

## Evaluation of the use of ICT Amongst Elementary School Teachers in Iran

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**Abstract:** The aim of this research is the evaluation of the use of ICT amongst the teachers of elementary schools in Iran. The studied society includes all elementary school teachers in Iran. 358 samples have been selected by the random sampling method. The research method was done by a measuring method and to gain the special aims of the research, the question paper and interview methods are used. The X2 test and the two dimensional tables have been used to analyse the results of descriptive and comprehension statistics. The final conclusion shows that teachers are weak in ICT use in all five subjects.

**Key word:** ICT, ICT Knowledge, Information knowledge, ICT Knowledge Techniques.

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### INTRODUCTION

ICT influence has made quick changes in technology, in the world's economical, political and social information. However, with the influence of this technology the educational system has been affected by it and ICT has affected the quality and quantity of teaching, learning and research in training teachers and teaching students, so that this technology has made chances for teachers and students to communicate to each other much more effectively in teaching and learning, both formally and informally (Hakimi, Amir Hossein, 2004). Not only do teachers and students need education of teaching and learning at computer knowledge but also at using a variety of educational soft ware's. Moreover, they need to learn how to use ICT in classroom activities. Quality of teachers' work in all the countries predicts mainly students' learning (Hassanzadeh, Ramezan, 2006). So teachers' learning would be assured with the help of ICT because these technologies are devices which can make teachers' learning comfortable on one side and also help them to use the whole potential benefits of technology to expand students' learning. According to this, ICT is introduced in a new era and in the traditional teaching methods and presents new experiences of teaching and learning for teachers and students. So the educational surrounding should use this characteristic for easy availability to information (Ghaffari, Esmail., 2004). In this research, an attempt is made at expanding this new technology amongst teachers by a proper model provision of ICT so that, besides providing digital knowledge at schools, it causes teachers to advance their awareness and knowledge in relation to ICT (Fathian, Mohammad., 2004). The current research tries to gain the aims stated below:

- A. Definition and evaluation of using availability to information (Data recycling) among elementary schools teachers
- B. Definition and evaluation of using information management (Information use and categorisation) amongst elementary school teachers
- C. Definition and evaluation of using information amalgamation and fragmentation (interpretation, information manifestation, abridgement and information transferring) among elementary schools teachers
- D. Definition and evaluation of using information evaluation (quality judgement, profiting and information benefit) among elementary schools teachers
- E. Definition and evaluation of using information production (Information design and production) among elementary schools teachers

#### ***Information Limitations with ICT Knowledge:***

One of the studies that has been done abroad and is close to the subject of this research is the work of Yangan and his colleagues that have considered a subject in an essay about the effect and role of IT at elementary schools classrooms in Hong Kong to show how social and economical changes and ICT pressure affect the schools of Hong Kong and their students daily drills (American Library Association., 1989). They concluded that it was very essential for teachers and schoolmasters of schools to be familiar with the use and extension of ICT. Writers also emphasised the essence of research and more projects for proving the success effects of IT educational programmes on the professional progress of teachers, the graduated and the employees in Hong Kong. In another study by Myrick, *et al.*, (1999) the emphasis is on using ICT in elementary and secondary schools of the US and writers have stated the difficulties teachers had at using computer techniques. In another part of this research, teachers' attention and consideration to the use of the Internet and electronic letters and their role in supervising these letters, are deliberated. Newhouse has considered ICT effects on

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students, learning surroundings, teachers and educational training and techniques and providing the capacity of this technology in schools in 2003. In his view, technology has been made to solve problems and increase production so it is clear that we expect educational technology to advance with respect to these matters. The educational technology should affect educational results and expenses because if one selects the most beneficial educational technology it means that the learning of the student becomes more beneficial which means an increase in the amount and value of the results (Breivik, P.S., 2005).

In Tony Hont's view, ICT is a plan to define reformations by using teaching learning territory which includes using computers, public media, libraries and skills in information selection. Moreover, ICT includes information knowledge; information techniques, information studies, computer skills, computer knowledge, information skills and information studies. As Hont says each of the mentioned factors causes simultaneous growth and progress of teachers and students in the teaching and learning contexts (Kautto-Koivula, K., 1996). Ms Patricia San Breivik in her new essay in *Change* magazine entitled as learning and information knowledge in 21<sup>st</sup> century concludes that from the aspect of availability and information use, nowadays the graduands in schools and universities do not have enough techniques or their information is limited whereas nowadays university and school students are not acquainted with any powerful apparatus of information gathering. These instruments such as the Internet are appropriate as an advanced device and are readily available for information gathering (Keen, K., 1991).

In this country Hakimi inferred in his MA research studies and considerations that teachers are not prepared to use ICT in teaching. Needed services and education for teachers have been very limited. The results of this research show that teachers are not well prepared to use a computer and its dependant software and hardware[9]. Moreover, teachers' responses to question papers and the analyses of the question papers show that using computer soft ware and hard ware is one of the frequent problems of teachers. In a research by Mohammad Fathian and Masoomeh Noroozi in Elm-O-Sanat University an attempt was made to recommend a proper model for teaching the techniques of IT and of computer knowledge to high school teachers by considering the polls by teachers. So, it has initially paid attention and considered the condition of computer knowledge in educational ministry especially at high school level so the results of the round research and polls of the research at this level about the techniques they have learnt and the techniques they think that they need were presented (Ololube, N.P., 2005a). The results showed that the teachers have shortcomings in computer knowledge and techniques. It is worth mentioning that a plan called progressing information and communication technique use which is called *takfa* (abridged in Persian) has been delivered to the government management and plans by the high council of communication and information ministry. In this plan the expansion is prognoses of the virtual progressing web and of making the making possible of the schools' access to this web, teachers' training, and schools facilitation to computer, educational materials provision on the basis of computer surrounding and facilitating and expanding technical centres of computer teaching (Ololube, N.P., 2005b). Regarding the importance in the national programme to expand using information and communication techniques to extend human sources, the advancement of more and quicker information support is an important priority, so that using ICT at schools and revolution in the process of education and learning can be regarded as the most important letter and as the ground for national advancement. On the road to this goal, the educational ministry has established an office of ICT progress and provided and performed various projects and then with cooperating with private sections to extend this new technique at schools and different parts of the educational organisation (Ololube, N.P., 2006). The plan of progressing information and communication techniques has been designed for the maximum of preparation of the country in the information era. This plan is seeking general knowledge and programming, using facilities and providing ways for the future of Iran. *Takfa* is an attempt to produce a national programme and an advancement according to a structured process that has both coordination and clear performing aims which are defined. *Takfa* strategic plans are to gain national programme objectives, expanding information and communication technique, expanding digital knowledge and spreading national culture and language (UNESCO., 2003). The main aim of the research is in preparing the country to attend to the information era to gain cultural and economical advancement and also expanding grounds and chances to provoke the private sections as key and useful sources to expand ICT. According to this, all the performing organisations should try to organise their activities by using ICT. One of the goals of the Iranian future plan is expansion of national information and communication technique and decreasing the digital difference and making it professional at world class level. The digital difference states the difference between advanced and deprived countries on advancing support and using techniques of ICT. By other words the digital difference is the indicator of the difference between the situations of the preparation of different countries in the information community. The national forecasting programme of the expansion of ICT has been designed in a way that the digital difference can be decreased in the world and the country can get to a proper degree of preparation of attendance and activity in the information community.

**Recommending a Model for Knowledge (ICT):**

Every discussion about the ICT knowledge should begin with the concept of information knowledge. The expression, information knowledge, was invented by information and library specialists in the 1970s. The US library union defines information knowledge as: In information knowledge, one should be able to figure the needed information out and put, evaluate and put and use effectively the information (US Libraries Council, 1989). Also the information knowledge includes lots of dependent techniques which relate to leading, searching, information and communication. So specialised ICT knowledge includes the ability to use technological apparatus like: searching, unscrambling, information categorising, communication, and availability to digital surrounding and information use (Yusuf, M.O., (2005a). Also ICT knowledge means using digital technologies, communicative apparatus, availability to communicative channels and informative channels, information management, information amalgamation and fragmentation, and evaluation and producing information to avail the knowledgeable performance in a society. This definition reflects a belief about ICT knowledge as a chain that ends in measuring different aspects of knowledge of daily life techniques to changeable benefits in ICT technique. In this definition the five combinations of ICT knowledge are listed. In these five sections a complex of techniques and knowledge are presented in a way that possess increasing knowledge. These five combinations are defined below:

- A. Availability of information: Knowledge about how to gain or restore information
- B. Information management: Information use and categorisation in current organisational design
- C. Information amalgamation: Information interpretation and manifestation which need abridgement, resemblance and differentiation of information and data
- D. Information evaluation: Judgement of quality, communication, profit or benefit of information.
- E. Information production: Information production by invention, establishment and designing of information in digital surrounding

**Table 1:** shows a model of ICT knowledge in the 21<sup>st</sup> century.

Skills	Explanations
1- Availability to Information	Gaining or restoring information in digital surrounding
2- Information Management	Using devices to use and categorise info in current organisational design
3- Information Amalgamation and Fragmentation	Information interpretation and manifestation by using devices as: communication, abridgement, Resemblance and information differentiation From several sources
4- Information Evaluation	Judgement of the amount knowledge about information needs from a duty in ICT surrounding
5- Information Production	Fairness, use, intelligence or information invention in ICT surrounding

It should be said that the concept of ICT knowledge is ambiguous theoretically and is continually changing and there are different definitions of it as most of the researchers in this field prefer to focus the ICT knowledge definition on some merits or abilities. The concept of ICT in educational organisations includes the ability of preparation and use, ICT knowledge context and performance recruitment, enough identification, effectiveness and usefulness in teachers’ special aims to produce science and expanding critic and creative thought in students. So teachers’ training is a special updating instrument which relates to all advancing performances and is effective for saving and expanding one’s professional merit and knowledge (Cerremers, 1994). ICT knowledge, quick ability, enriching and deepening skills, students invocation to learning and help communicate school experience are to help make fundamental changes in school, reinforcing teaching and providing opportunities among organisations and the world. ICT knowledge has made education more meaningful and end useful so it makes a variety of instruments to expand and comfort teachers’ and students’ special activities (Yusuf, 2005b). Teacher’s professional growth supports this idea that ICT knowledge skills in teachers’ training is an important factor in their effectiveness and professional progress. It is because teachers’ training is totally effective for effectiveness and better of schools operation. Studies related to staff’s training clearly need a better presentation for teachers to teach and expand their selves for creating understanding among their skills and effectiveness.

**Research Method:**

This research is by a method from the descriptive and measuring sort because, not only does it describe ICT knowledge models, but also it evaluates its use among teachers. A measuring research is defined as a researching process which is performed to gather information from society. The aim of this research is to generalise the samples to society. This research, in its aim, is from the applicative sort because it focuses on testing and bettering ICT knowledge among teachers and students.

**4.1. Statistical Society, Sample and Sampling Method:**

In this research the statistical society consists of all the teachers (both men and women), of daily elementary schools, teaching in Mazandaran province in the studying year and the number of teachers is 8,852.

In this research, sampling method was done in two stages to extract statistical samples. Stage one: It is a random sampling and at stage two the sampling method uses the Corgecy and Morgan table was used to select

the statistical sample. The statistical sample was 367 teachers of which 195 persons were women and 172 persons were men. From the 367 teachers, 8 persons (2.2%) had diploma degree, 96 persons (26.2%) had AD, 244 persons (66.5%) had BA or BS and 11 persons (3%) had MA or MS degree. 8 persons (2.2%) did not respond. From the 367 persons of the teachers of the social sample most of them, 179 persons (48.8%), had more than 15 years of experience. The least amount of experience was less than five years and the number was 11 persons (3%) and they were observed. 17 persons (4.6%) of them did not state their experience on their duty. Also 38 persons (10.4%) had between 5 to 10 years experience and 122 persons of them (33.2%) had between 10 to 15 years experience. By age, from the 367 teachers of the sample society 65 persons (17.7%) were 20 to 30 years old, 204 persons (55.5%) were 30 to 40 years old and 98 persons (26.7%) were over 40 years old.

**4.2. Information Gathering Devices:**

In this research the question paper and interview method were used to gather information. A question paper was designed by the guidance of a guiding teacher and a consulting teacher and also different studies, and then it was spread among selected samples of society. At the question paper completion by any of the examinees they were asked to explain a little about the questions of the question paper so that the researcher could be sure of the correctness of the questions. After that the question papers were gathered and analysed. The question papers were set double-questioned and with a Yes-No scale. So the main device used for information gathering and measurement in this research was the question paper.

For compensating the shortcomings and ambiguities of the question paper the pre-test method was used. Before final setting and spreading of the question papers, they had initially been handed to guiding instructors and a consultant and two specialised men at ICT so that that they could comment on the question paper context and the fitness of its questions and also the research aims. Then their comments were gathered and the questions which the instructors and the specialists agreed upon were selected. At the next stage, the question paper or the measuring device was tested unsystematically on 36 teachers (10% of the sample capacity). Then there was a poll among them about the questions of the question papers and at the final stage, after the total admissions for all of the examinees who were samples of the researched society. For defining the reliability of the question paper, SPSS computer software was used and Coefficient Cronbach Alpha for the skill level testing was attained. The result was satisfactory. The amount of Cronbach Alpha for the skill level testing result was  $\alpha = 0.79$ . Actually, the studied results were gained by internal reliability and by the Cronbach validity analysis. The coefficient was between a nought and a variable and for the quantity in the nought state the inexistence of validity and No 1 states validity of the whole questions. The amount of this coefficient has a direct dependency with the number of the questions.

For the analysis of data, descriptive statistics (Frequency spreading tables, column diagram, double-dimension tables) were used and for the research questions test comprehensive statistics (X2 test) was used. The reason to use this test is that X2 test is the best test for these data and double-dimension tables, because it is measured at nominal testing stage.

In this section, for data analysis, by using characteristic of descriptive and comprehensive statistics the research questions at the sample society stage were considered and also the results and conclusions of studying the skill testing about ICT knowledge were considered .

**4.3. Evaluation of ICT Use on the Basis of Teachers' skills at Information Restoration:**

For evaluating the teachers' skill level about data restoration, X2 meaningful test was used which is represented on table NO 2. It could be said that according to this table in the freedom angle 1 and with assuring difference of 99.9% there is a meaningful difference between teachers' skills concerning data restoration.

**Table 2:**

Variable	Amount X2	Freedom Angle	Responders Numbers	Meaningful Level
Skills of Data Restoration	30.299	1	757	0.000

**4.4. Evaluation of ICT Use on the basis of Teachers Skill Level in Information Use and Categorisation:**

For evaluating the teachers' skills level about information use and categorisation, X2 test was used and the result is represented in table NO 3. According to this test, from the statistical point, there is a meaningful difference between the teachers' skills level and 99.9% percent assurance exists. In other words, the teachers and students' level of skills are different in this field.

**Table 3:**

Variable	Amount X2	Freedom Angle	Responders Numbers	Meaningful Level
Skill at info use and Categorisation	34.001	1	757	0.000

**4.5. Evaluation of ICT Use on the basis of Teachers’ Skills level at Information Interpretation and Presentation:**

For evaluating teachers’ skills level at information interpretation and presentation, X2 test was used. This test shows that there is a meaningful difference between teachers’ skills levels at information interpretation and presentation with 99.9% assurance which is represented in table NO 4.

**Table 4:**

Variables	Amount X2	Freedom Angle	Responders’ Numbers	Meaningful Difference
Skill at Info Interpretation and Presentation	43.096	1	757	0.000

**4.6. Evaluation of ICT Use on the basis of Teachers’ Skills Level in Judging Quality and Information Profiting:**

For evaluating the teachers’ skills level in judging the quality and profiting of information, X2 test was used. This test shows that there is a difference in teachers’ skills level at judgement level of quality and profiting of information and this difference is statistically meaningful at 99% difference. This table is represented on Table No 5.

**Table 5:**

Variables	Amount X2	Freedom Angle	Responders Numbers	Meaningful Difference
Skill at Judgement of Quality and Profiting of Info	45.668	1	757	0.000

**4.7. Evaluating ICT Use on the basis of Teachers’ Skills Level at Information Designing & Production:**

X2 test was used to evaluate teachers’ skills level at information designing and production. This test shows there is a meaningful difference with 99.9% assurance in teachers’ skills level at information designing and production. This test is represented on table NO 6.

**Table 6:**

Variables	Amount X2	Freedom Angle	Responders’ Numbers	Meaningful Difference
Skill at Info Design and Production	49.936	1	757	0.000

**Discussion and Conclusion:**

The current research has tried to evaluate ICT use among the teachers of Mazabدران elementary schools and present a proper model of ICT knowledge to expand this knowledge. Also in this research, according to the presented model, five combinations have been provided to extend ICT knowledge the most, so that these combinations have been defined as the aims of this research and then analysed. The whole conclusion is that the resulting research shows that the teachers of Mazandaran elementary school are weak at ICT knowledge use. Teachers who are in the teaching-learning process and are transferors of knowledge to students do not have the ICT knowledge and skills which are the main keys of the 21<sup>st</sup> learning skills or they have limited information in this field. According to the investigations of the research, teachers have little skill at ICT field and this fact shows the common shortcomings of the educational system in the country. So, it is recommended that educational organisations and centres should advance ICT knowledge amongst their teachers in order to observe growth and appearance of more teaching-learning at schools especially amongst teachers and students. It is also recommended that educational organisation officials should better ICT knowledge at schools especially teachers with proper suggestions.

Yangan *et al.*, (2003) have concluded in their researches that teachers have little awareness of ICT. They suggest that a teacher needs to be more familiar with this technology in order to gain more success in the teaching-learning process. The results of the current research show this condition, too. Patricia San Breivik concludes in his studies and considerations that nowadays the graduated ones of schools and universities have not enough skill at information use and availability. He recommends that although today the university and school students are not acquainted with the powerful instruments of information gathering, they should be acquainted with information use in the digital surrounding and gain the needed skills in this field. Also, in a research done by Fathian and Noroozi, the results showed that teachers are weak at computer knowledge and skills. They recommended that it is essential that the educational organisation should compensate teachers’ shortcomings more carefully (Fathian, 1383). In another research done by Tang & Ang (2002) it brightens the communication effect on ICT knowledge amalgamation at schools. They recommend that teachers should not be considered as receivers in teaching but they should be considered as companies in teaching and learning.

Hakimi, (1383) concludes in a study entitled as deliberation of the effective factors on teachers' not using ICT in his studies and considerations that teachers are not prepared to use ICT in teaching. Needed services and trainings for teachers have been very limited and little? Also teachers are not well-prepared to use computer, software and hardware, basically. Moreover, teachers' responses to question papers and the question papers analyses show that using computer software and hardware is one of the teachers' frequent problems. In a research done by Dawson & Rakes (2003), they state that the more teachers are trained in ICT skills, the more the students are caused to grow and the more the schools are advanced. They say that without trained teachers and teachers with ICT skills, performance of ICT programmes at schools and their amalgamation with students' educational programmes would not be possible or it would be done with shortcomings and we could not hope growth and advancement of students at ICT skills. In this research teachers report that they are weak at ICT and their personal effect on the current level of ICT knowledge advancement is very limited and they could not use ICT skills in their educational programmes.

Another investigation of the current research is the existence of meaningful differences amongst teachers' skills levels in all five combinations that were considered in this research. To explain these investigations, it could be inferred that the five mentioned combinations are proper for helping better teaching and learning of teachers and students. According to these investigations it could be said that knowledge about each of these combinations (Data restoration, information use and categorisation, information presentation and interpretation, information evaluation, information designing and production and their correct use) in the educational system could be effective in expanding approaching teachers' training and learning and cause advancement and affiliation of schools at ICT. Also we could look for these combinations as one of educational and learning devices in the 21<sup>st</sup> century.

The current research tries to make a good step towards understanding more of ICT knowledge and skills by teachers and students and prepare then to produce a teaching-learning process and affiliate teachers and students and finally promote schools. According to this, in this research recommendations have been presented according to the research investigations that are ordered as below:

- A. It is recommended that the publishing of world and national standards for ICT knowledge at different stages especially amongst teachers their progress and affiliation, should happen
- B. It is recommended that the concept of ICT knowledge should be extended in educational surroundings public knowledge at society stage
- C. It is recommended that we should pay attention to world and national researches with insight and perspicacity and the educational researches that have been done at ICT and different stages should be used
- D. ICT use and amalgamation in teachers' and students' educational programmes
- E. It is recommended that Universities and schools should be availed of computer and world web extensively to expand their members' ICT knowledge abilities
- F. It is recommended that communication and information skills training centres in the educational organisation should be expanded and the educational organisation member especially teachers should be able to use these skills

## REFERENCES

- American Library Association, 1989. Presidential Committee on Information Literacy: Report. Chicago: ALA.
- Breivik, P.S. 2005. 21<sup>st</sup> century learning and Information Literacy. *Change* (March/April), 20-27.
- Fathian, Mohammad., Noroozi, Masoomah, 2004. Study of the proper model of computer knowledge for high school teachers in Iran. Elm-O-Sanat University, Educational ministry, Office of design, advancement and use of ICT (2002). The whole programme of expansion and use of ICT in Iran (Takfa).
- Ghaffari, Esmail, 2004. Deliberation of trained teachers' performance with ICT in comparison with the untrained ones in Tabriz in educational year 82-83. MA final research of educational management, Centre of governmental education in Azarbaijan-E-Sharghi.
- Hakimi, Amir Hossein, 2004. Deliberation of the effective factors of not using IT. MA final research, training and psychological college, TTC University.
- Hassanzadeh, Ramezan, 2006. Research method in behaviouristic sciences. Tehran: Savalan publication. Fourth edition. pp: 142.
- Kautto-Koivula, K., 1996. "Degree-Oriented Professional Adult Education in the Work Environment. A Case Study of the Main Determinants in the management of Long-Term Technology Education Process". Unpublished PHD Dissertation, University of Tampere, Finland.
- Keen, K., 1991. "Competence- What is it and how can it be developed?" In conference proceeding of Ette conference, pp: 61-77.
- Myrick, R., D. Russel, A. Sabella, 1999. *Cyberspace: New place for technology*, elementary Newhouse, C.P., 2002. "The impact of ICT on Learning and Teaching". Perth: Special Educational Service.

Ololube, N.P., 2005a. "Benchmarking the motivational competencies of academically qualified teachers and professionally qualified teachers in Nigerian secondary schools". *The African Symposium*, 5(3): 17-37.

Ololube, N.P., 2005b. "School effectiveness and quality improvement: quality teaching in Nigerian secondary schools". *The African Symposium*, 5(4): 17-31.

Ololube, N.P., 2006. "Teachers Instructional Material Utilization Competencies in Secondary Schools in Sub-Saharan Africa., 2006. Professional and non-professional Teachers' Perspective". In conference proceedings of the 6<sup>th</sup> international education technology conference EMU, 19-21 April 2006 North Cyprus.

UNESCO., 2003. "Manual for Pilot Testing the Use of Indicators to Assess Impact of ICT Use in Education".

Yusuf, M.O., 2005a. "An Investigation into Teachers' Self-Efficiency in Implementing Computer Education in Nigerian Secondary Schools". *Meridian: A Middle School Computer Technologies Journal*, 8: 2.