

Identification of Factors Affecting the Use of Information and Communication Technology among High School Students

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ABSTRACT: Today, traditional methods of teaching and learning have lost their efficiency and man to keep pace with the changing environment must seek to new methods and procedures to transfer knowledge and increase awareness. Therefore, knowledge transferring has emerged using Information and Communication Technology (ICT) and quickly introduces itself as a successful approach to learning. In such circumstances, understanding of curriculum design with approach of the use of ICT and students' use of it has a particular importance in the teaching. This study aimed to identify factors influencing the use of information and communication technology among high school students in Bushehr city were carried out in the academic year 2007-2008. The population in this study is all high school and pre-university students in city of Bushehr that 370 subjects were selected by a random stratified sampling. In this study, variance analysis and path analysis of relationships between variables were evaluated using survey method and the correlation coefficient. This research has been discussed identification of the factors influencing the use of ICT and basic skills students in ICT, family income, parents' education level, access to internet and computers at home and at school, attitudes towards computers, the impact of teaching methods used by teachers in ICT.

Key words: Information and Communication Technology, Student, Learning, Knowledge

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INTRODUCTION

The end of the twentieth century and the beginning of the new millennium, not only for social scientists and supporters of the millennial movements contained contradictory meanings and allusions for the public. Many thought the end of the millennium should be contains a serious transformation. While it not true necessarily: the end of first millennium was passed without any incident. However, the end of the second millennium is truly the era of transformation. Third millennium is the climax of entering technologies into learning environments.

Technology can facilitates knowledge creation and classroom, improvement of teaching and learning process. This issue has been confirmed by many researchers (Muir-Herzig, 2003).

Today, traditional methods of teaching and learning have lost their efficiency and man to keep pace with the changing environment must seek to new methods and procedures to transfer knowledge and increase awareness. Therefore, knowledge transferring has emerged using ICT and quickly introduces itself as a successful approach to learning. In such circumstances, understanding of curriculum design with approach of the use of ICT and

students' use of it has a particular importance in the teaching. But this phenomenon has not found in Iran its real position, yet. In such circumstances, understanding of curriculum design with approach of the use of ICT and students' use of it has a particular importance in the teaching and students' use of it has a more particular importance in the teaching affair, similarly.

In this respect, the arrival of information and communications technology into training environment particularly computers entrance into the classroom is accepted as a key strategy in creating a European based on economy of knowledge (Kinder, 2002).

New studies on education have shown that the development strategy of information and communication technology Leads to develop students' higher level thinking skills (Lim et al., 2004).

Some of education experts also believe that paradigm shift from teacher-centered to student-centered, has increased problem-oriented, development of critical thinking, creativity and participation of students (Muir-Herzig, 2003).

Many researches have been done on the use of ICT; but in Iran and particularly in the city of Bushehr has not been done a serious research on this problem, yet. To implement ICT in the education system should be given to a few tips: tracking arrangements, scope of

operations, executive centers, management and organization and curriculum (Al-Hosseini, 2005).

There are different models for the deployment and use of ICT in education system that one of the models is the leading systematic model of the use of ICT. In perspective of this model, application and use of ICT in the educational system requires the operation at three levels of: Educational systems, school and individual. In each of these three levels must be adopt and implemented the policies and strategies (Lowe, 2004).

In the educational system, building networks of ICT, educational system enrichment, research and development and changes in curriculum are conducted and at school level must be established infrastructure, technology, specialty of teachers and administrators and resources of learning and teaching and at the family and personas well as in the areas of economic and social of a person and its personality characteristics is effective in the use of ICT (the same, 2004).

What in the present study is concerned is identification of the factors affecting high school students' use of ICT in the city of Bushehr. In this regard, the effective factors such as students' level of computer skill, level of access to computer and Internet at home and at school, teaching methods of teachers, teachers' attitudes toward the use of computers and the Internet, levels of parental education and family income on ICT use has been studied using a survey method.

Hypothesis

- 1 - Basic proficiency level of students to work with computer is effective on their use of ICT.
- 2 - Access to computers and the Internet at school is effective on students' use of ICT.
- 3 - Access to computers and the Internet at home is effective on students' use of ICT.
- 4 - Parents education level on is effective students' use of ICT.
- 5 - The students' attitude toward computers and the Internet is effective on their use of ICT.
- 6 -There is a difference between the male and female students' use of ICT.
- 7 - Use of ICT varies in different disciplines.

MATERIALS AND METHODS

The population of the study consisted of male and female high school students in the city of Bushehr. Total number of schools at the secondary level is 58 schools, which includes 20conservatoryand 38 secondary schools. The number of their students is 11167 that 3078 people majoring in the humanities,

2505 people in science, 3139 people in mathematics and physics and 2445 in the fields of conservatory.

370 subjects have been selected as the sample by stratified random sampling. A questionnaire was used to collect data and analysis of variance test and path analysis have been identified the relationship among variables through correlation coefficient. The questionnaire should have several features to good answers and responses obtained be reliable and usable. Meanwhile, the reliability and validity of the questionnaire has a significant important. Validity or reliability of the questionnaire is that the questionnaire should be able to measure what it is supposed to measure. In other words, what it will measure and not something else. In other words, the validity is that how much the measuring instrument measures the desired property. In this study, preliminary questionnaire was given to several experts, and ambiguous point have identified and deleted. The aim of the reliability of the questionnaire is a questionnaire or a test should be give the consistent and coordinated results; in other words, the same result is obtained in different times and places. To obtain the reliability or validity of the study the different methods used that in this research, Cronbach's alpha coefficient is used and the questionnaire was given to 15 people and, finally, the Cronbach's alpha coefficient obtained was 0.873 which is suitable for research.

RESULTS

Hypothesis 1:1 - Basic proficiency level of students to work with computer is effective on their use of ICT.

Table 1 displays correlation coefficient between basic proficiency levels of students to work with computer. According to this table, the correlation coefficient between the two variables is equal to 0.689 which is significant at level of $\alpha < 0.01$ and shows a significant relationship between two variables, so, the hypothesis is confirmed. Therefore, basic proficiency level of students to work with computer is effective on their use of ICT.

Table 1: The correlation between students' level of proficiency in working with computers on their use of ICT

Variable	Number	Correlation coefficient	Sig.
Basic skill level	370	0.689	0.0001

Hypothesis 2: the access level of students to computers and the Internet at school is effective on their use of ICT.

Table 2 displays correlation coefficient between the access level of students to computers and the Internet at school. According to this table, the correlation coefficient between the two variables is equal to 0.159 which is significant at level of $\alpha < 0.05$ and shows a significant relationship between two variables, so, the hypothesis is confirmed. Therefore, the access level of students to computers and the Internet at school is effective on their use of ICT.

Table 2: Correlation coefficient between the access level of students to computers and the Internet at school on their use of ICT

Variable	Number	Correlation coefficient	Sig.
the access level to computers and the Internet at school	370	0.159	0.002

Hypothesis 3: the access level of students to computers and the Internet at home is effective on their use of ICT.

Table 3 displays correlation coefficient between the access level of students to computers and the Internet at school. According to this table, the correlation coefficient between the two variables is equal to 0.588 which is significant at level of $\alpha < 0.01$ and shows a significant relationship between two variables, so, the hypothesis is confirmed. Therefore, the access level of students to computers and the Internet at home is effective on their use of ICT.

Table 3: Correlation coefficient between the access level of students to computers and the Internet at home on their use of ICT

Variable	Number	Correlation coefficient	Sig.
The access level to computers and the Internet at home	370	0.588	0.0001

Hypothesis 4: Attitude of students to computers and the Internet is effective on their use of ICT.

Table 4 displays correlation coefficient between attitude of students to computers and the Internet in use of ICT. According to this table, the correlation

coefficient between the two variables is equal to 0.214 which is significant at level of $\alpha < 0.01$ and shows a significant relationship between two variables, so, the hypothesis is confirmed. Therefore, attitude of students to computers and the Internet is effective on their use of ICT.

Table 4: The correlation between attitude of students to computers and the Internet on their use of ICT

Variable	Number	Correlation coefficient	Sig.
Attitude	370	0.214	0.0001

Hypothesis 5: Parental education level on is effective students' use of ICT.

Table 5 displays correlation coefficient between Parental education levels in their use of ICT. According to this table, the correlation coefficient between parental education level and their use of ICT is equal to 0.338 and 0.392, respectively, which is significant at level of $\alpha < 0.01$ and shows a significant relationship between two variables, so, the hypothesis is confirmed. Therefore, Parental education level on is effective students' use of ICT.

Hypothesis 6: There is a difference between the male and female students' use level of ICT.

Table 6 displays T-test of hypothesis 6. According to this table, the male and female students' use level of ICT is equal to 1.4997 and 1.8114, respectively, shows a significant relationship between two variables which is significant at level of $\alpha < 0.01$ with T value of 3.502 and freedom degree of 368, so, the hypothesis is confirmed.

Hypothesis 7: the students' Use level of ICT varies in different disciplines.

Tables 7 and 8 shows ANOVA of hypothesis 7, based on the table the average amount of students' use of ICT for humanities equal to 1.5007, for the field of experimental sciences is 1.4659, for field of mathematics is 1.6199 and for conservatory is equal to 2.0329 that shows the differences in the different use level of the academic disciplines and the difference is equal to 8.001 with the amount of F and is significant at the level of $\alpha < 0.01$, so the hypothesis is confirms.

Table 5: The correlation between students parental education level on their use of ICT

Variable	Number	The correlation coefficient	Sig.
Fathers' education level	370	0.338	0.0001
Mother's education level	370	0.392	0.0001

Table 6: T test of hypothesis 6

Sex	Number	Mean	Standard Deviation	T	df	Sig.
Son	200	1.4997	0.85412	3.502	368	0.001
Girl	170	1.8114	0.85243			

Table 7: ANOVA of hypothesis 7

Field	Number	Mean	SD
Humanities	102	1.5007	0.79496
Science	83	1.4659	0.87423
Mathematics	104	1.6199	0.85010
Conservatory	81	2.0329	0.85824
Sum	370	1.6429	0.86626

Table 8: Sequence of ANOVA

Groups	Sum of squares	Degrees of freedom	The mean square	F	Sig.
Intergroup	17042	3	5681	8.001	0.0001
Intragroup	259860	366	0.710		
Total	276902	369			

DISCUSSION AND CONCLUSIONS

There were seven hypothesis in this paper. The first hypothesis examines the relationship between basic proficiency levels of students to work with computer on their use of ICT, which was approved. Leo (1997), Bruce (1997) and Kennedy (1993) believe that the influence of the variable on the use level of ICT is important and have been focusing on this issue. The second hypothesis examined the relationship between students' access level to computers and the Internet at school their use of ICT, which the correlation coefficient between these two variables was significant and the hypothesis were confirmed. The third hypothesis examined the relationship between students' access level to computers and the Internet at home their use of ICT, which the correlation coefficient between these two variables was significant and the hypothesis were confirmed. The fourth hypothesis, students' parents' education level on their use of ICT, which the correlation coefficient between students' parents' education level on their use of ICT. So the hypothesis were confirmed. The fifth hypothesis examines the relationship between the students' attitude toward computers and the Internet on their use of ICT, which the relationship between these variables was significant, and this hypothesis was confirmed. Liaw (2002), Wang (2003), Seyed Naghavi (2007), Davis et al. (2004) were concluded.

The sixth hypothesis examines the difference between the male and female students' use level of ICT. The average of male and female students' use

level of ICT is different and the difference is significant, therefore, the hypothesis was confirmed. Seventh hypothesis examines the differences between students' use level of ICT in different disciplines, so hypotheses were confirmed.

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