

## **The Need for Recognition and Implementation of Educational Technologies by Teachers in the Educational and Learning Process**

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## Abstract

In today's world the use of information and communication technology and its influence on every aspect of human life has caused great changes in human society and human relations, which is known as the information revolution. The increasing development of technology and use of these technologies has initiated a new era in the life of human societies which is called information society. Entry to this era requires measure and facilities that the most important of them is appropriate cultural infrastructure. The first action in this regard is to consider the need for efficient use of information and communication technology applications by teachers in the process of teaching and learning of students. In this paper it has been tried to investigate the role of information and communication technology in students' learning and the importance of applying instructional technologies by teacher in the process of teaching and learning. And advantages of using information technology, recommendations and guidelines are also expressed.

**Keywords:** Educational technology, Teachers, Learning, Education

## 1. Introduction

Societies are changing and developing with an amazing pace and these changes cover all aspects of life. The progress of science and technology raises new knowledge that keeps creating new needs for people. For this reason many experts recommend taking advantage of educational technology in educational issues because educational technology improves ease, speed and accuracy of teaching and learning. Education is one of the most important institutions and systems of societies and infrastructure of a variety of developments (Majidi, 2001). 21st century goes to a direction where most jobs require computer knowledge and skills. In the education system, there are individuals and scholars who should get prepared for a better life and participation in different fields of science, culture, and economy. Thus some countries have established electronic smart schools. In these schools computers affect teaching and evaluating and they change school curriculum to some extent. One of the basic needs of education to educate global citizens is to getting away from traditional education, entry to modern education and applying current knowledge and technology in the world (Ebadi, 2001). Therefore, intelligent schools, new learning environment in the classroom and making use of new information and communication technologies are fundamental needs of school children.

## 2. Statement of the problem

Education has always been one of the concerns of parents and the educational systems in all countries, words that encompass an intricate process and families and the education system continuously try to implement this process better and faster regarding its facilities and necessities. One of the implications of development in the era of technology is training of human resources which is the responsibility of a country's educational system. Each developing country should have powerful and developed saving called human resources in order to follow this trend and become a developed country. This wouldn't happen except in

the light of a modern education system that is equipped with modern science step by step and in the current era school and classes cannot be run traditionally. Today, students, teachers, facilities, training centers and other training equipment have changed so types of training need to be changed and be equipped with modern technology (Zoufan, 2004). The texts which are used in traditional schools include gathered and organized information which only aid students to be successful in their final examinations; however, real life is sometimes very complex and requires a lot of different roles by individuals so new and efficient methods should be found for education. Hargreaves(1995)believes that traditional methods of knowledge transfer using text, papers, and exercises, etc. no longer attract the youth`s attention who live in a world fed with media . Most researchers believe that this change will lead to changes in teacher-centered learning approach and having a student-centered approach. Stolman believes that the use of computers create a situation that places more emphasis on student learning; for example making greater use of training in small groups of students and changing the role of teacher from publisher of information to facilitator of the process are the results of entry of new technologies in education (Ghaffari, 2009). Also, studies show that the most effective application of ICT is that teachers and software programs challenge students` understanding by participation of all students in class discussions using interactional whiteboards or students` usage of computers individually or in pairs. Statistics show that 60% of the time of learners in primary schools and 90% of it in higher levels and universities is spent on listening. Students only memorize a small part of what they have heard (about 3%). Adults, on average, are able to hold 50% of the content on their mind and about two months later this amount will be reduced by half. As a result, despite spending too much time in the application of hearing, this sense has a poor impact on human learning (Ministry of Health and Medical Education, 1392). Information technology is an interactive technology and it almost involves all of the senses of a person which plays an important role in education and knowledge transfer. Information and communication technology due to having the power to change and the ability of a dynamic communication with students has an important role in the transmission of knowledge (UNESCO, 2003). One of the basic needs of education for training global citizens is getting away from traditional training, entry to modern training and also applying current science and technology of the world. For this reason, equipping schools with new educational technologies and bringing new learning environment in the classroom and taking advantage of new information and communication technologies are essential requirements for school pupils (Ahadian, 1994).

### **3. Significant of the study**

Today, the world has entered a new era that can be called the information revolution. Creating information, turning it into services and distributing these services among customers is of a special importance. Education is one of the most important institutions and systems of societies and the infrastructure for variety of developments. In the education system, there are individuals and scholars who have to be prepared for a better life, presence in different scientific, cultural and economic fields; therefore, education should train people to be accepted as a global citizen (Attaran, 2002). With regard to the explanations provided the main reasons for the importance of equipping schools with modern educational technologies

are as follows:

### 3.1 Improve Teachers Teaching Skills

Today, with the development of computer technologies, the speed of data transfers and the issue of the explosion of knowledge, information and knowledge can easily be available to everyone. And no longer schools are the only framework for transferring knowledge, skills and values to students, rather economic, social, cultural frameworks and media have a crucial role in forming students' ideas (Fardanesh, 2003). In such circumstances, the use of educational technologies in schools enables teachers to update scientific information and improve their teaching skills so that they can use the existing facilities at schools for a better and more accurate assessment of the student's conventional knowledge and coordinate training courses and teaching materials with their students' conventional knowledge.

### 3.2 Reducing or Eliminating Educational Gap

On the other hand, training programs in traditional schools are mostly in the form of teacher-oriented programs and they are not in line with students' talents, abilities, needs and learning styles which are different for individual students. Smart schools due to their curriculum flexibility, allowing teaching with new educational methods, focus on a wide range of educational applications and programs and having student-centered policies (With considering individual differences and paying more attention to needs, interests and talents of them) can be effective in reducing or eliminating this educational gap, and in fact each student, depending on his/her own talent can be educated or in other words educational system varies according to students' talents.

### 3.3 New Approach For The Educational system managers

The future modern society needs people who are able to use information technology for development and growth. In this era, being deprived of the knowledge, insight and skills of the day leads to unemployment, social inequality and as a result rise of discontent and tension and smart schools have mostly been planned to meet these needs because in these schools, students learn how to extract their required information through intelligence network, how to think about it and how to apply the results of their findings in order to solve their problems and to develop their societies (Mirzajani, & Delaviz Bayekolaei, 2013). This study is a small step to determine the role of teachers' understanding and insight, nature and use of educational technology in the process of teaching-learning and its impact on students' achievement. In addition, the present study tries to create a new approach in equipping schools with modern educational technologies and the use of new technologies in the training of students that can create a new approach for the education and educational system managers, and especially for families and be a turning point for the development of education in the schools.

## 4. Literature Review

Brown, and Palincsar (1989) conducted a research about the impact of school-based educational facilities on students' achievement in one of the states of America in which they

compared students' achievement in two schools. One of those schools was a modern one with adequate facilities and equipments and the other one had an old building with limited facilities. The study sample included 280 elementary school students. The results showed that students of the modern school got higher scores in reading, writing, math and science in comparison with their classmates of the old school. Meanwhile, modern school students had fewer problems, better presence and fewer diseases compared to old school students. Also, Clark and Salomon (1986) investigated the role of applying educational aids in training and making students' learning easier. In this study, they concluded that the use of educational technologies has a tremendous impact on increasing student learning. President of the United States presented a report about the successful application of technology in the classroom that some of them are: Improving test scores, reducing the amount of failure, reducing absence of students in the classroom, reducing dropouts, increasing graduation rates, increasing motivation and a growth in employment. In this investigative report, 85 percents of respondents believed that schools fully equipped with technology had a major advantage compared to schools without adequate technology. 74 percents believed that technology would have a positive effect on education (Kent, and McNergney, 1999). Moreover, the results of a study conducted by Moshtaghi Largani ,Gorbani, and Rezaeian, (2008) showed that teachers working in technical schools due to the use of new technologies in education, including the Internet and other computer and laboratory equipment in fields such as chemistry and electricity are more aware of the importance of technology and advantages and facilities that it creates in the process of education so their attitudes are significantly better than those high school teachers who only teach theoretical lessons using traditional methods such as lectures and do not use technological tools in education. The results of a study conducted by Motamedi (1998) found that students' learning has increased in classes in which educational aids have been used. This study has only focused on tools and equipments. In another section, the results of the study show that many teachers are not familiar with the concepts and methods of educational technology and use traditional teacher-based and subject-based methods due to their easiness. Lack of physical and educational facilities results in lack of applying educational technology and many teachers believe that the mismatch between the content of teaching with the amount of weekly teaching of lessons is an obstacle in using educational technology. Nasekhian study (1993) has also shown that teachers' awareness of the positive effect of applying laboratory instruments while teaching and accessibility of them for science teachers are of encouraging factors in using laboratory instruments by science teachers. The findings of Mousavi Pour and Karimi (1994) proved that that the main obstacles to the use of school facilities include: concentration of students in the classrooms, high volume of teaching materials, negative attitudes of managers and teachers, lack of knowledge and information of users, lack of facilities and poor educational areas.

## **5. The Role of Teachers in the Developing Process of the Use of ICT**

Teachers are the main agents of successful interaction with information and communication technology in the education system. As each teacher has his/her own method in using blackboard or any other tools in teaching, the way of using technology in education and the

way of integration of technology in teaching are also dependent on teachers' attitudes and experiences (Yildirim, 2000). Teachers in today's classes must be ready to provide technology-based learning opportunities for students. In fact, the main person in helping learners to access the capabilities of technology is the teacher. Readiness for applying technology and knowledge of how technology supports learning of students must be included in teachers' basic skills. Experts emphasize that if today's teachers do not experience the pattern of applying technology in their classes, nurturing a new generation of teachers who are able to use new information and communication technology tools efficiently in their learning would not be possible. Ahmadi and Bakhtiari (2007), believe that today, teachers-as the most important source of education- without being aware of the complexity of events, never would be able to do their critical task. Therefore, continuous and specialized improvement of professionals, teachers, school and centers' managers in applying modern technologies and providing handbooks for teachers in specialized fields for scientific uses must be considered.

## **6. Applying ICT to Achieve Learning-Teaching Objectives**

Today, computer applications, preparing spreadsheets, simulation, molecular modeling, database, etc. have gained a unique place in teaching lessons but they are not properly used. The reason is that when a technology is eventually accepted and is allowed to the training process due to the change of teaching-learning process and development of goals, its abilities are not completely used (Razavi, 2007). Applying ICT allows teachers to have more flexibility in using class time and to spend more time for practicing and repeating students' learning (Afzalnia, 2005). Applying ICT facilities not only provides more opportunities for spending more time on different samples for students but it also enables teachers to develop the process of learning by discussing those samples' applications in life.

## **7. Advantages of Using Technology in Education**

In the current era, the use of information and communication technology should find its place in the education system and it must be included in the school curriculum and educational programs as an important principle. Methods of education would change in a school that is based on information technology and teachers wouldn't be the mere educators and students wouldn't be mere learners. Educational content is designed in such a way that each person is given the capabilities that could benefit from educational content (Garrison, Anderson, and Archer, 2003). The use of information technology in education has some benefits as follows:

### **7.1 Motivating students**

Each teacher is well-awarded that to have a successful teaching and to receive a proper feedback, it is necessary to motivate the learners so that they pay more attention and become more interested. Information technology has an undeniable and effective application in this regard and it can create doubled incentives in students. Learning is the reason for different incentives; one of them is students' motivation for learning which has a very important role in the learning process. Willingness is the driving force that increases activity. For students,



in order to be active while learning, they need to be interested in what they are going to learn (Shabani, 1992). Information technology enables teachers to make student have more activities and to use brainstorming to make them interested in learning.

### 7.2 The impact on the school curriculum

Increasing expansion of knowledge has led to suggesting new scientific theories which have more credits in comparison to the prior knowledge. So it could be said that if the issue of curriculum is combined with new technologies, an important step in achieving the objectives of Education would be taken. So, taking advantage of current science and knowledge, which is done through information and communication technologies, causes the content of the curriculum be prepared in such a way that has a high level of reliability and significance. New technologies, because of their diversity and high volumes of information, can cover various needs of learners and increase their interest in the content of their curriculum. Take advantage of information and communication technology in the curriculum setting make the possibility of providing students with information, concepts and principles of learning content so that they can be provided with appropriate scientific information. In other words, new technologies provide students with rich a content of the learning in the curriculum.

### 7.3 Evolution in student learning

Learning is one of the factors that may play a role in the effectiveness of information and communication technology and enhance it. Therefore, learning is more effective and efficient when a learner is placed in a real context and background of what that is going to be taught. On the other hand, the process of learning is greatly enhanced when it is associated with problem solving. Traditional classroom are not effective because they are dependent on a special time a place and fail to provide a real context for learning. Printed texts, also due to their certain limitations, are nothing more than text, picture and design are problematic (UNESCO, 2003). Research shows that with the advent of Information technology, learners can be more efficient, more challenging and safer than before. The more technology provides access to course materials taught by previous teachers, the more educators' role change from a source of scientific material to a manager overseeing the learning process (Ghaffari. 2009). In other studies, the results indicate that teachers who are skilled in the use of Information technology, can better guide students in learning. Problem-Solving, high-level thinking skills, interpretation and analysis, time management and the ability to prioritize skills will develop in information space and international community which is based on information and this requires that teachers and students can use technology effectively and in a principled way (Shabani, 1992).

### 7.4 Increasing community spirit among students

The researchers believe that the use of digital tools such as computers can help a child understand him/herself and socialize as the use of computer networks in schools has led to simplifying group interaction, cooperation and formation of social relations. For this reason, one of the arguments that advocates of the development of Information technology in education suggest is that In this way one can provide equal educational opportunities for

various classes of society, especially the poor (Shabani, 1992). Using information technology by students in pairs, groups or classes (Eg, interactive Whiteboard) enables teachers to get a lot of feedback by listening to the description of the students. From this point, teachers can get a more in-depth view of students' achievement and their recognition. Pair and team participation of students in the use of Information technology resources in special topics make the challenge each others' understanding of learning and learn more through partnerships (Ghaffari, 2009).

### 7.5 Creating joy and happiness in the students

One of the problems that discourage students in traditional styles of school is lack of diversity in classrooms and their being dull. But now we can bring vitality and excitement to classrooms by using information technology in them and we can prevail a cheerful spirit among students so that learners do not notice the passage of time. By Information technology, teaching can be organized in different ways and with different pictures and games.

## 8. Discussion and conclusions

No doubt the system of education needs to be coordinated with new technology to progress. Moving in each channel of new technologies can be very useful for the education system. In the last decade, there was no event which has changed world affairs as information technology did, many countries of the world including Malaysia, Singapore, Japan, America introduced achieving information technology as their national strategy and believed that the more this strategy is provided, the better they use their opportunities. E-learning is a virtual learning environment where learners interact with the content, other learners or educators by tools of information and communication technology. Therefore, electric interaction and relation provides a different type of interaction compared to what happens in traditional education (Abbasi, 2005).

In the e-learning environment, teacher and learner are both separated from each other in terms of time and place and a learner interacts with teacher, classmates or other individuals or resources to do individual or group learning activities. Since interaction is the main type of activity in the process of learning and it is a result of interaction of learning components, In the e-learning environment if it is expected that students will acquire a level beyond receiving knowledge, their experiences must be involved and they need to be provided with opportunities for interacting with information and other elements of learning such as other learners or teachers (Karami Pour, 2002). E- Learning by taking advantage of emerging technologies such as: Internet, e-mail, blogs, webcam, audio and video conferences, chat rooms, etc., provides a range of interactions simultaneously and asynchronously in order to access extensive information and to communicate, a capability which existed in a very limited form in traditional process of education. Therefore, professors, teachers and education professionals. In the electronic environment need to be familiar with Types, shapes and various tools of communicating and relations of educational elements to achieve effective teaching and learning and with selecting and applying appropriate tools of interaction in different educational settings achieve the ultimate goal of education, which is effective learning. Effective teaching in schools requires students to accept new roles in the learning



process and seek information to be able to review and evaluate the value of the extensive data available In the World Wide Web for their use. In such circumstances, the role of teachers changes from a the transferor of knowledge to facilitator of the learning process, they should also strive so that students acquire self-confidence, strategies for information management and needed skills so they can successfully launch technological tools and media in their daily life (Attaran ,2002). Like any other educational innovation there are barriers to the establishment and development of these schools in the education system that the most important of which are cultural and structural problems. In the last 50 years many changes have taken place in the human life. You can observe this claim if you look around but unfortunately, the classes have not changed compared to 50 years ago a teaching is done using blackboards and chalks. If administrators and custodians, teachers and people do not accept that replicating the traditional methods is over, they won't accept new methods because it is the infrastructure for accepting new styles, Otherwise, the change does not happen and it wouldn't have expected results and is accompanied with resistant and defensive modes of people.

The objective of education is overall growth (intellectual, physical, emotional and social growth) of students so that they achieve their fullest potential, be aware of current world issues and become innovative in problem solving and building a better future. In this regard, educational technology and innovation will be valuable if they can help us to achieve this goal (Norouzi, Zandi, and Madani, 2008). Another important thing is that should be considered is that E-learning using emerging technologies such as the Internet, e-mail, blogs, webcam, audio and video conferences, etc. Provides Extensive interactions simultaneously and asynchronously to extensive information and establish communication; a possibility that existed in a very limited form in the traditional process of education (Kadem Masjedi, 2010). Thus, professors, teachers and authorities must be familiar with a variety of forms and various tools for achieving effective education and their interaction and achieve an effective learning by selecting and applying appropriate tools of interaction in various educational settings, which is the ultimate goal of education.

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