

## COMPARATIVE STUDY OF THE USE OF ICT IN ENGLISH TEACHING-LEARNING PROCESSES

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### ABSTRACT

The use of Information Communication Technologies (ICT) in cultural, political, social, economic, and academic activities has recently attracted the attention of many researchers and it should now be an important component of the comparative study of education. The present study was conducted to compare the amount and quality of ICT use in English teaching-learning processes among the faculty members of Medical and Non-medical Universities in Kashan, Iran and to explore the dimensions in which the two groups can benefit from one another and from ICT training in this respect. Out of a total of 255 full-time university teachers teaching at medical and no-medical universities in the region, 193 were chosen to participate in the study using a simple random sampling technique and the Morgan & Kritjki table for sample selection.

A researcher-made 5-point Likert scale questionnaire containing 50 items was used to collect the necessary data on the amount of access and use ICT in the two environments. The Chronbach Alfa reliability for this instrument was shown to be 0.8. To answer the research questions, t-test and the analysis of variance were used and the differences in ICT use for learning and teaching were analyzed.

The results of the analyses showed that there was a significant difference in the amount of ICT use among the faculty members of medical and non-medical universities. For reason considered in length, teachers at medical universities used ICT significantly less than the other group. Results also indicated that there was a significant difference between the two types of universities with regard to the availability of computers and the amount of ICT training and use. No significant effects on the use of ICT in education were observed for age, teaching experience, and university degree. University teachers with different fields of study showed significant differences only in non-medical universities. Based on the findings of the study suggestions are made for the improvement of teaching and learning activities through the use of ICT.

**Keywords:** Information Communication Technology (ICT), Teaching-learning processes, ELT, Higher education

### INTRODUCTION

One of the most influential recent changes in education is the application of information communication technology (ICT). Even though some researchers have expressed doubts regarding the effectiveness of information communication technology (e.g., Kleiman, 2004; Kozma, 1994), most agree that it can be used effectively as a tool for learning and as an instructional medium. Bruce and Levin (2001) suggest that technology can be helpful in classroom settings by encouraging inquiry, helping communication, constructing teaching products, and assisting students' self-expression (cited in Baek et al (2008).

**Bransford, Brown, and Cocking (2000) refer to five very important roles that technology can play in education:**

- **bringing the real-world experiences into the classroom,**
- **providing scaffolding that allow learners to participate in complex cognitive tasks,**
- **increasing opportunities to receive sophisticated and individualized feedback,**
- **building communities of interaction between teachers, students, parents, and other interested groups, and**
- **expanding opportunities for teacher development.**

**In general, the term technology shall represent relatively new electronic media such as computers, video, and the associated hardware, networks, and software that enable teachers and learners to work with them and this is what most people mean when they consider the educational uses of technology (Mehlinger & Powers, 2002). In the present work, however, the scope of the study has been limited to university teachers' ability to use ICT in teaching mainly English Language Teaching (EFL) classes.**

**University teachers' use of ICT may be negatively affected by any factors. Previous research has shown that many obstacles can prevent teachers from using ICT such as problems in infrastructures (Mehlinger & Powers, 2002; Pelgrum, 2001; Rossberg & Bitter, 1988), lack of training (Jacobson & Weller, 1988; Schrum, 1999; Strudler & Wetzal, 1999; Willis, Thompson & Sadera, 1999), and weak technical support (NetDay Survey, 2001; Schrum, 1995).**

**Apart from the above major preventive factors, there can be even more obstacles for university faculty members especially in the context of the present study, Iran. For example, Parker (1997) referred to the lack of time, software, hardware, keyboarding skills, knowledge of available information technology resources, and unavailability of computer labs and computer lab technicians as some logistical factors hindering the use of ICT by university professors. Individual perceptions in finding ICT frustrating, believing that changes are too fast, and not having a positive view of the effectiveness of ICT can be other negative factors in the use of ICT. From the prespective of university students and non-faculty employees different factors amy be mentioned for the weaknesses in the uses of ICT such as insufficient number of computers available for use and lack of some professors' sufficient knowledge and skills.**

## **REVIEW OF THE LITERATURE**

**The use of information communication technology especially the skills necessary for ICDL can have advantages for the classroom and can boost teaching and learning in many ways. Some of the most important advantages are summarized in the following statements:**

- **ICT provides rich banks of resources & information.**
- **ICT provides a sense of modernity and progress for teachers and learners.**
- **ICT offers multi-media capabilities.**
- **ICT can pay the way for individualised learning.**
- **ICT facilitates distance learning.**
- **ICT makes individualised feedback easier.**
- **ICT encourages communication.**
- **ICT can be used very interactively.**
- **ICT gives learners and teachers opportunities for endless repeatability and patience.**

- **ICT can be used whenever and wherever learners and teachers wish.**
- **ICT can be motivating.**
- **ICT offers high face-validity.**

**With so many advantages, ICT can surely be an effective tool in the academic life of the university. However, two very important points need to be taken into account in this respect. First, ICT can have some demerits along with its advantages that can not be ignored. ICT can be said to be like rainfall and depending on where the rains and how much it rains, either flood and devastation or greenery and rejuvenation may result. Changes that are brought about in education as a result of ICT can be either gradual and constructive or revolutionary and somehow destructive (See Tajabadi and Ranjbar, 2006). Second, the advantages of the ICT can influence teaching and learning activities only when adequate training is offered for its use. Some of the main disadvantages of the use of ICT in academic setting are the following:**

- **A lot of time and energy need to be spent on 'learning how to use ICT effectively'**
- **the 'wow' factor involved in using ICT can be a distraction from actual learning targets**
- **Teaching and learning can be negatively affected by what can be called 'computerized classroom syndrome'**
- **ICT can take learners too far in individualised learning and create isolation**
- **It can sometimes be very difficult to measure the 'effectiveness' of practices**
- **In some areas there may still be limited computer access**
- **Getting 'intelligent' feedback from computers can be indeed difficult**
- **ICT suits some communication skills more than others**
- **ICT use can lead to major changes in teacher's role, which may not always be positive.**
- **While using ICT technical problems can sometimes be very annoying and computers can crash frequently.**

**Considering the list of advantages and disadvantages of the use of ICT in (higher) education, different teachers and different institutions can certainly demonstrate varying amounts and patterns of ICT use. A very significant part of the equation is that it is the qualified teacher who will operate the computers and use ICT. Some researchers believe that training for these purposes is vital in education. If insufficient effort is put into training teachers to use technology - and to use it imaginatively - then it is probably better to dispense with technology altogether (see Davies, 1997). In teaching languages, the failure of the language lab, which boomed in the 1960s and the 1970s, was due largely to human failures - a lack of investment in training teachers how to use it and a lack of imagination.**

**The following position expressed in the Times Educational Supplement is probably a more sensible one:What we do know, whether from personal experience as teacher or learner, or as the result of 20 years of research into the question, is that ICT has an impact on learning, for some learners, under some conditions, and that it cannot replace a teacher. We know that a key factor in impact at school level is and remains the teacher, whose role in managing and integrating the ICT-based experiences learners have with the rest of the curriculum and culture is vital and probably always will be. (Times Educational Supplement, ICT in Education Online, 26 April 2002, p. 17.)**

**In order to train individuals equipped with the skills of learning and succeeding in today's world, teachers at all levels of education including colleges and universities**

increasingly need to serve as good models of using information and communication technologies. It, therefore, seems somehow odd these days to see usually older and more experienced faculty members at some departments in Iran who are still either totally computer illiterate or not so keen on using ICT in their academic activities. As Snelbecker(1999) argued , it is almost impossible not to be aware of the uses and influences of technology in instruction, education, or training issues.

Major studies carried out on the use of ICT for university teaching and learning in Iran have come up with different results. Some of the studies relevant to the present work are summarized in this section. Salajagheh (1998) studied the attitudes of computer users in the IT center of Shiraz Medical University in Iran and found that all users there had a positive attitude about the use of ICT in teaching and learning and that there was no difference between subgroups of users. Sotoodeh (1998) also studied the use of computers and the Internet in both medical and non-medical universities in Shiraz and found that most users used ICT for accessing new thoughts and ideas and that their most frequent use of ICT facilities was the email.

In a similar study, Tasviri Ghamsari (1999) investigated ICT use among faculty members of the Iranian Institute of industrial and scientific research and found that email was the most frequently used form of ICT use and that university degree and field of study were correlated with the amount of use. Yaghoobi (2001) studied factors affecting the use of ICT for research and instruction among faculty members and postgraduate students in Iran and came up with the following results:

- There was a significant effect on the amount of ICT use for perceived complexity of ICT.
- There was no significant effect on the amount of ICT use for perceived adaptability of ICT to teaching and learning situations.
- There was a significant effect on the amount of ICT use for positive attitude toward the advantages of ICT.
- There was a significant effect on the amount of ICT use for perceived testability of teaching and learning through ICT.
- Proficiency in English as a foreign language was a very effective factor that influenced the amount of ICT use.

Sharifi (2003) studied the amount of ICT use in relation to individual, academic, and occupational variables among faculty members of major universities in the capital, Tehran, and found significant differences in ICT use for gender, field of study, age, university degree, and teaching experience. Zarei Zavaraki (2002) also found significant effects on the amount of ICT use for gender, age, field of study and research experience. studies comparing ICT use in medical and non-medical like the present one can add to the bulk of knowledge being accumulated on the use of ICT in university.

The present work seeks to examine the extent of the use of ICT for teaching and learning in medical and non-medical universities in central Iran and to draw some insight from this comparative study.

## **RESEARCH METHODOLOGY**

The present work is a cross-sectional survey of university teaching staff targeted at their use of ICT for academic purposes. The aim is to explore the amount of ICT use among faculty members of these universities and to study its relationship with factors such as age, degree, access, and teaching experiences. More specifically, the study is designed to test the following hypotheses:

- Faculty members teaching at medical and non-medical universities in Kashan, central Iran, are significantly different in terms of the amount of ICT use.
- There is no relationship between age and the amount of ICT use among faculty members teaching at medical and non-medical universities.
- There is no significant difference in the the amount of ICT use among faculty members with different degrees teaching at medical and non-medical universities.
- There is no relationship between the level of access to computers and the amount of ICT use among faculty members teaching at medical and non-medical universities.
- There is no relationship between teaching experience and the amount of ICT use among faculty members teaching at medical and non-medical universities.

## **PARTICIPANTS AND RESEARCH INSTRUMENTS**

The research population of the study included all of the 300 full-time faculty members teaching at medical and non-medical universities in kashan, central Iran. Using the guidelines offered by Krejcie and Morgan (1970) and simple random sampling techniques, 193 were selected to participate in the study, only 178 of whom returned the relevant survey instrument completed.

The participants were all on tenure track and all had the experience of teaching courses in their discipline which offered all possibilities for the use of ICT.

The main research instrument of the study was a researcher-made likert scale questionnaire constructed to measure the amount of ICT use by university teachers and supplemented with items on relevant demographic information.

Apart from items on relevant demographic factors, the questionnaire also contained items on how much softwares such as Word, Powerpoint, Access, SPSS, Frontpage, Email, Search, and Chat were used for producing and using electronic contents and facilities for teaching. The questionnaire was first corrected and modified with the advice of faculty members of the ICT centers of the subject universities and was then pretested for reliability.

The Cronbach alpha reliability for the questionnaire was 0.80. The data collected with the questionnaires were summarized using descriptive and inferential statistics of the SPSS software. T-test, analyses of variance, and correlation were used to test the research hypotheses stated above.

## **DATA ANALYSES AND RESULTS**

Table 1 below shows the means and percentages of the use of eight common ICT facilities for academic purposes among the faculty members of medical and non-medical universities collected by the questionnaire described above.

**Table: 1**  
**Means for the use of eight ICT related activities**

Softwares	Type of University	Average use	Percentage	SD
Word	Non-Medical	11.69	68.52	3.7
	Medical	9.73	31.48	3.9
Powerpoint	Non-Medical	9.05	72.23	4.2
	Medical	6.98	27.77	4.02
Access	Non-Medical	5.88	43.82	3.8
	Medical	3.93	56.18	2.9
SPSS	Non-Medical	4.63	50.44	4.3
	Medical	5.38	49.56	6.5
Frontpage	Non-Medical	3.96	64.05	3.6
	Medical	2.60	35.95	2.8
Email	Non-Medical	8.06	85.23	5.2
	Medical	6.45	14.77	5.4
Search	Non-Medical	9.17	48.31	7.2
	Medical	9.99	51.69	7.1
Chat	Non-Medical	3.33	44.52	4.1
	Medical	3.20	55.48	3.98

As the table shows, nly in the case of using search engines and the SPSS software did medical faculty members show higher means whereas the use of other facilities was used more by faculty members of nonmedical univewrsities. The total amount of ICT use by faculty members of the two university types were also different in favour of non-medical ones. Results are shown in Table: 1 above.

In order to compare the use of all of the softwares in general and to test the first research hypothesis (Faculty members teaching at medical and non-medical universities in Kashan, central Iran, are significantly different in terms of the amount of ICT use) t-test analysis was employed. Table 2 below shows the result of the analysis. The faculty members of medical universities used ICT less in their teaching and learning activities. ( $p > 0.05$ , Sig 0.04).

**Table: 2**  
**T-test results for Mean ICT use among faulty members**

Type of School	Type of School	No	Percentage	Mean	t-value	DF	Sig
Non-Medical	Medical	96	53.93	55.75	2.03	176	0.04
Medical	non-medical	82	46.07	48.24			

In order to compare the use of all of the softwares in general among faculty members in different age groups (younger newly-employed staff, middle-aged staff, and old staff) and to test the second research hypothesis (there is no relationship between age and the amount of ICT use among faculty members teaching at medical and non-medical universities), analysis of variance was performed. The results, shown in Table: 3 and Table: 4 showed that age did not seem to be a factor in determining the amount of ICT use in either of the two universities.

**Table: 3**  
**Anova comparing ICT use among age groups (non-medical)**

Variance	Sum square	Df	Mean square	F	Sig
Between groups	27.72	5	554.43	0.97	0.43 not significant
Within groups	51288.87	90	569.87		
Total	54061.03	95			

**Table: 4**  
**Anova comparing ICT use among age groups (medical)**

Variance	Sum square	Df	Mean square	F	Sig
Between groups	2613.52	4	635.38	1.02	0.39 not significant
Within groups	48995.59	77	636.30		
Total	51609.12	81			

In order to compare the use of all of the softwares among faculty members holding different degrees (bacholar, masters, Ph.D.) and to test the third research hypothesis (There is no significant difference in the the amount of ICT use among faculty members with different degrees teaching at medical and non-medical universities), analysis of variance was performed. The results, shown in Table: 5 and Table: 6 showed that the difference was not significant.

**Table: 5**  
**Results of Anova comparing ICT use among university degree groups for non-medical university**

Variance	Sum square	Df	Mean square	F	Sig
Between groups	2266.34	3	755.44	1.34	0.26 not significant
Within groups	51794.69	92	592.98		
Total	54061.03	95			

**Table: 6**  
**Results of Anova comparing ICT use among university degree groups for medical university**

Variance	Sum square	Df	Mean square	F	Sig
Between groups	2172.02	3	724.00	1.14	0.33 not significant
Within groups	29437.11	78	633.80		
Total	51609.12	81			

One of the other findings of the present study was that the amount of access to computers was a very important factor that contributes to the use of ICT in teaching and learning processes at the university. The results of this analysis are summarized in Table 7 below. The study also showed that groups with different teaching experiences in non-medical universities and medical universities did not significantly differ in using ICT as a result of teaching experience.

**Table: 7**  
**Results of Anova comparing ICT use among faculty members with different amounts of access to computers**

Variance	Sum square	Df	Mean square	F	Sig
Between groups	10632.38	3	3544.12	6.74	0.00
Within groups	40976.74	78	525.34		
Total	51609.12	81			

## **DISCUSSION AND CONCLUSION**

The present study showed that there was a significant difference in the amount of ICT use among the faculty members of medical and non-medical universities. One of the reasons is that faculty members at medical university do a lot of work that requires them to be away from the university and to work with the public and therefore to find less time for concentration on ICT use. They may also have less opportunities to participate in ICT training workshops. Results of the study also indicated that there was a significant difference between the two types of universities with regard to the availability of computers and the amount of ICT training and use. A major movement in the universities in today's world would be to make sure that there are no shortages of facilities and expert technicians to make ICT use possible. No significant effects on the use of ICT in education were observed for age, teaching experience, and university degree in this study, indicating that people can enjoy the benefits of ICT under numerous conditions.

Making sure that there is a sufficient number of qualified teachers who can operate computers and use ICT in their learning and teaching is a very important part of the today's educational reform and development.

Training for these purposes is so important and vital in education that some researchers claim if insufficient effort is put into training teachers to use technology - and to use it imaginatively - then it is probably better to dispense with technology altogether (see Davies, 1997). In teaching languages, the failure of the language lab, which boomed in the 1960s and the 1970s, was due largely to human failures - a lack of investment in training teachers how to use it and a lack of imagination. The researchers hope that this never happens for ICT in developing countries.

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