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Research Article

INVESTIGATION OF EFFECTIVE FACTORS ON AMOUNT OF USING INFORMATION AND COMMUNICATIONS TECHNOLOGY BY ART STUDENTS OF AGRICULTURAL VOCATIONAL AND TECHNICAL ART SCHOOLS OF TEHRAN PROVINCE

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ABSTRACT
The aim of this study is to investigate the factors affecting on the use of students of technical and vocational disciplines of agriculture in Tehran province from ICT. The purpose of this study is applied one and its method is descriptive – correlation. This research has implemented survey approach. The population of this research consists of all of the students of technical and vocational disciplines of agriculture in Tehran province in academic year of 89-90 which was estimated using the 275 census. The main instrument for data collection was a questionnaire and its validity was confirmed by experts and the reliability of the questionnaire using Cochran's alpha coefficient was calculated the average of 79% for sections of the questionnaire. The results showed that there was a significant relationship between student's use and application of ICT and factors of environmental, economics, skills of computer, Internet and English. Also there are significant differences between the use of ICT among students of different years and different academic disciplines.

Keywords: *Internet, Education, Information and Communication Technology (ICT), Technical and Vocational of Agriculture, Computers*

INTRODUCTION
Twentieth century is the century of knowledge and information revolution. Information tools have been changed in the world. If in the twentieth century were radio, television, telephone and data transmission factors, now computers, electronic networks, and most importantly, e-learning have transformed the concepts and tools of information technology and with special abilities, limitations of space and time have taken from the feet of student's knowledge to obtain information (Rezaee, 2010).
The present age is disappointed due to the rapid changes and innovations in various fields of science, information and communication age. Today, the rapid development of information and communication technology (ICT) has influenced on various aspects of life including cultural, social and economic.
Ayati *et al.*, (2010) believe that concepts and terms such as information society, the information age and knowledge economy are the result of the entry of ICT. All aspects of human life influenced by ICT, one of the aspects is education and learning (UNESCO, 2005). ICT is one of the tools that can play a key role in training.ICT can increase the quality of access to materials and appropriate and updated topics. With decreasing cost of hardware and access to Internet and with the increasing spread of telecommunications, are expected that the benefits of using new technologies surpass in schools in developing countries than its costs. By the same token, some depicts training in the new millennium, while there will be a school, but there are many differences in the management of class.
Several studies have been done that show that the role of ICT in the quality development of teaching and learning. UNESCO (2005) in explaining the trilateral relationship between the education, technology and the development believes to appropriate and effective use of ICT to achieve educational goals. The report of NET from the3000 American school pupil's views about ICT and Education shows that students of all

age levels have strong opinions about ICT can and should participate fully in training (Tamson, 2007). Based on the research that Newrouse (2002) conducted in Australia, Use of ICT is increased learning. Moallem (2003) believes that ICT has the potential ability to increase student motivation, communication of students with diverse information sources and support from their group learning. Information and communication technology improve the quality of learning through achieving to scientific resources, effective storage of information, motivation and achievement of online learning. Information and communication technology led to the active participation of students in the learning plays a key role in student learning (Mc Combs, 2000). Katz (2002) argues that the characteristics such as independence in learning, self-confidence in learning, satisfaction of learning, learning control, creativity and motivation for study are the benefits of using information technology and telecommunications. UNESCO (2002) has designed ICT curriculum model for high school students in four main categories of ICT literacy, implementation of ICT in the areas of curriculum, the integration of ICT in the curriculum and expertise in ICT access. Also in Malaysia (2001), England (2002) Australia (2003), Belgium and India (2004), Albania, Bulgaria, Romania (2005), China, USA, Sudan, Germany and Uzbekistan have been attention to ICT curriculum as one of the major topics of the curriculum in various periods especially in high school (UNESCO, 2005).

Several studies have been conducted in field of using of ICT in education that each points to factors in this area. Regardless of these factors, it was not possible to reach the goal of application in education. For example Zainal (2008) considers the subject to competency of teachers in the use of various tools of technology and their knowledge about support the process of teaching - learning. Lim *et al.*, (2005) postulate effective management of class in this area. Neil (2008) refers to social, economic and cultural constraints on the effectiveness of technology in the future of educational. Glazer, Hannafin (2008) with investigation effective factors on interaction of teachers in using technology conclude that teachers use technology to teach are more interact than their colleagues. Levin and Vadmany (2008) with investigation effective factors on teacher's use of technology in the classroom found that teachers use two general patterns in the use of technology in the classroom. The first model focuses on the origin of impact of technology implementation and emphasizes on human factors in this area and the second focuses on the nature of the impact of the use of technology and in this regard emphasizes on the technical and cognitive development. Heysung (2004) in a study with title of investigate the effective factors on teacher's the acceptance of Information Technology has concluded that there is a significant relationship between student's attitudes towards ICT skills. Rezaee (2010) have classified barriers application of ICT in education to four components: organizational, creativity, structure and human resources that student's areas one of major axis in department of human resources. Al- Ammari (2004) Lack of access to sites of computers, Lack of sufficient proficiency in computer skills, proficiency in computer use has cited inhibiting factor has cited the deterrent factors of the use of computers. The main strategies of education in Iran are economic, social and cultural programs and improve the quality to the programs. Evaluation the existent indices in Education in terms of performance, effectiveness and given the huge consumption resource, especially government sources make vital need for attention to the quality of education programs. So part of the reform program in education should be noticed to the quality of the educational system. ICT and the use of information technology capabilities, production and transfer of knowledge and learning can be considered to be an effective step towards reform program of education (Ebadi, 2009).

Since 1381 (2002), the Ministry of Education in Iran as an major agent of policy in reform process of education decided to develop ICT in schools and attempted to equip six thousand high school to the hardware and implement the ICDL for Teachers (Attaran, 2006).

But our country, Iran, in terms of Informational Development has great distance with the developed countries and even in comparison with some developing countries is also ranked lower. According to recent estimates, the amount of information doubles every four to five years. In other words, the information available for a student in 1997 is less than one percent of the information available for him in 2050. In the information society, the development of ICT in schools and universities as a means to develop student's skills is necessary to solve complex problems in various areas of knowledge (Dawson

et al., 2006). Therefore, given the discussions, it seems that over the next decade, ICT phenomenon maintains its position as one of the main axes of change and innovation in the field of education and learning that one of the main axes will be students, therefore, in order to productivity and the development of student's skills of ICT in education it is necessary to examine the factors that are effective in developing the use of ICT. Therefore, this study is conducted to identify and analyze the effective factors in use of information and communication technology (ICT) by the students of technical and vocational disciplines of Tehran province.

Investigation Method

The nature of this study is quantitative and functional. The population of this research consists of four students of art high school students of technical and vocational disciplines of agriculture in Tehran province in academic year of 2010-11 which were selected 275 persons using the Census method. The questionnaire of this research have open and close question. The initial questionnaire was placed at the disposal of experts to examine the validity of it and technical defects will be corrected in it. The average of reliability coefficients for the questionnaire sections determined with 30 students (out of sample) pre-test and Cronbach alpha coefficient a=0.79.In order to measure the variables in the questionnaire were considered five sections of individual and family characteristics, environmental conditions, the use of ICT skills, use of ICT, student's attitudes towards ICT. Spss software for data processing and descriptive and inferential statistical methods were used.

RESULTS AND DISCUSSION

Results

The results show that the average age of the students in the study was 17.6 years.59.6 % of the respondents are living in the city. 95.6 % of father's level of education of students is diploma.93.5% of respondents indicated that they had no job. Family income of 1/86 percent of the study population was ten million Rials per month.

Table 1: Evaluation and description of individual and family characteristics of students

Variables	Items	Frequency	Percent	Cumulative percentage	Descriptive statistics
Age	17-17.9	119	43.3	43.3	Average=17.6
	18-18.9	146	3.1	96.4	SD=0.56
	19 and up	1	3.6	100	
	total	275	100		
Father's education	Illiterate	64	23.3	23.3	Average= Guidance
	Elementary	41	14.9	38.2	
	Guidance	118	14.5	81.1	
	diploma	40	4.4	95.6	
	Technicians and up	12	4.4	100	
	total	275	100		
Family residence	City	164	59.6	59.6	Mode = City
	Village	111	40.6	100	
	total	275	100		
Employed	Yes	18	6.5	6.5	
	No	257	93.5	100	
	total	275	100	-	

Field of Study	Animal Affairs	52	18.9	18.9	Mode =
	Farm Affairs	71	25.8	44.7	Farm Affairs
	Wood Industries	65	23.6	68.3	
	Food Industries	35	12.75	81.05	
	Machines	52	18.90	100	
	total	275	100	-	
Educational level	Second year	123	44.7	44.7	
	Third year	152	55.3	100	
	total	275	100	-	
Household income	Less than 5000(Thousand rials)	10	3.6	3.6	
	5001 to 7000 (Thousand rials)	79	28.7	32.3	
	7001 to 10000 (Thousand rials)	148	53.8	86.1	
	Upper than 10000(Thousand rials)	38	13.8		

Skills of Art Students

The obtained results in relation to familiarity and proficiency of art students with computer show that the amount of familiarity and proficiency of art students in field of copying and saving files is higher than in other cases. After this case, using of peripherals such as printers will be at the next category and had the lowest skill and knowledge in field of solving primary problems in hardware and software. The average of familiarity and proficiency of art students in using of computer is 2.6 that show art students have little knowledge about the use of computers. Summarize of results are presented in Table 2.

Table 2: Familiarity and proficiency of art students in using of computer

Field of activity	**The average percent**	**SD**	**Coefficient of variation**
Copying and Saving	3.67	0.63	0.17
using of peripherals such as printers, scanners and ...	3.85	0.74	0.19
Working with Applications of Word	3.37	0.76	0.22
Installing the software	2.91	0.82	0.28
Resolving Primary disadvantages when working with computer	2.24	0.78	0.34
Working with Powerpoint software	2.36	0.81	0.34
Working with graphics software	2.53	0.89	0.35
Working with Excel software	2.12	0.79	0.37
Resolving Primary disadvantages of software	2.01	0.85	0.42
Resolving Primary disadvantages of hardware	1.82	0.88	0.48

Very low = 1Very high = 5

According to the obtained results are seen that the amount of familiarity and proficiency of studied art students to internet in the field of chatrooms, newsgroups, social networks and use e-mail are more frequently. The average of student's proficiency in the use of Internet is moderate. Summarize of results in Table 3 are presented.

Table 3: The amount of familiarity and proficiency of art students to use of internet

Field	The average Percent	SD	Coefficient of variation
Chat	4.31	0.61	0.14
Newsgroups and social networks	3.42	0.73	0.21
Use of Email	3.78	0.81	0.21
General search on Internet	2.56	0.56	0.21
Find information from search engines.	3.23	1.31	0.40
Discussion groups	2.89	1.21	0.41
Build a website	1.85	1.43	0.77

Very low = 1Very high = 5

The results of assessing the important aspects of using IT by students in technical and vocational schools showed that the most important area of information technology for students is entertainment and using e-mail. And use of information technology to obtain information in agriculture is less important than other fields.

Table 4: Field of students using the Internet

Field	The average Percent	SD	Coefficient of variation
Entertainment	3.31	0.72	0.21
Obtaining general information	3.12	0.91	0.29
Obtaining scientific information	2.01	1.21	0.60
Knowing the rules and regulations and responding to assignments	1.05	0.81	0.77
Obtaining new information on agriculture	1.24	1.03	0.83

Very low = 1Very high = 5

The results of the study related to the art student's use of ICT in Table 5 indicate that the average hours of art student's use of the Internet at the Conservatory and home is 8.4hours per week and the average hours of art student's use of the computer are 2.9.

Table 5: Distribution of student's usage hours of Internet and Computers

Field	Hours of using technology equipment	Frequency percent	Other statistical characteristics
Internet	Less than 5 hours per week	31	Average=8.4
	Between 5 to 10 hours	82	SD=1.37
	More than 10 hours	162	
	Total	275	
Computer	Less than 5 hours per week	63	Average=2.19
	Between 5 to 10 hours	181	SD=1.11
	More than 10 hours	31	
	Total	275	

According to the results of the study on student's familiarity and proficiency in English is seen that dominance of teachers on English language in listening is more and translation from Persian to English is lower than in other cases. The results showed that average of student's familiarity and proficiency in English is much less.

Table 6: Familiarity and proficiency of art students in English

Field skills	Average percent	SD	Coefficient of variation
Listening	2.89	0.97	0.33
Reading	3.2	1.12	0.37
Speaking	2.56	1.17	0.45
Writing	2.79	1.32	0.47
Translating from English to Persian	2.42	1.25	0.51

Very low = 1 Very high = 5

Among the effective environmental conditions in the use of ICT, the necessary and sufficient facilities and equipment (Computer, Telephone, Modem) in most centers are most important, and the availability of facilities and auxiliary equipment such as scanners, printers are the least important in centers. Summarize the results are presented in Table 7.

Table 7: Comments of students regarding the importance of environmental factors in the use of ICT

Environmental factors	Average percent	SD	Coefficient of variation
Lack of time and space limitations in the use of Internet	4.36	0.72	0.165
the necessary and sufficient facilities and equipment (Computer, Telephone, Modem)	4.15	0.71	0.17
Access to the Internet at school	3.26	0.64	0.196
Existence of internet-equipped computer center	4.21	0.83	0.197
Existence of direct line of the Internet in the Classroom	3.92	0.95	0.24
Flexibility managers in placement of the facilities to educators	4.41	1.21	0.27
Appropriate conditions of temperature and light when working with computer and Internet	3.41	1.11	0.32
Relax and feel comfortable when working with computers and the Internet	3.47	1.18	0.34
Not crowded Computer Site when working with computers	2.98	1.21	0.40
Existence of experts to solve problems users when working with Internet	2.87	1.16	0.40
Availability of facilities and auxiliary equipment of School Site such as scanners, printers, ...	2.26	1.28	0.56

Very low = 1 Very high = 5

Based on the collected information in conjunction with the effective economic factors the use in of ICTIs seen Family income and low-cost connecting to the Internet has higher priority by students.

Table 8: Comments students regarding the importance of economic factors in the use of ICT

Economic Factors	Average percent	SD	Coefficient of variation
Family income	4.65	0.86	0.18
low-cost connecting to the Internet	4.52	0.91	0.19
Having a personal computer	3.86	1.24	0.32

Very low = 1 Very high = 5

Student's attitudes towards the use of ICT were measured with 11 items. In order to qualitative description of the student's attitude variable towards the use of ICT, distance of standard deviations from the average was used and the attitude of students was divided into three levels. The results showed that 24 percent of students have completely positive attitude towards ICT use. 58 percent of student's attitudes towards use of ICT are moderate and about 18 percent of students have a positive attitude to ICT. In general, student's attitudes towards use of ICT are moderate. Summarize the results in Table (9) are presented.

Table 9: Student's attitudes towards the use of ICT

Student's attitudes	Average percent	SD	Coefficient of variation
The Internet is interesting and attractive than other methods of information	4.01	0.62	0.15
Working with ICT reduces the relationship between teachers and art students	3.42	0.56	0.16
use of Internet is increasing interest in education	3.41	0.78	0.22
Given the rapid pace of developments today, working with the Internet is vital in educational activities	3.51	0.92	0.26
Working with ICT reduces the possibility of obtaining practical experience in agricultural education	2.91	1.18	0.36
The use of ICT provides new and updated information	3.25	1.27	0.39
use of ICT in agriculture causes the interest and motivation of students to study in the fields of agriculture	2.83	1.15	0.40
Advantages of the using Internet is more than disadvantages for students	1.97	0.89	0.40
Working with ICT increases scientific knowledge of agriculture students in the field	3.41	1.26	0.42
ICT can be used in teaching and learning issues	2.91	1.31	0.45
Working with ICT reduces the social relations of agricultural students with people	3.12	1.32	0.45
Working with ICT increases commitment, perseverance, creativity and discipline of agricultural students in academic affairs	2.08	1.11	0.53

Completely disagree = 1, completely agree = 5

To investigate the relationship between student's use of ICT and the studied, Pearson's correlation coefficient, and Cramer is used. To describe the correlation between variables, Davis was used as a known model. The results of correlation in table 10 show that there is significant relationship between

student's attitudes to use of ICT, student's parent's educational level, economic factors, computer skills, Internet skills, proficiency in the English language and their use of information and communication technologies. In other words, art seekers that their fathers have higher education, and are more familiar with the Internet, computers and English language, and have a more positive attitude to ICTand use of information and communication technology more.

Table 10: Correlation between student's use of information technologies and communication and studied variables

Independent variable	Correlation coefficient	Pearson's correlation coefficient	Describing the correlation
Student's attitudes to ICT	Pearson	o.61*	Relatively strong
Father's education	Pearson	0.89**	Very strong
Economic Factors	Pearson	0.69*	Relatively strong
Computer skills	Pearson	0.91*	Very strong
English language proficiency	Pearson	0.76**	Very strong
Internet skills	Pearson	0.71*	Very strong
Environmental Factors	Pearson	0.81	Very strong
Student employment	Cramer	0.41	Medium

**and ** are significance respectively in level of 0.05 and 0.01*

The Use of Information and Communication Technology Based on Separation of Years and Majors

Comparative study of the use of information and communication technology and Communication of students by academic year were performed using T test of Student T. The results in table 11 showed that with 95 percent there are significant differences between students in different academic years and use of information and communication technology.

Table 11: Comparison of the use of ICT in the school years

Academic year	Use of ICT	SD	T	Significant level
Second year	3.91	1.32	1.95	0.04*
Third year	6.71	1.14	-	-

**and ** are significance respectively in level of 0.05 and 0.01*

Evaluate and compare the average usage of ICT according to field of study was performed using the test. The results showed that with 95 percent there are significant differences between the use of ICT and communication between different academic fields. In order to clarify the location of the differences, the LSD test was used. As Table 12 shows that students in the fields of food industry in relation to the use of ICT with other fields, there are significant differences and no significant difference between other fields.

Table 12: Comparison of the use of ICT in various academic fields

Field of Study	Use of ICT	SD	F	Significant level
Crop Science	2.98 a	1.33	-	-
Animal Science	3.1 a	1.28		
Machines	4.32 a	1.25		
Wood Industries	3.46 a	1.16		
Food Industry	7.83 b	1.12	3.56	0.03

The same letters indicate no statistical difference
**and ** are significance respectively in level of 0.05 and 0.01*

Evaluation and comparison the mean of student's skills toward computer and internet and attitude toward usage of ICT was performed using examination. The results showed that with probability% 95 there are

significant differences between those who have a computer and internet skills with the use of ICT. In order to realize the differences, the LSD test was used. As shown in Table 13, there is a significant difference between the art students that have more positive attitude towards the use of ICT and the amount of use of ICT.

Table 13: Comparison of skill average and attitudes of art students towards ICT and its usage

Variable	The use amount of ICT	Average	SD	F	Significant level
Computers and Internet skills	less than 5 hours(a)	2.36	1.12	-	-
	Between 5 to 10 hours(a)	2.72	0.86		
	More than 10 hours(b)	3.74	0.74	3.28	0.04*
Attitude	less than 5 hours(a)	2.46	1.12	2.93	0.03*
	Between 5 to 10 hours(b)	3.21	1.08	-	-
	More than 10 hours(b)	3.41	0.93		

The same letters indicate no significant difference.
**and ** are significance respectively in level of 0.05 and 0.01.*

Discussion and Conclusion

Research findings showed that studied students are little familiar with the different skills of student's English. Knowledge and skills average of students towards computer use was 2.6 that indicate students have little familiarity with computer use. However, the level of knowledge and skill of students in the use of computer and English language can have a significant impact on their use of ICT services in different educational activities. The obtained results in this relationship have been confirmed in studies of Karimi and Asadi (2006), Atashi and Movahed (2007), Mashhadi *et al.*, (2007), Ghasemi *et al.*, (2011) and Rezaei *et al*., (2012).

The results of the research in the context of use amount of internet during the week showed that about half of the students are used the Internet more than 10 hours. The main reason for students to use of information technology is entertainment and use of electronic mail and information in the field of agriculture has been less important in terms of application areas.

Without doubt, the main reason for this topic can be found in the simplicity and ease of referred cases, learning and easy application of them by art students, their age and educational nature and also, lack of necessary of student to searching information in the field of study for doing educational projects.

Aspects of using the Internet in chat areas, news groups and social networks have been more frequently. The main reason can be attributed to the low introduction of student to other services. In such circumstances, it seems that part of this problem can be overcome by conducting regular related training courses and gave them the necessary information about familiarity of student with Web browser software and search methods for required topics and beneficial use of ICT.

The results showed that in relation to associated factors with the development of ICT applications in agricultural education in level of Vocational-Technical Conservatory, environmental factors is one of the most important factors. In section of environmental factors can be pointed to the lack of time and place restrictions on the use of the Internet and the necessary and sufficient equipment. Of course, one of the primary conditions for student use of ICT is making required hardware facilities such as computer center with internet access and sufficient number of computers and available, auxiliary equipment and Other

Items. In this regard, it seems that qualitative aspects of agricultural education in education has not been considered in parallel with quantitative growth of agricultural education, and required hardware facilities such as computers and the Internet has not increased in proportion to the quantitative growth. However, according to current limitations for adequate access of students to facilities, proper management and developing and implementing a regular schedule can provide a basis for more students to use of the available resources. In this regard, the removal of restrictions on time and place (if possible) will have an important impact on improving student access to computers and the Internet. The obtained results in this section and the importance of access to facilities have been approved in numerous studies such as Zhang (2001) Milladi and Malek (2010), Karimi and Asadi (2006), Puratashy and Movahed (2007), Atashak and Mahzadeh (2010), AbbasiAsl *et al.,* (2011) and Rezaee *et al.,* (2012). Research findings showed that a significant relationship exists between the student's attitudes towards the use of ICT and its usage. Results of this research are similar to research results of Karimi and Asadi (2006), Puratashy and Movahed (2007) and Mashhadi *et al.,* (2007), Nasiri and Taghipour (2009) and Hejazi and Hashemi (2011). Based on the results of economic factors had a significant correlation with the use of technologies. The results showed that family income, low-cost internet connection and having a personal computer has been a higher priority terms of the studied students. Results of this research are similar to research results of Puratashy and Movahed (2007) and Atashak and Mahzadeh (2010).

The results showed that with 95 percent probability there were no significant differences between groups of students in different academic years and acceptance of use of Information and Communication Technology. Results of this research are similar to the results of research and Hejazi and Hashemi (2011). Also there is a significant difference between the useing of ICT between disciplines.

Based on the results and presented discussion

The following recommendations are presented based on the results and discussion:

- According to the results, managers and planners of art schools provide the conditions by holding and expanding quantitative and qualitative of English courses and computer and Internet training, preparation and distribution of educational pamphlets to increase knowledge and skills of students in related fields and they can properly use the various services of the Internet in their educational activities. In this regard, can made a condition of graduation for students such as providing certificate of participation in short-term courses in the field of familiarity with web services, especially in terms of familiarity with the superior styles of searching the information on the Internet and also the national and international scientific databases.
- According to results of research on environmental factors, important and effective Environmental factors on the use of ICT students are including: Lack of time and place restrictions on the use of the Internet, existence of necessary and sufficient facilities and equipment, and access to the Internet in School. And the present conditions of factors in technical and vocational agricultural schools were not in good condition. It is recommended to act to create computer centers in proportion to the number of students, equipping, and strengthening computer centers and improving the quality of Internet by adopting the necessary measures and allocation of required funds and cridect. More and better-equipped computer centers can help students to use Computer and the Internet and abilities of them.

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