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Study of Skills and Competencies Needed by Teachers and Students in Use of Information and Communication Technology (ICT)

MAHNAZ SAMADI HONARVAR
M.Sc., Educational Management Branch Roodehen
Iran
MEHRI GHANIZADA GRAILY
PhD Student in Educational Administration
Science and Research Branch, Islamic Azad University, Tehran
Iran

Abstract:

This article evaluates the skills and competencies needed by teachers and students in the use of information and communication technology. The population consisted of all teachers and high school students in Tehran are formed. According to Morgan, Secretary of sample size 375 and 384 multi-stage cluster sampling method was selected students. The assessment tool included 38-item questionnaire developed by the researchers. Validity and content validity using expert judgment to determine the reliability of the test run on the sample of 40 subjects with a coefficient of internal consistency (0.86), it was. Both descriptive and inferential data collected by appropriate tests (e.g. 2χ) is analyzed. Results showed that 95% of all four categories of skills in terms of teachers and students in the use of information and communication technology are essential.

Gender of student scores in the three categories of skills (cognitive, communication and technology) influence mean scores than girls in all three components of mean girls, but this difference was not significant attitudinal skills.

Mean scores on the four components of male teachers than female teachers are out. The result is that with increasing student familiarity with ICT, the importance of communication skills in their eyes widened.

Key words: ICT, skills, attitude, communication skills, cognitive skills and technical skills.

Introduction

Education is a key element in the development and dissemination of knowledge and education of youth are the future of learning is an integral part of their program is. In the information age and the use of ICT in education is necessary. Notable in this regard is that IT should be a process of educational innovation orientation is not a mere exercise of its, this will enable teachers to teach skills that not only use hardware and software tools to enhance the quality of education in the world but also producers of knowledge and technology in this area (Attaran, 2006). Teachers need to be aware of developments in education are subject to the principle of information and communication technology leads to better learning (Saeidian Nezhad, 2006).

One of the advantages of using information and communication technology in teaching and learning is to motivate students to study. The role of human resources, especially teachers in providing students with easy access to new technologies in the classroom is important (Pelgarum, 2003). As a result, the key to effective use of technology to advance student learning is the teacher. But teacher who qualified use the technology. The teachers are the main actors to enter and successfully integrate computers into the educational system to-be (Fazeli, 1997).

The use of information and communication technology in teaching and learning and to broaden and deepen students' computer literacy and information, important mission shouldered the burden of education to achieve this important endogenous and sustainable development of the country's leading will affect the educational system (Haji, 2002).

Teaching skills in information and communication technology has three main objectives, which include: 1) developing and deepening knowledge of computers, information technology, and communications between its teachers, 2) be familiar with the intelligence community and the relationships of modern education and the role of teachers and students, and 3) knowledge of teachers and students with the skills and competencies and capabilities of modern information and communication technologies and their use in teaching and learning. Theoretical and empirical review suggests that use of information and communication technologies by teachers and students to have a group of professional skills and competencies necessary to:

Communication Skills: Communication process of exchanging data from a source transmitter to a receiver source. The bulk of our waking time is going to interact and communicate with others. On this basis, the way we communicate with others in a decisive role in how our lives. Rules and regulations vary according to the human system at a specific time in which they operate. Such a situation specific and complex social and communication skills to demand and this phenomenon is not easy to learn other communication skills and attention to professional and systematic (Public Education Administration, 2006).

Cognitive skills: the perspective of cognitive theorists, cognitive skills, the integration of new knowledge with knowledge-her previous one. They believe that learning is an internal process and is permanent.

Man throughout his life, the search and discovery of relations between the phenomena, on the basis of this discovery, production will expand your knowledge and understanding of the students is active and curious creatures. That's why teachers recommend learning environments where students can organize such-an insight and discovery reach (Shabani, 1992).

Skills Attitude: Attitude is a multidimensional concept consisting of cognitive, emotional and behavioral changes that will determine how people behave. Each view has a different theme, which can be people, things, events and even the odd (Karimi, 2000).

Technical skills: the application of knowledge, methods, techniques and tools required to perform the specific tasks that can be obtained through experience and training tests (Kabiri, 1999). ICDL courses provide opportunity for teachers with their mastery to create an educational CD and educational packets using the Internet to provide higher education. In relation to the impact of ICT on teaching-learning process and much research has been done in other functional areas of application. For example Sharifi and Eslmiyeh (1999), Soleimani (2004) showed important role of teachers in the use of ICT in education. National Center for Education Statistics (2004) in a study entitled "The Role of Information Technology (ICT) to increase the level of students in America", the academic level of the students and their use of computers to collect and analyze data in different age groups playing with the relationship has approved. Lowe (2004) to understand the effects of ICT in educational activities, research and administrative levels showed that the use of ICT in learning activities leading to the executive level interaction and the development of learning between teacher inclusive.

The main objective of this study was to identify the skills and competencies needed by teachers and students in the use of information and communication technology (ICT) has their own point of view. To accomplish this goal, we examined four questions raised are as follows:

- Teachers and students to use ICT to what extent the communication skills they need?
- Teachers and students to use ICT to what extent the skills and attitudes they need?

- Teachers and students to use ICT to what extent the cognitive skills they need?
- Teachers and students to use ICT technical skills needed what extent?

Research Methodology

The objective of the study was the descriptive survey.

The population consisted of all teachers in secondary schools in Tehran, who have 11 545 patients (3448 males and 8097 females) were all high school students in Tehran that the number of 166,852 persons (71,063 males and 95,789 females) between teachers, 375 students (including 112 males and 263 arbitrary) and 384 students (including 164 males and 220 females) with Morgan and were selected from a stratified cluster random sampling. For example, the first instruction of the nineteen districts of Tehran clustered into five geographic North, South, East, West and Central Division and the training area was selected in each domain method.

In order to assess the skills and competencies required in the use of ICT skills in four categories of the questionnaire consists of 38 questions that (communication, attitudinal technological cognitive and) are available to measure the, is used. Validity and content validity is determined by experts and its reliability by performing tests on a sample of 40 subjects coefficient of internal consistency (86/0) were identified. To analyze the data, descriptive statistics and statistical tests were performed as 2 χ.

Findings

The findings of this study are presented in two parts as follows.

A) Description of data: Indicator describes four categories of skills were assessed in two groups of teachers and students, the results in Table 1 are shown briefly.

Table 1: Central Indicators of Distribution for Variables

Index	Skills and competences of teachers				Skills and competences of student			
	Communication	cognitive	Attitude	Technical	Communication	cognitive	Attitude	Technical
Mean	4.24	4.24	4.199	4.28	4.03	4.039	4.18	4.03
Middle	4.43	4.43	4.33	4.33	4.16	4.15	4.33	4.16
Mode	5	5	5	5	4.5	4.46	5	4.5
Elongation	-1.21	-1.21	-0.94	-0.94	-0.78	-0.70	-0.98	-0.78
Extent of the change	3.71	3.71	3.33	3.33	3	3.56	3.33	3
Minimum	1	1	2	2	2	1	2	2
The maximum	5	5	5	5	5	5	5	5

As the figures in Table 1 show Tremblay middle grades teachers in communication skills and other skills are more technical than the median score for students in the skills and attitudes and communication skills more than others. The distance of significant difference between mean, median, mode and rate of strain placed on all components found in most cases that indicate a close one is the lack of normal distribution of data.

B) Analysis of data to answer questions regarding the type of data 2χ univariate test was used. To do so, because the frequency observed for low and very low options, in some cases, less than 5, and the error was calculated to test 2χ, as a result of these two options were merged and a new encoding to reduce measurement error.

Table 2: Frequency Response options for questions related to teachers 'Communication skills '

Items	Frequency observed	The expected frequency	Dif. of (Fo-Fe)
Low	10	93.8	-83.8
The average	44	93.8	-49.8
High	160	93.8	66.3
Very high	161	93.8	67.3
total	375		
df=3		Sig=0.05	$\chi 2$=196.275

Table 3: Frequency Response options for questions related to students 'communication skills ′

Items	Frequency observed	Percent	The expected frequency	Dif. of (Fo-Fe)
Low	10	2.6	96.0	-86.0
The average	67	17.4	96.0	-29.0
High	170	44.3	96.0	74.0
Very high	137	35.7	96.0	41.0
total	384	100		
df=3			Sig=0.05	$\chi 2$=196.275

2χ values obtained in response to the first question teachers (196.275) and students (214.271) in the 0.05 with 3 degrees of freedom is greater than the critical value of the test (7.81). As a result, we can conclude with 95% confidence between the observed and expected frequencies in these areas there are significant differences. After communication skills and competencies for teachers and students to use information and communication technologies are essential to high and very high levels.

Table 4: Frequency Response options for questions related to teachers' cognitive skills

Items	Frequency observed	Percent	The expected frequency	Dif. of (Fo-Fe)
Low	5	1.3	93.8	-88.8
The average	53	14.1	93.8	-40.8
High	150	40.0	93.8	56.3
Very high	167	44.5	93.8	73.3
total	375	100		
df=3			Sig=0.05	$\chi 2$=192.712

Table 5: Frequency Response options for questions related to students' cognitive skills

Items	Frequency observed	Percent	The expected frequency	Dif. of (Fo-Fe)
Low	5	1.3	96.0	-91.0
The average	72	18.8	96.0	-24.0
High	204	53.1	96.0	108.0
Very high	103	26.8	96.0	7.0
total	384	100		

df=3	Sig=0.05	$\chi 2$=214.271

To answer the second question survey response rate from teachers 2χ (192.712) and students (214.712) 0.05 level with 3 degrees of freedom is greater than the critical value of the test (7.81).

As a result, we can conclude with 95% confidence between the observed and expected frequencies in these areas there are significant differences most of the options are as many and too high. The cognitive skills and competencies of teachers and students to use information and communication technologies are essential to high and very high levels.

Table 6: Frequency Response options for questions related to teachers' skills and attitude

Items	Frequency observed	Percent	The expected frequency	Dif. of (Fo-Fe)
Low	11	2.9	93.8	-82.8
The average	47	12.5	93.8	-46.0
High	144	38.4	93.8	50.3
Very high	173	46.1	93.8	79.3
total	375	100		
df=3			Sig=0.05	$\chi 2$=280.190

Table 7: Frequency Response options for questions related to students' skills and attitude

Items	Frequency observed	Percent	The expected frequency	Dif. of (Fo-Fe)
Low	7	1.8	96.0	-89.0
The average	44	11.9	96.0	-52.0
High	166	43.2	96.0	-0.70
Very high	167	31.5	96.0	0.71
total	384	100		
df=3			Sig=0.05	$\chi 2$=291.608

To answer the third question 2χ values obtained from the responses of teachers (190.280) and the response of the students (214.229) 05/0 level with 3 degrees of freedom is

greater than the critical value of the test (7.81) years. As a result, we can conclude with 95% confidence that the frequency of observed and expected no more significant in the context of high and very high response items. The skills and competencies of the attitude of teachers and students to use information and communication technologies are essential to high and very high levels.

Table 8: Frequency Response options for questions related to the teachers' technical skills.

Items	Frequency observed	Percent	The expected frequency	Dif. of (Fo-Fe)
Low	7	1.1	93.8	-89.8
The average	43	11.5	93.8	-50.8
High	144	38.4	93.8	50.3
Very high	184	49.1	93.8	90.3
total	375	100		
df=3			Sig=0.05	χ2=301.871

Table 9: Frequency Response options for questions related to students' technical skills

Items	Frequency observed	Percent	The expected frequency	Dif. of (Fo-Fe)
Low	7	1.8	96.0	-89.0
The average	65	16.9	96.0	-31.0
High	190	49.5	96.0	94.0
Very high	122	31.8	96.0	26.0
total	384	100		
df=3			Sig=0.05	χ2=176.690

To answer the fourth research question 2χ values obtained from the responses of teachers (227.208) and students (191.604) 05/0 level with 3 degrees of freedom is greater than the critical value of the test (7.81). As a result, we can conclude with 95% confidence between the observed and expected frequencies in these areas there are significant differences skills and technical competencies for teachers and students to use information and

communication technologies are essential to high and very high levels.

Discussion and Conclusion

Communication skills and competencies for teachers and students to use information and communication technologies are essential to the high and very high. Because communication is the means by which the basic functions are formed.Communication skills is social process by which information, ideas, opinions and feelings of an individual or group with a common language or behavior will be transferred to the other side and led to the understanding, coordination and perception or behavior between transmitter and receiver unit (Mirkamali, 2004). Technical skills and competencies for teachers and students to use information and communication technologies are essential to high and very high levels.

Soundness of technical skills in the use of information and communication technology skills, to learn a few strains of impact and effectiveness of as a result, some of the educational activities of the learner must reach a level of skill that would personally and independently the skills to do it. Technical skills, application of knowledge, methods, techniques and tools required to perform the duties of experience, testing and education achieved (Kabiri, 1999).

Based on the results and impact the ability of the four cases examined in this study and the need to implement the components of ICT in teaching-learning process and update training services etc. It is quite evident and ignoring rapid and dramatic growth and technology on human society is impossible.

Today, amazingly rapid spread of information and communication technology (ICT) on many aspects of human life, including the education of the basic necessities of human life is considered to be affected. Also, technological advances led

to the development of appropriate competencies required students become competent in the current changing world, which are relevant today, including critical thinking, public authority, problem solving and decision-making (Ghoorchian, 2003). Information and communication technology education supplement, not substitute for, the purpose of improving the efficient development of educational resources, especially human resources. Development and use of information and communication technology tools promote new concepts, low cost, easy access to information provided to teachers and students.

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