



WCES-2011

## Investigating the Possibility of Using IT Programs in High Schools

Marziyeh Dehghani<sup>a\*</sup>, Asma Malekzadeh<sup>b</sup>, Hamideh Pakmehr<sup>c</sup>

<sup>a</sup>*Ph.D Student Curriculum studies, Ferdowsi University of Mashhad, Mashhad, Iran*

<sup>b</sup>*Medical student, Urmia University of Medical Sciences, Urmia, Iran*

<sup>c</sup>*M.A. Student Curriculum studies, Ferdowsi University of Mashhad, Mashhad, Iran*

---

### Abstract

Regarding the role of ICT on education systems' transition from traditional education to modern one, schools generally have started to use ICT in their programs. This study aimed to investigate teachers' attitudes towards the use of ICT, especially, computer as a main manifestation of ICT- in Tabriz, Iran governmental high schools. 367 teachers were selected randomly as research sample by using Kokeran's formula for sampling. A researcher-made questionnaire in Likert scale was prepared and presented to the subjects. Findings showed that the studied teachers' views on computer and ICT (in 5 subscales including computer eagerness/enjoyment, computer anxiety, computer avoidance, using e-mail in class and computer productivity) were totally in good range with the mean of 4.2 ( $p < 0.05$ ). Despite some deficiencies in computer and ICT facilities, the teachers are aware of importance and necessity of using computer and ICT in students' achievement and teachers' successful teaching.

*Keywords:* Information and Communication Technology (ICT), Computers, High Schools, Teachers' attitudes;

---

### 1. Introduction

Information is of obvious and essential indicators of our current age. Individuals who live in our "information and knowledge age" should have information literacy skills for better life. Equipping with information and knowledge is a unique power for a society. Most countries produce and disseminate scientific information and knowledge for their development. In these countries, ICT (Information and Communication Technology) has a remarkable effect and influence on education technology, methods and techniques in order to gain new knowledge, educational programming and implementation, so that it changes priorities involved in traditional education. In other words, formal knowledge acquisition and skill training are fading and being replaced other new priorities such as general growth and self-controlled learning. Computer is one of ICT manifestations with a great importance in education. As Newhouse (2002) states, computers have been used in educational institutions for learning purposes since they came into demand. 1990s was the decade of computerized communication and access to information, mainly by internet-based services such as e-mail and the Web when various software packages (e.g. electronic encyclopedia) were available easy and cheaply. Then, educators more emphasized the use of technology for improving learners' education process. Nowadays, computers are studied and learned by students in schools (technology education) and also assist in education (education technology). Some educational problems can be solved in schools by ICT. Elimination of distance obstacle by providing access to educational resource via the Net is one solution. Any discussion on the use of computers in schools needs the mutual perception of relations among

---

\* Corresponding author. Tel.: +98 914 4469346; fax: +98 511 8783012

schools, learning and ICT (Khalili, 2008: 3). Hence, the use of technology for the protection of various learning environments and assistance in learning process is ideal goal for education systems (Newhouse, 2002).

The appearance of a new interacting education in classes in developed countries has been resulted in basic change in communication between students and teachers in which an every-thing-knower teacher replaces a teacher whose role is mainly guiding and directing students. Consequently, learners are responsible for their own learning and actively and eagerly share in their learning process by assistance of their teacher's directions and guidelines and according to their own strengths and weaknesses. Computers can help such learners by providing appropriate suggestions in each step of learning process and determine whether or not a learner can gain the next step. In general, designing hardware and software systems, employing skillful specialists for training human resources, and equipping local education systems with multipurpose media, computer and national and international networks (e.g. intranet and internet) are of important strategies for making a dynamic education system and fulfilling learners' various needs. Therefore, ICT has a main and effective role in the development of learners' knowledge level and enhances the quality of education. Teachers need to acquire necessary abilities in using ICT and learn related basic skills eagerly and continuously to change traditional educational procedures. Ability to research is one of necessary skills a teacher needs in order to enhance learning-teaching process and this necessitate ICT skills (Simonse. 2003: 95-6). Maynard (2006: 1) regards technology as a catalyst for the following affairs:

- 1) To convert schools to dynamic and innovative institutions in which students become inquisitive and inventive and motivated.
- 2) To connect students to wide area networks by which they can acquired base knowledge and global viewpoints.
- 3) To improve students' skills in effective information processing.
- 4) To enhance capacities and attitudes needed to independent and lifelong learning.

ICT provides effective interaction and communication between teacher and individual student through facilities such as e-mail (Sarmad, et al., 1998). Including ICT in class work tends to cause students' positive attitudes towards learning (Baker and Herman. 1994). Schank and Cleary (1995) believes that today's schools have been organized according to past viewpoints, needs and resources that are not suitable for current circumstances. Schlechty (1997) argues that providing better technology background for learning environments is some solution. Barnet (2003) reveals that ICT will not be affective in absence of enhancing teachers' skills and continuous protection of its infrastructure and instruction. ICT should affect inputs (teachers, students and class resources and facilities) as well as outputs (the quality of students' learning process). Then, if a teacher selects the most appropriate technology, it will result in the enhancement of students' learning. Meghabghab and Price (1997) conceive educating deficiencies, no access to information technology and the lack of budget and infrastructures as main obstacles to ICT innovations in 12-k schools in Georgia. Darling and Mclaughlin (1996) point to the effects of ICT use on teachers' professional development and the innovation in education. Conducting a study in U.S.A., Khalili, (2008: 37). found that 96% of the studied teachers agreed with the use of ICT for U.S.A. educational development.

The development of computer usage in education systems needs modern facilities in all classes, training dependent skills and teachers' protection. American Congress allocated \$680,000,000 for education programs in 1999 of which \$75,000,000 were specified to train teachers in ICT (Wilson, 2008). Ballard (2007) believes that children memorize 5% of what they hear and 10% of what they read, but 80% of what they practically do and 90% of what they teach in learning process. This simply emphasizes the role of ICT in learning process (Khalili, 2008: 43). In the report of Programming and Human Resource Deputy of Iran's Ministry of Education, it has been stated that the lack of an integrated program in the use of ICT in all schools and administrative levels, unawareness of the staff within education system about the effectiveness of ICT and no attention to context needed to achievement the ICT programs are of main obstacles to the implementation of ICT-related programs in the education system (cf. Safi, 2005). Human resources are the focal factor in ICT development in each country, and the fulfillment of such development is achieved by education ministries/systems of countries. Education is a key for global change and intended changes in social life can be begun from school and making change in school should begin from teacher (Khalili, 2008: 9). So, the cooperation of education systems, especially teachers with the ICT programs is certainly needed for linking to information society. Considering the above-mentioned points, the current study aimed to investigate teachers' attitudes towards the use of computer –as a main manifestation of ICT- in Tabriz, Iran governmental high schools.

## 2. Method

The research population included all teachers in the governmental high schools located in Tabriz, Iran during school year of 2008-2009. The sample size was calculated by using Kokran's formula and amounted to 367 teachers. A researcher-made questionnaire was used for data collection entitled "teachers' attitudes to computer". This included 92 items in Likert scale. Its validity was confirmed by some specialists in the field and its reliability amounted to 0.86 by Kronbach's alpha coefficient. Data was analyzed by descriptive and inferential statistics (especially, X2 test, t-test and analysis of variance or ANOVA).

## 3. Results

The teachers' Attitudes toward computer were measured according to 5 factors held in the questionnaire (i.e. computer enjoyment/eagerness, computer anxiety, computer avoidance, e-mail use in class and computer productivity. The related findings are presented separately.

### 3.1. Computer enjoyment/eagerness<sup>2</sup>

11 and 9 items measured the sub-factors of computer eagerness and computer enjoyment, respectively. 18 items were common with other factors. Then, this factor was measured through 29 items.

Table 1 shows the mean of teachers' computer eagerness and enjoyment by their gender, age and academic field. The means of these attitudes were relatively higher than assumed Likert mean levels and in "good" range. Totally, this mean was 4.17 which indicated that the teachers had enough computer eagerness and enjoyment.

Table 1. Teachers' computer enjoyment/eagerness by their gender, age and academic field

Academic Field			Age					Gender		Variable Factor 1
Engineering	Basic Science	Humanities	45<	41-45	36-40	31-35	30>	men	women	
4/28	4/60	4/42	4/19	4/24	4/29	4/28	4/44	4/88	4/65	Computer Eagerness
3/92	3/84	3/89	3/76	3/88	3/90	3/94	4/18	3/8	4/2	Computer Enjoyment
4/27	4/96	4/28	3/99	3/99	4/01	4/34	4/21	4/06	4/66	Common Items
4/38	3/98	4/4	3/98	4/04	4/07	4/32	4/48	4/24	4/5	Sum of Means
4/06			4/08					4/37		

#### 3.1.1. Computer anxiety

This factor was measured by 22 items of which 16 were for computer anxiety and 14 common with other factors. Table 2 shows that the total mean of computer anxiety in the studied teachers was rather good (3.97). However, the means were relatively different by their gender, age and academic field. Then their computer anxiety was low.

Table 2. Teachers' computer anxiety by their gender, age and academic field

<sup>2</sup> This factor included 2 sub-factors closely related to each other and then was considered as an integrated factor.

Academic Field			Age					Gender		Variable	
Engineering	Basic Science	Humanities	45<	41-45	36-40	31-35	30>	men	women	Factor 2	
3/37	3/6	3/61	3/57	3/64	3/64	4/98	4/21	4/79	3/8	Computer Anxiety	computer anxiety
3/85	3/67	3/78	3/79	3/77	3/85	4/13	4/19	4/81	3/6	Common Items	
3/79	3/63	3/68	3/68	3/7	3/74	4/5	4/2	4/8	3/7	Sum of Means	
3/7			3/88					4/25			

3.1.1.1. Computer avoidance and E-mail use in class and Computer Productivity

14 items reflected teachers' computer avoidance. As shown in table 3, the mean of this factor is rather high by teachers' gender, age and academic field. The overall mean was in "good" range (4.54). Then, their computer avoidance was low. 16 items were measured this factor. The participant had positive attitudes towards the use of e-mail in class in general (with the mean of 4.4). These attitudes were slightly different by their gender, age and academic field. Overall mean of this factor was in "good" range (4.3). However, such as other factors, the means were relatively different by the participants' gender, age and academic field. Then, the teachers confirmed the effectiveness of computer in their work. In summary, the results of t-test for determining the significant level of these attitudes by participants' gender revealed a significant difference (p<0.01). F scores for ANOVA showed no significant difference between their attitudes and academic field from the one hand and age from the other hand.

**Table 3. Teachers' computer avoidance by their gender, age and academic field**

Academic Field			Age					Gender		Variable	
Engineering	Basic Science	Humanities	45<	41-45	36-40	31-35	30>	men	women	Factor 2	
4/96	4/76	4/9	3/82	4/1	4/28	4/4	4/83	3/94	4/22	Computer avoidance	
4/72			4/28					4/08		Sum of Means	

4. Discussion and conclusion

This study aimed at investigating teachers' attitudes towards computers in Tabriz city governmental high schools according to 5 factors mentioned. The overall mean of the attitudes was in "good" range (4.2, p<0.05). Their attitudes regarding computer enjoyment/enjoyment were 4.17 that means that they believed the positive effects of computer on their enjoyment and eagerness in their work environment. Linesky (1997) found that students who were taught in a computer-based learning environment were eager and more progressive than students who were taught traditionally (Khalili, 2008: 24). Knezek and Christensen (1997) showed that students in schools with adequate facilities and experienced educational staff more enjoyed computer. Computer anxiety was another factor with the mean of 3.94 that indicated the participants' relatively low rate of computer anxiety. It can be said that this factor logically has a reverse relationship with that of computer enjoyment/enjoyment. The higher the former is, the lower the latter is. The mean of computer avoidance was 4.94 indicating the relative lack of participants' avoidance. This is in accord with Kiridis, Drossos and Taskiridou's (2006) findings. Box (1999) claimed that the studied teachers have not any program for using computer despite that almost half of the classes had appropriate computers. Regarding the mean of teachers' attitudes towards the use of e-mail in class (4.40), it can be said that the participants agreed with its application and as Attaran (2004) and Zamani and Esfijani (2005) stated, e-mail acts as a means of facilitating the communication among school, teachers, students and parents. Teachers' attitudes towards computer productivity were satisfactory with the mean of 4.3 and they were aware of its effectiveness in education. The finding is in accord with those of Atkinson (1976) and Barker and Franklin (1998). The findings also showed a significant difference between teachers' attitudes to computer and their gender. This is in accord with the findings of Chua et al. (1999), Pinaro and Albo (1996) and Torkzadeh and Angulo (1992) indicating males and females

(1999) found no significant difference in this respect. There was no significant difference between teachers' attitudes to computer and their academic field. Khalili (2008) reported a similar finding. The finding is in accord with Naderi and Ahadi (2005) and Lavasani's (2002) findings. Also, we did not find any significant difference between teachers' attitudes and their age ranges. Brownsnan (1998), Lavasani (2002), Khalili (2008) and Naderi and Ahadi (2005) reported a similar finding. In concluding, education systems needs teachers who are interesting and eager to apply ICT and modern technologies in teaching process to be compatible with our current age. Technology and interested staff are interdependent to reach the expected results. Regarding the findings and the importance of this subject, it is suggested that the obstacles to implementing ICT in education system are studied from teachers' viewpoints. Dedicating an independent unit in schools for learners' access to computer and the Net and providing ICT for teachers in order to use it as a complementary means in learning process will be effective for today's education systems.

## References

- Attaran, A. (2004). *Information Technology: A context for education*. Tehran: Hooshmand, (Chapter 2), [in Persian].
- Atkinson, R.C. (1976). Teaching children to read using a computer. *American psychologysit*, 29, 78-169.
- Baker & Herman. (1994). Evaluating the apple classrooms of tomorrow. In J.E.L. Baker and H.F. O'Neil (ed), *technology assessment in education and training*. Hillsdale, NJ: Lawrence Erlbaum.
- Barker, R. & Franklin (1998). *Information and communication technology-the victim of the literacy hour*, Focus on literacy, MAPE.
- Barnet. (2003). *Professional development: successful strategies for teacher change*. Eric digests. Retrieved Jan, 28 2006 from: www.eric.ed.gov.
- Box, K. (1999) *Teachers & Technology: A Snapshot of a Texas High School*. Denton, TX: Texas Center for Educational Technology. Retrieved 9, June 2009 from: www.tcet.unt.edu/research/survey/snapshot.htm.
- Brosnan, M.J. (1998). The impact of computer anxiety and self – efficacy upon performance. *Journal of computer assisted learning*, 14, 223-234.
- Chua, S.L., Chen, D. T., & Wong, A. L. (1999). Computer anxiety and its correlate: a meta analysis. *Computer in human behavior*, 15, 609-623.
- Cohen, B.A. & Waugh. W.(1989). Assessing computer anxiety. *Psychological reports*, 65, 735-738.
- Darling & McLaughlin (1996). Policies that support professional development in an era of reform. In M. W. McLaughlin & I. oberman(ed), *teacher learning: new polices ,view practices* .New York: teachers college press.
- Gholamali lavasani. M. (2002).The effects of personal variables on computer anxiety in Bachelor students of Tehran University. *Journal of Psychology and Educational Sciences*, 2, 109-133. [in Persian].
- Khalili, L. (2008). *The feasibility of using ICT programs in schools and its effect on abilities*. Research Project in West Azarbaijan- State Education Organization. [in Persian].
- Kiridis, Drossos, & Taskiridou (2006). Teachers facing ICT :the case of Greece. *Journal of technology and teacher education*.14, 75-96.
- Knezek,G.& Christensen, R. (1997). *Attitudes toward information technology at two parochial schools in north Texas technical report 97.2*. Retrieved 6 June 2007 from: www.tcet.unt.edu/pubs/studies/techrept/tr97-2.htm
- Maynard, S. (2006). Can electronic textbooks help children to learn?, *The electronic library*. 23, 103-115.
- Meghabghab & Price (1997).*The impact of a technology-rich environment*. retrieved 2009 from: www.thelearningfederation.edu.au/.../impact\_digital\_technologies\_k-12pdf.pdf.
- Naderi, F. & Ahadi. H. (1384). Review computer anxiety and its relation to individual characteristics. *Journal of Psychological Studies, Faculty of Education and Psychology Zahra University*, 2,3, 7-24. [in Persian].
- Newhouse, C. Paul (2002). *The impact of ICT on learning and teaching a literature review*. retrived 2006 from: http://www.det.wa.edu.au/education/cmis/eval/downloads/pd/impactreview.pdf.
- Otomo, yuko. (1998). *The relationship of computer anxiety, mathematics anxiety, trait anxiety , test anxiety, gender, and demographic characteristic among community college students*. Dissertation abstracts international,No.59,(6-A).
- Pitariu, Horia, & Albu, Monica (1996)." Computer anxiety: components and ways of coping ".*Revista de Psychologie*, 42 , 19-36.
- Safi, A. (2005). Te elementary, guide and high school education. Tehran: Samt, (Chapter4). [in Persian].
- Sarmad, Z. Bazargan, A. Hejazi, E. (1998). Research Methods in Behavioral Science. Thehran: Agah, (Chapter 3). [in Persian].
- Schank & Cleary(1995). *Engines for education*.Hillsadle, NJ:Lawrence Erlbaum Associates.
- Schlechty(1997). *Investing better schools : an action plan for educational reform*. San Fransisco ,CA.: Jossey-Boss Inc
- Soloway, E., Norris, C., Knezek, G., Becker, H., Riel, M. & Means, B. (1999). *The Relationship of Teachers and Technology: Survey Findings and Reflections*. Panel presented at Society of Information Technology & Teacher Education (SITE)'s 10th International Conference, San Antonio, TX, and March 3, 1999. Retrieved 9 June 2007 from: http://www.tcet.unt.edu/research/site99/att99/sld001.htm.
- Torkzadeh,G. & Angulo,I. E.(1992). "The concept and correlated of computer anxiety ". *Behavior and information technology*, 11, 99-108.
- Wilson, R. (2008), "E-education in the UK", *Journal of Digital Information*, 3, 107-115.
- Zamani, A. Esfjani, A. (2005). *The social relations of teachers and students in the knowledge age*. Selected Conference Proceedings of the teacher in the age of wisdom. Isfahan: Sorodeh Andishe. [in Persian].