

The Relationship between Information Technology and Communication (ICT) Skills of the Teachers and Their Active Teaching Methods

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Abstract

The present research has been undertaken to evaluate the "The Relationship between Information Technology and Communication (ICT) Skills of the Teachers and Their Active Teaching Methods". The under-study population of the research includes all Eslamshahr primary level school teachers, the sum of whom is 1122 people in the 92-93 educational year. The research is descriptive-associative in data gathering and applicable in purpose. Simple random sampling has been used and the sample size of 286 primary teachers, as representative group, has been measured through Cokran Formula. To gather the required data, two questionnaires have been used; first questionnaire measures the extent of teachers' application of ICT, and the other one assesses the active teaching methods. The results of the research indicate that application of ICT and active methods of the studied group was less than the average of the whole population; however, there is not a meaningful difference between the chosen group's application of ICT and the whole population. Also, there is a meaningful, albeit weak, difference between the teachers' application of ICT and their active teaching methods.

Key words: ICT, Active Teaching Method, Teachers, Primary Level

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Introduction

Nowadays, the quality of education and the efficiency of educational system are among the most important issues which obsess educational decision makers and planning specialists. "ICT rightfully claims the potential of developing existing structure by reducing the costs, increasing the quality of educational systems and its outcomes by adjusting them to the necessities and requirements of the time through a step-by-step plan" (Heidarzadeh and Salehi, 111). ICT bears noticeable influence on learning through reforming teacher/student perspective, more student cooperation with their classmates, more usage of extra textbook materials, and higher proficiency in material designing and presentation (Kardan and Zameni, 24). According to Heigens, increasing the influence of teaching and quality of learning are the ultimate goals of applying ICT. Teacher is the most crucial element in providing happy teaching and learning atmosphere and is considered second to student in the whole structure of education and training system. It is the teacher who creates the bond between the content of the textbook and students and helps them fulfill their whole capabilities through realizing individual differences and creating emotional rings between students in the classroom (Ghasemi, 1388). ICT develops cognitive learning, problem solving skills, thinking abilities, and mental/physical attributes by activating the students' hidden skills. Computer and technology are effective as long as they are used as tools by an experienced teacher. Ignoring, and not using, ICT results in inequality of available educational opportunities; this discrimination is quite catastrophic between developed and developing countries. Societies which fail to use and apply ICT will constantly and increasingly lag behind in a world based on science and technology. Therefore, the role of education and training becomes more vital in producing experienced labor work that is capable of working with technology as a means of increasing creativity and efficiency; Also, "all individuals, inevitably, have to use technology to fulfill their personal needs" (Garmabi and Maleki, 39). Therefore, a literate person becomes a lifetime learner and effective learning will be based on informational sources. The realization of educational goals and the fulfillment of learning objectives in order to get prepared to work with progressive technology necessitate training specially qualified teachers. Producing creative, self-learner students who think of learning as a lifelong process, and who are always in search of knowledge, is one of the most crucial goals of education system of each country. Based on what was mentioned, here comes the main question of the research: is there a relationship between information technology and communication (ICT) skills of the teachers and their active teaching methods? Having understood the gravity, value, and impact of ICT on education, the present study aims at discussing the role of ICT in active teaching method and education. The present study emphasizes the value and impact of ICT on education and aims at discussing the role of ITC on active learning and teaching methods in education. Many researches with different results have been undertaken. For example, the results of Eslamieh, Davoodi, and Sharifi's research entitled "The relationship between the extent of teachers' use of ICT and their performance in teaching/learning process" showed that there is a meaningful relationship between teachers' use of ICT and the efficiency of teaching/learning process and 60/6 of the changes of dependent variable of the research (teacher performance) clarified the role of the following criteria: use of applicable software, database, and internet. The results of Hosseini's research, entitled "The relationship between knowledge of ICT and its application in teaching process and computer self-sufficiency among teachers in Karaj", showed that the extent of ICT use in teaching was more

than theoretical average and there is a positive correlation between the extent of ICT application and computer self-sufficiency of the teachers. The rate of ICT knowledge in sample groups showed that the average of all sub-scale ICT literacy, except for extra skills, is about 0.001 above theoretical value of 2/5. The results of Andesh, KHalkhali, and Shakibaei's research entitled "Meta-analysis of ICT influence on professional advancement of teachers" showed that the application of ICT meaningfully affects the degree of career progression of teachers; the numerical value is about 0.387 which, according to descriptive statistics, is more than mean rate. The results of Andy, Behnamfar, and NiaAzari's research entitled "Investigating the effect of ICT application on primary level learning" displayed great impact of ICT on higher learning in science and geography. Attaran and Karami's research entitled "Developing content knowledge and teaching skills of teachers through combining task-based learning and ICT" showed that mixing task-based learning and ICT resulted in better performance and higher skills in teachers who used both compared with those applying them separately. The results of Ashtak and Samari's study entitled "The influence of the rate of knowledge and application of educational technology by teachers on developing the quality of student learning" showed that teachers' knowledge was either insufficient or average; most teachers used educational technology materials rarely in teaching process; they employed active methods more and diagnostic evaluation less in teaching. Zalzade's research, entitled "Investigating the rate of Yazd university instructors' application of ICT" showed that 79%, more than three fourth, of instructors used ICT in teaching. The results showed that, also, there is meaningful relationship between the extent of ICT use and factors such as sexuality, age, educational level, degree, years of service, and English proficiency. Based on the results of Tangkaw's research, entitled "The consistency of multi-perspectives on ICTs in higher education of developing countries: Thailand as case study", there are four parameters crucial to performance of ICT in higher educational levels of each country: infrastructure, management, policies, and human resources. Each part is ineffective unless aided by other parts; thus, a holistic approach is needed. The results of Sanska and Saviska's research, entitled "The application of ICT-based teaching and learning for enriching math schools" showed that teachers and methods are vital parts in the learning process and that educational achievements depend on cooperative interactions between teacher and student; combining traditional teaching methods with active educational approaches results in enhancing level of knowledge. Cooperative education is an influential means not only at school, but in social life as well. The results of Smeureanu and Isaila's research entitled "ICT and its support of innovation" showed that application of technology can facilitate learning; however, this is just the beginning and more is to come on the progressive road to globalization, innovation and technology cannot help being omniscient. Deryakuh's research, entitled "Predicting the degree of students' success with ICT and application of different learning strategies by teachers" showed that there is positive relationship between students' educational progress and ICT application. Karahooka's research entitled "It instruction through cooperative approaches in high school" showed that students educated with computers and cooperative methods were more successful and functioning than traditionally-educated students. Marit's research, ICT and active learning processes as challenges and opportunities in teacher training, indicated that ICT, if unaided by 7 active teaching methods, does not fulfill the planned educational goal. As all above-mentioned researches showed, the role of ICT in the quality of educational plans, enhancing teacher proficiency, and students' educational progress is undeniably kernel; this role is to be realized with classes and educational contexts equipped with as many smart tools as possible. Eslamshahr has long tried to make its teachers familiar with ICT in workshops and, also, to make educational context smart and automated for three years. Mobilizing schools has been an important issue; all school board trustees and 5th and 6th grade classes and 50% of other classes have been mobilized. The question is this: is there a relationship between information technology and communication (ICT) skills of the teachers and their active teaching methods? The main issue associated with this question is whether the extent of Eslamshahr primary level teachers' application of ICT directly related to their teaching methods and their efficiency? The following questions are the central points of the research.

Methodology

The present study is descriptive-associative in data gathering, applicable in purpose, and temporary for educational year of 92-93 in time scale. The under study population covered all Eslamshahr primary level school teachers that surmounted to 1122 ones. This study has used clustral sampling and the sample size of 266, as a representative group, has been measured through Kokran formula. Two questionnaires were used to gather required data, one of which evaluated the extent of ICT knowledge and the other assesses active teaching methods. The ICT questionnaire included 21 questions and the teaching method one covered 17 questions to which participants replied. Visual and content validity of the questionnaires were measured by specialists and Cronboch's alpha was used to measure reliability. Cronboch alpha coefficient revealed to be 0.89 for the extent of teachers' knowledge of ICT variant and 0.78 for active teaching method variant.

Findings

This research measured the relationship between information technology and communication (ICT) skills of the teachers and their active teaching methods. Descriptive findings of predicting variants with main research variant (active teaching method) are shown in table 4-5.

Table1. Descriptive findings of research variant

scale	Statistical indicator	average	The standard error of mean	Standard deviation	Minimum	maximum
ICT application		39/53	0.66	11/28	13	65
Active teaching method		60/68	0.47	7/99	33	99

First question

To what extent do Eslamshahr primary level school teachers apply ICT?

Table2. Single group *t* test for third question

groups	indicator	size	average	Standard deviation	T value	df	sig	Meaningfulness level
	sample	286	39/53	11/28	/0.79	285	0.427	0.05
	population	-	39	-	-	-	-	-

Table 2 reports *t* test results between the average of ICT application for Eslamshahr primary level school teachers and that of whole society. According to the recorded values and the final measured *t* value (0.79), and the fact that meaningfulness level (0.42) is more than theoretical value (0.05), thus the zero assumption is confirmed and with 95% certainty, there is no meaningful difference between ICT application for Eslamshahr primary level school teachers and that of whole society.

Second question

To what extent do Eslamshahr primary level school teachers apply active teaching methods?

Table3. Single group *t* test for second questions

groups	indicator	size	average	Standard deviation	T value	df	sig	Meaningfulness level
	sample	286	60/68	0.47	-	285	0.0001	0.05
	population	-	66	-	11/24	-	-	-

Table 3 shows the results of single group *t* test for the average active teaching method between Eslamshahr primary level school teachers and the whole population. According to the recorded values and the final measured *t* value (-11/24) and the fact that measured meaningfulness level (0.0001) is less than real meaningfulness level (0.05), thus zero assumption is refuted and with 95% certainty the average of active teaching method application for Eslamshahr primary level school teachers is less than whole population.

Third question

Is there a meaningful relationship between ICT use of teachers and their active teaching methods?

Table4. Pierson correlation test for question number 5

variants	Statistical indicator	Correlation coefficient	R2	sig	Meaningfulness level
	The extent of ICT use Active teaching method application	0.03	0.001	0.59	0.05

According to table 4, there is not a meaningful relationship between the extent of ICT use and active teaching method application ($p > 0.05$).

Fourth question

Is there difference among teachers in their use of ICT according to their years of service, educational level, age, and sexuality?

Years of service

To evaluate the assumption of difference in the extent of ICT use among teachers according to their years of service, single-way variance analysis was employed and the following results, shown in table 14-4, were achieved.

Table5. Single-way variance analysis related to Teacher ICT use in different years of service

Statistical indicator	SS	df	F	sig
Change resources				
Intra-testees	26/32	2	1/81	0.76
Inter-testees	2055/72	283	-	-
sum	2082/04	285	-	-

The final measured *F* (1/81) on meaningfulness level of 0.05 shows that with 95% certainty, there is not a meaningful difference among teachers in ICT use according to their years of service ($p > 0.05$).

Educational Level

To evaluate the assumption of difference in the extent of ICT use among teachers according to their educational levels, single-way variance analysis was employed and the following results, shown in table 15-4, were achieved.

Table 6. Single-way variance analysis related to Teacher ICT use in different educational levels

Statistical indicator	SS	df	F	sig
Change resources				
Intra-testees	260/69	3	13/45	0.001
Inter-testees	1821/34	282	-	-
sum	2082/04	285	-	-

The final measured *F* (13/45) on meaningfulness level of 0.05 shows that with 95% certainty, there is a meaningful difference among teachers in ICT use according to their educational level ($p < 0.05$).

For more precise evaluation of the results of two groups together, assuming that variance remains the same for both, LSD test was applied. The results show that the differences for all educational levels are meaningful ($p < 0.05$), except for diploma and upper-diploma level ($p > 0.05$).

Age

To evaluate the assumption of difference in the extent of ICT use among teachers according to their age, single-way variance analysis was employed and the following results, shown in table 16-4, were achieved.

Table7. Single-way variance analysis related to Teacher ICT use in different ages

Statistical indicator	SS	df	F	sig
Change resources				
Intra-testees	70/63	3	3/3	0.021
Inter-testees	2011/41	282	-	-
sum	2082/04	285	-	-

The final measured F (3/3) on meaningfulness level of 0.05 shows that with 95% certainty, there is a meaningful difference among teachers in ICT use according to their ages ($p < 0.05$).

For more precise evaluation of the results of two groups together, assuming that variance remains the same for both, LSD test was applied. The results show that there is meaningful difference among teachers in ICT use according to their age only when their age groups are less than 30years, between 31-40 years, and 41-50 years ($p < 0.05$).

Sexuality

To test the assumption of difference among teachers according to their sex, double group t test was applied and the following results, shown in table 17-4, were achieved.

Table8. Comparison of male/female average in their use of ICT

Statistical indicator of groups	size	average	Standard deviation	Average difference	T value	Freedom degree	Meaningfulness level
Female	226	5/34	2/65	0.12	0.32	284	0.74
Male	60	5/21	2/88				

As the table shows, based on the following observations with 95% certainty the zero assumption is confirmed and there is not a meaningful difference among teachers in their use of ICT according to their sex:

- Measured t value (0.32) with freedom level of 284 is less than t value of the table
- Meaningfulness level of this test is 0.74 which is more than general 0.5 level

Conclusion

The results of the present study showed that there is not a meaningful difference between Eslamshahr primary level school teachers and the whole population in their use of ICT. This is in contrast with Atshak and Samari's research result; they stated that most teachers use ICT insufficiently in teaching/learning process. However, it further confirms the results of Zalzade's research entitled "Investigating the rate of Yazd university instructors' application of ICT" which showed that 79%of Yazd university instructors actually applied ICT in teaching. Also the average of active teaching method among Eslamshahr primary level school teachers is less than the whole population. This finding does not confirm Atshak and Samari's research which stated that teachers apply active teaching methods; also, it is not in line with Hosseini's findings which showed that the extent of ICT use in teaching was more than theoretical value. It also became clear that there is not a positive and meaningful relationship between ICT use of Eslamshahr primary level school teachers and their active teaching methods. This means that the fact that Eslamshahr primary level school teachers use ICT, does not guarantee their applying of active teaching methods. This is not in line with the finding of two researches; first, Hosseini's research entitled "The relationship between knowledge of ICT and its application in teaching process and computer self-sufficiency among teachers in Karaj" which showed that the extent of ICT use in teaching was more than theoretical value (2/5) and that there is meaningful correlation between ICT use and teachers' computer self-sufficiency; and the other one, Sattari's research entitled "The relationship between the extent of ICT knowledge and use and students' educational advancement". It also does not confirm the results of Eslamieh, Mohamad Davoodi, and Sharifi's research entitled "The relationship between the extent of teachers' use of ICT and their performance in teaching/learning process" which showed that there is meaningful relationship between teachers' use of information-communication technology and their performance in teaching/learning process, and that 60/6% of the changes of research dependent variant (teacher performance) was clarified through the use of applicable software, database, and Internet. It, also, is not in line with the results of Andeshk, KHalkhli, and Shakibaei's research which showed that ICT use meaningfully affects professional development of the teachers up to the noticeable value of 0.387, and with Marit's research which concluded that active learning process supports teachers' educational goals and ICT is a useful supplement which is irreplaceable and can enrich teaching; this means that ICT, if unaided by active teaching methods, does not fulfill primary educational goals. The final conclusions of the research might be summarized as the followings:

- There is not a meaningful relationship between our two dependent variant; i.e. ICT use and active teaching method application.
- Sexuality of the teachers does not meaningfully the relationship between variants and does not differ in ICT use.
- Years of service are not a determiner factor in information-communication technology use.

To elucidate the above-mentioned results, we can state that the teachers included in the statistical population have shown serious degree of problem combining information-communication technology and active teaching methods. Given careful consideration, this difficulty can be traced to one of the following sources:

- a. Lack of sufficient familiarity with and awareness of ICT
 - b. Lack of training and skill in modern active teaching methods
 - c. Absence of appropriate smart schools and educational contexts available to teachers
 - d. Poor educational opportunities in some areas due to insufficient ICT hardware and software equipment.
- Generally either schools lack working computer networks or, if available, teachers and students don't have enough knowledge and skill of ICT to use it in an effective way (Farhadi 1381: 56). The advancement of information-communication technology has had an extensive influence upon education and training. Day by day, the necessity and capability of this technology in the production and transition of information looms so large that no body, any longer, doubts applying it to teaching process at school. Therefore, we can say that the role of ICT in enhancing the quality of teaching, teacher training, and educational advancement of students is undeniable and, as the results of other studies show, there is a positive meaningful relationship between the extent of ICT use and active learning process. However, based on the findings of this study either statistical population teachers are not sufficiently familiar with ICT, or they have disregarded the essential role of ICT in educational enhancement, or are not sufficiently motivated to apply modern information-communication technology, or suffer from lack of available sources necessary for the application of ICT. Noticing the fact that most districts in Eslamshahr are poorly equipped, and due to drastic changes in the overall educational policies such as the accommodation of grade 6th, changes of textbooks, lack of qualified and trained teachers, and the teachers' disregard for educational workshops, or lack of such opportunities, the lack of correlation between the extent of ICT use and active method teaching is justified. Based on the results of this research, we can conclude that to increase the extent of knowledge and use of ICT and modern active teaching methods, which are two main requirements of today's education, plans need to be designed and carried out to enhance the knowledge and skill of all teachers regardless of years of service, educational level, age, sex, and district of service.

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