argued that integrating the new technologies into educational settings require change and different teachers' will react and handle this change differently. According to him, considering different teachers' attitudes to change is important because teachers' belief influence what they do in the classrooms. Although teachers felt that there are more than enough technologies that will benefit their teaching, but they do not believe that they were being supported, guided and rewarded in the integration of technology into their teaching. The change from present level to desired level of performance is facilitated by driving (encouraging) force, such as, the power of new developments, rapid availability, creativity, internet access or ease of communication, while it is delayed by resisting (discouraging) forces such as lack of technical support, expertise help or time for planning.

4. Lack of time

Several recent studies indicates that many teachers have competence and confidence in using computers in the classroom, but they still make little use of technologies because they do not have enough time . According to Sicilia (2005), the most common challenge reported by all the teachers was the lack of time to plan technological lessons, explore different internet sites or look at various aspect of educational software. According to Ai-Alwani (2005), lack of time is an important factor affecting the application of ICT in education in Saudi Arabia because of busy schedules. Saudi teachers work from about 7:00 a.m. to 2:00 p.m. and the average number of class sessions taught by a science teacher are 18 per week. Similarly in Canada, Sicilia (2005) concluded that a teacher takes much more time to design lessons that includes the use of ICT than to prepare traditional lessons.

5. Lack of effecting training

The barrier most frequently referred to in the literature is lack of effective training. There were not enough training opportunities for the teachers' in the use of ICT in the classroom environment. The issue of training is certainly complex because it is important to consider several components to ensure the effectiveness of the training. These components are time of training, pedagogical training, skill training and an ICT use. Recent researches concluded that lack of training in digital literacy, lack of pedagogic and didactic training in how to use ICT in the classroom and lack of training concerning the use of technologies in specific area are obstacles to using ICT in classroom practice. Therefore, pre-service or in-service training both should focus on pedagogical issues with the use of ICT.

6. Lack of accessibility

Several research studies indicate that lack of access to resources, including home access is another complex barrier that causes discouragements among teachers to use new technology in education. Various studies indicated several reasons for the lack of access to technologies occurred. Teachers complained about how difficult it was to always have access to computers or other ICT materials because most of these were shared with other teachers. But the inaccessibility of ICT resources is not always merely due to the non- availability of the hardware and software or other ICT materials within the school. It may be the result of poor organization of resources, poor quality of hardware, inappropriate software or lack of personal access for teachers.

7. Lack of technical support

Without both good technical support in the classroom and whole school resources, teachers cannot be expected to overcome the barriers preventing them from using ICT. In the view of primary and secondary teachers, lack of technical support is one of the top barrier and technical problems were found to be a major obstacle for them. These technical problems includes waiting for websites to open, poor internet connections, printers not working , malfunctioning of components and teachers having to work with old computer. If there is a lack of technical support available in a school, then it is likely that technical maintenance will not be carried out regularly, resulting in higher risk of technical breakdown. Many teachers indicated that technical faults might discourage them from using ICT in their teaching because of the tear of equipments breaking down during a lesson. ICT support or maintenance contracts in school help teachers to use ICT in teaching without losing time to fix soft ware and hardware problems.

Implications

Any barrier can be easily removed by resolving and reducing the reasons for the occurrences of these barriers. Educators, teachers and principals need to collaborate to overcome any of the obstacles and break down the above mentioned barriers to the meaningful integration of ICT into teaching and learning. There are some implications for teachers for successful integration of ICT into education are briefly illustrated in Table-1 and broadly described as follows.

1. Schools need to provide training courses for teachers to gain experience in dealing with the new devices, modern technologies and new pedagogical approaches.
2. Technical supports needs to be provided in schools.
3. Teachers should take advantage of ICT resources offered at schools.
4. Teachers need to be well trained in using ICT, before joining the teaching profession.
5. In the absence of proper training, teachers can prepare themselves by self- training.

6. Teachers should be open-minded towards new approaches of training.
7. Teachers should try to access to ICT resources at home also.
8. Teachers should take training in new pedagogical approaches.
9. Teachers should develop skills of self- organization and time management.
10. Teachers should get knowledge- how to access to ICT resources and available technical support.
11. Teachers should acquire the skill to maintain ICT devices, tools and hardware and software, so as to rely on themselves to solve low level problems.
12. Teachers should motivate themselves to use ICT, without the fear of failure.
13. Teachers must get the knowledge about ICT and its useful applications in the classrooms.

Conclusion

The aim of this paper is to provide information on encouraging the desired improvements in the future teaching situation, which is responsible for integration of ICT in education. The findings of this study indicate that teachers have a strong desire for the integration of ICT into education but they faced many barriers to it. Since confidence, competence and accessibility have been found to be critical components for technology integration in schools and ICT resources including software and hardware, effective professional development, sufficient time and technical support need to be provided for teachers. However, the presence of all components increases the likelihood of excellent integration of ICT in teaching and learning.

Table 1. Possible implications for teachers for the integration of ICT in education

Barriers	Implementations for teachers
Lack of access	- Taking advantages of resources offered at schools.
	- Access to ICT resources at home.
Resistance to change	- Being open-minded towards new ways of teaching and new technologies.
	- Training in new pedagogical approaches.
Lack of time	- Acquiring skills of self- organization and time management.
Lack of training	- Preparing themselves (pre-service) by self- training.
	- Taking up opportunities for training offered at schools.
	- Taking training (in-service) in dealing with new devices, modern technologies and new pedagogical approaches.
Lack of technical support	- Relying on themselves to be able to solve problems in their use of ICT.
	- Accessing available support.
Lack of confidence	- To be self –motivated in using new technologies.

and competence   - Take attempts for using ICT without the fear of failure.

- Knowing about ICT and its useful applications in classroom

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