THE EFFECT OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AND TRADITIONAL METHOD OF TEACHING SCIENCE ON LEARNING LEVEL OF GUIDANCE SCHOOL STUDENTS IN SARI (IRAN)

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Abstract: *The present research intends to investigate, the effect of Information and Communication Technology (ICT) and Traditional Method of Teaching Science on Learning level of Guidance School in Sari (a city in the north of Iran), considering the unique role of ICT in the educational system and its importance at the present age. It was carried out in the city of Sari within two daily Male-State-run Guidance School. 100 students had been selected as the sample size, 50 were in the experiment group and 50 in control group. The paper tries to make anassessment of the effect of an independent variable on dependent variable, implemented with a pilot design of pre-test and post-test within the control group. The researcher has implemented a pre-test for both groups and used independent T test. The results showed that two groups of the students do not differ in terms of the marks they gain. Then, new methods of education using the (ICT) techniques, like Atlas and power point software, Internet and other new techniques have been used in four sessions, each having a 90 minute duration in experiment group. Simultaneously, the traditional methods have been used in the control group during these four sessions. After one week, a test was conducted for both groups and after an analysis of the pre- test and post test in the experiment group using the independent T test, it was found that ICT has positive effect on the learning capacity of the experimental group. Moreover, using the independent T test the post test of two groups show that there is a significant difference between the marks gained by the control group, taught by traditional method of teaching and experimental group, taught by ICT in education.*

Keywords :
Information and Communications Technology, Student, Learning, Teaching Methods, Traditional Method

INTRODUCTION

In the era of information explosion, vast amount of information in different forms and categories are transferred to different destinations, making huge and rapid changes in the world of science, creating new results. In the present era, awareness of the new knowledge is one of the most important life necessities, since the advancements has such an accelerating pace that every day the essence of the issues we face is changing. Hence for understanding the issues, knowledge of special skills is required, and it is not possible to face these new technological advances by the traditional knowledge. In such society, Information and Communication Technology (ICT) has become one of the main factors in making a modern society in short period of time. Nowadays, most of the countries have recognized the importance of ICT as it plays a major role in reading, writing, and calculating in the nucleus of the education system (UNESCO). People everywhere in the world can receive the latest news and information by using ICT. Moreover, it is possible to have fast and easy connection and transfer of data. Yet, it was the effect of educational systems that has created such huge advances.

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Learners, enjoying such technology, which want to receive data, should be equipped with the features like efforts and curiosity so that they could change the information transfer as well and learning process from traditional ways to the advanced ways. The importance of using Information and Communication Technology, as the most powerful, cheapest, and most confident way of attaining data and information is obvious. Yet, it has been observed that ICT is less used in educational system in Iran's schools compared to the schools in other countries. In other words, ICT is the newest technology which is capable of gathering, organizing, saving, and reflecting the data in the forms of voices, images, written texts and numbers, which can be presented by the computer systems and by using the transferring systems (Yazdani, 2002).

Ministry of Education is one of the biggest producers of information, and undoubtedly, the most important consumers and savors of the information and knowledge, (which has more spread and value in Iran, because of the national and religious factors and the quantitative development of the education). Knowledge creation and its optimum use will increase the wisdom and capability of the learners as well as those of the teachers, and help the education system in training capable and efficient Human Resource which is the most important mission of any educational system. On the other hand, the backwardness and lack of development in knowledge and technology are the main reason of different problems in social, behavioral, cultural, and economic spheres.

1.1. Definition of Information and Communication Technology (ICT)

Information and communication technology (ICT) is a means of storing, processing and presenting information electronically through a number of media Computers and microelectronic devices are built into a variety of everyday objects. However, the types of technologies incorporated in the educational context tend to focus around the delivery of content and information to support formal learning processes.

Information and communication technologies (ICTs)-which include radio and television, as well as newer digital technologies such as computers and the Internet-have been touted as potentially powerful enabling tools for educational change and reform (Tinio, 2003).

ICTs stand for information and communication technologies and are defined, for the purposes of this primer, as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information." Technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony (Blurton, 2002).

However, the experience of introducing different ICTs in the classroom and other educational settings all over the world over the past several decades suggests that the full realization of the potential educational benefits of ICTs is not automatic. The effective integration of ICTs into the educational system is a complex, multifaceted process that involves not just technology—indeed, given enough initial capital, getting the technology is the easiest part!-but also

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curriculum and pedagogy, institutional readiness, teacher competencies, and longterm financing, among others (Tinio, 2003).

1.2. Teaching Method of ICT

ICT is a modern method that is used in schools and it can empower teachers and learners, transforming teaching and learning processes from being highly teacher-dominated to studentcentered.

This transformation will result in increased learning gains for students, creating and allowing for opportunities for learners to develop their creativity, problem-solving abilities, informational reasoning, communication skills, and other higher-order thinking skills.

From the earliest times when computers were commercially available, they could be found in use in educational institutions, and educators argued that computers should be used to support learning.

During the last few decades the availability of increasingly sophisticated software has grown steadily. Throughout the world personal computers (PCs) and the internet have become part of childhood and adolescence. The rapid development in hardware technology has led to enhanced software opportunities. A similar development took place in educational software since the dominance of hypertext systems changed to a predominance of hypermedia systems in the last decade. These hypermedia learning environments usually contain a broad band width of media, e.g., text, graphics, animations, simulations, video, narration and sound.

Information and communication technology (ICT) is a force that has changed many aspects of our living way. If one was to compare such fields as medicine, tourism, travel business, law, banking, engineering and architecture, the impact of ICT across the past two or three decades has been enormous. The way these fields operate today is vastly different from the way they operated in the past. But when one looks at education, there seems to have been an uncanny lack 5 of influence and far less change than other fields have experienced (Soloway and Prior, 1996; Collis, 2002).

From the earliest times when computers were commercially available, they could be found in use in educational institutions, and educators (e.g. Bork, 1980; Carnegie Commission on Higher Education, 1977; Papert, 1980) argued that computers should be used to support learning. There has always been huge community support for this as illustrated recently in a survey of voters in the USA which indicated greatest support for expenditure on ICT in schools when compared with a list of alternative expenditures in education (Lemke, 1999). However, there has always been debate among educators on how the technology should be used and the importance of using Information and Communication Technology, as the most powerful, cheapest, and most confident way of attaining data and information is obvious. Yet, it has been observed that ICT is less used in educational system in Iran's schools compared to the schools in other countries. In other words, ICT is the newest technology which is capable of gathering, organizing, saving ... and reflecting the data in the forms of voices, images, written texts and numbers, which can be presented by the computer systems and using the transferring systems (Yazdani, 2002).

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biggest producers of information, and undoubtedly, the most important consumers and savors of the information and knowledge, (which has more spread and value in the country, because of the national and religious factors and the quantitative development of the education). Knowledge creation and its optimum use will increase the wisdom and capability of the learners as well as the teachers, and help the educational system in training capable and efficient Human Resource which is the most important mission of any educational system. On the other hand, the backwardness and lack of development in knowledge and technology are the main reasons for different problems like social, behavioral, cultural, and economic problems.

2. OBJECTIVES OF THE STUDY

The following objectives guided the present study:

1. To study the mean scores of the control and experimental groups at the pre test level.
2. To study the mean scores of the students taught by ICT and those taught by traditional method after the treatment.

3. RESEARCH HYPOTHESES

Ho.1: There is no significant difference between mean score of the control and experimental groups at the pre test level.

Ho.2: There is no significant difference between the mean scores of the students taught by ICT and those taught by traditional method after the treatment.

4. METHODOLOGY

4.1. SAMPLE

The sampling method in this research is of simple probabilistic sampling method. 8governmental Guidance Schools in distinct no. 1 in the city of Sari have been selected. Out of these 8 schools, 2 schools were selected randomly, one of which was selected as experimental group and the other one selected as control group. 100 students have been included in this study, out of which 50 of them were in experimental group and 50 of them were in control group.

Human Resource is the most important mission of any educational system.

TABLE 1: DETAILS OF STUDENTS FOR THE SAMPLE SELECTED FOR THE STUDY

	Teaching Method		
Independent variable	ICT Method	Traditional Method	TOTAL
No. of Students	50	50	100

Note= ICT: Information and Communication Technology

4.2. PROCEDURE

At the beginning of the study, both experimental and control groups were asked to respond to a test to measure their prior achievement in the selected units 5. Before starting of the intervention, the experimental group was given one introductory session to know how to use the ICT learning material prepared for this study. Then the science teacher gave lectures to introduce the units in general to both groups together. After the introduction, the control group continued learning the units through regular classroom instruction science. Regular classroom instruction included mainly lecture and recitation methods supported by reading assignments. The experimental group studied the units using the ICT learning in the computer laboratory.

5. STATISTICAL ANALYSIS

Independent sample "t" test was employed to find out the significance difference between students taught by ICT and those taught by traditional method after the treatment SPSS for Windows (version 16.0) was used for statistical analysis.

6. RESULTS

1. Difference between experimental group and control group at the pretest level According to the first null hypothesis "There is no significant difference between mean of the pre-test of experimental group and control group". The obtained results indicate that, there is significant difference between ICT and Traditional groups of students at pre-test of science subject in guidance school (t = 17.15, P>0.01). The mean of Control group (mean = 4.72) is higher than the experimental group (mean = 4.51).Thus, rejecting the null hypothesis, it is inferred students d that there is significant difference between ICT and Traditional groups of guidance school.

There is no significant difference between mean of the pre-test of experimental group and control group".

Table 2: Results of "T" Test between Means of ICT and Traditional Methods at the Pre-Test Level

	Group				
Post-test		Mean	S. D.	t-Test	Sig
	ICT	17-48	1.37	39.97	0.000
	TRADITIONAL	12.76	2.25		

7. DISCUSSION

In recent years there has been a groundswell of interest in how computers and the Internet can be harnessed to improve the efficiency and effectiveness of education at all levels and inboth formal and non-formal settings. Teachers and learners no longer have to rely solely onprinted books and other materials in physical media housed in libraries for their educational needs. With the Internet and the World Wide Web, a wealth of

learning materials in almost every subject and in a variety of media can now be accessed from anywhere at any time of the day andby an unlimited number of people. This is particularly significant for many schools in developing countries, and even some in developed countries, that have limited and outdated libraryresources. ICTs also facilitate access to resource persons—mentors, experts, researchers, professionals, business leaders, and peers—all over the world.

Improving the quality of education and training is a critical issue, particularly at a time of educational expansion. ICTs can enhance the quality of education in several ways: by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. ICTs are also transformational tools which, when used appropriately, can promote the shift to a learner-centered environment.

ICTs such as videos, television and multimedia computer software that combine text, sound, and colorful, moving images can be used to provide challenging and authentic content that will engage the student in the learning process.

The researcher found that Interactive computers likewise make use of Macromedia flash, Camtasia, Internet, Microsoft office and other performance conventions to compel the students to listen and become involved in the lessons being delivered. More so than any other type of ICT, networked computers with Internet connectivity could increase learner motivation as it combines the media richness and interactivity of other ICTs with the opportunity to connect with real people and to participate in real world events. ICTs have also been used to improve access to and the quality of teachers.

The researcher observed that if the schools in Sari city equip with the electronical equipments, and teacher's opinion is changed about ICT by ICT training course, we can achieve to our purpose easily.

The main findings from the survey are summarized below.

- In only a small minority of schools in Sari, there is regular coherent use of ICT to support learning.
- Many schools in Sari have some limited involvement in ICT use with opportunities identified in schemes of work, but most often pupils' experience was erratic and there is no entitlement to work in using ICT.
- In some schools in Sari there is improving access to accommodation, but often this is not the case as overall demand outstrips supply.
- Many teachers in Sari are now competent personal users of ICT, but some remain reluctant, anddo not see the potential benefits of ICT.
- There have been difficulties in the early stages of training, but increasingly teachers are using training materials for experiment in the classroom and transferring ideas from the training to new situations.

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The obtained results indicate that there is significant difference between ICT and Traditional groups of students at pre-test of science subject in guidance school and there is significant difference between the students taught by ICT in the course of Basic Science and those taught by traditional methods of learning after the treatment.

Finally the researcher found out by using ICT a deep change will be caused in learning inschools. ICT method indicate that (mean = 17.48) is higher than that of Traditional method mean= 12.76).

8. SUMMARY

The present research intends to investigate the, The Effect of Information and Communication Technology (ICT) and Traditional Method of Teaching Science on Learning level of Guidance School in Sari (Iran), Guidance School. The objectives of the research were to study the mean test scores of the control and experimental groups of the pre test level. And to study the mean test scores of the students taught by ICT and those taught by traditional method after the treatment. 2 schools were selected randomly out of 8 governmental schools. 100 students in this research divided into experimental group and control group. Both groups were asked to respond to a test to measure their prior achievement in the selected units. After the introduction the experimental group studied the units using the ICT learning in the computer laboratory but the control group continued learning the units through regular classroom instruction science. Independent sample "t" test was employed to find out the significance of difference between ICT and Traditional methods. SPSS for Windows (version 16.0) was used for statistical analysis. The obtained results indicate that there is significant difference between ICT and Traditional groups of students at pre-test of science subject in guidance school and there is significant difference between the students taught by ICT in the course of Basic Science and those taught by traditional methods of learning after the treatment.

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