

Effect of ICT on Improving the Learning-Teaching Process of Students in Elementary School: Tehran-District 2

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ABSTRACT:

Innovation in the teaching methods and use of Information and communications technology (ICT) has led to the development of cooperative learning of students, enhancing the research spirit, applying education, and providing lifelong learning. This research aims to investigate the effect of ICT on improving the teaching-learning process of students in the second district of Tehran. In this research, a pre-test experimental plan and a post-test plan with a control group have been used. To gather information for the literature review, the documental method and for those required, the field methods have been utilized. The statistical population of the current research is the female students in the 6th grade of elementary school in Tehran in 2016-2017 in which ICT is used to present educational services on the extracurricular English course. 58 students were chosen by random sampling as the statistical sample. In the control group, 29 students were taught by the usual method, and, for 29 students, the course materials were presented via computer, smart board, video projector, and educational software. The impact of this act on the educational progress of students has been measured by the YLE-Flyers tests with a validity index, and the results of data analysis have been discussed and reviewed through SPSS 16. The Cronbach's alpha value of the questionnaire is more than 0.7, so, the validity of the mentioned questionnaire can be assessed optimally. A comparison of the end-course scores in both experimental and control groups shows that the use of ICT affects improving the teaching-learning process of students in the second district of Tehran.

Keywords: Information and Communications Technology, ICT, Teaching-Learning Process, Elementary Students, Sixth-grade primary school

INTRODUCTION:

Among the most important development indices of a country is the output quality of the educational system, which also depends on how the programmed information of the education is transferred to the learners, as well as improving the teaching-learning process. In today's world, educational technology is accountable for this important matter. Optimal use of educational technology during teaching makes education more actual and practical due to activating the learners' senses while making the teaching quality and learning rich and has enhanced the efficiency of the education and training because it creates an embodied state in the students' mind and increases their perception relative to the lesson, productivity in the education system with the help of the educational and technological devices, and the efficiency in terms of acceptance and higher knowledge.

What nowadays is raised in the educational system is the use of new technologies (for facilitating learning) and its positive effect on the educational progress of students. The development of ICT in education

programs is an effective and long-lasting step that could create qualitative evolution in the goals, programs, methods, and ways, and as a result, the efficiency of education. It is predicted that the long-lasting dreams and unsolved problems such as applying education, focusing on the learners' abilities and needs, systematizing a student-oriented perspective, changing the role of teacher as guidance, and at last, giving originality to life-long education be realized (Sattari et al., 2011, pp. 85-86).

ICT is one of the factors changing the classrooms and its role and impact on developing knowledge creating facilitation and accelerating learning is indispensable in the current age. After the Times' study (2003), a significant increase, especially in Eastern European countries, was observed in the number of students who had access to the computer and the Internet. The experiences of countries that have evolved their education systems many years ago show that the best point of beginning to create the evolution in the quality of public education in each country is to transform the teaching method. Of course, after publishing the

results of the Times' studies, the main changes created in our country in the educational policies and the contents of textbooks related to elementary and secondary schools (Sattari et al., 2011, pp. 86).

A study by Ghavifekr et al. (2017) "Challenge of mathematics teachers in the use of ICT elements: a comparative study in high schools in Kuala Lumpur and Kota Kinabalu", investigated the results obtained from 100 questionnaires (50 questionnaires for every city) compared to the teachers in Kuala Lumpur, and found that the mathematical teachers of the Kota Kinabalu city have many more challenges including internet service and speed, insufficient resources and equipment such as the number of computers connected to the internet. The research by Ghavifekr et al. (2017), "Teaching and learning using ICT tools: subjects and challenges from the teachers' view" among 100 high schools in Malaysia", found that the challenges of using ICT from the teachers' view are the limited access to the internet, weakness of the technical support, lack of efficient training, lack of time and lowering the teachers' qualifications; findings also show that the male teachers who use ICT and its tools are more than female teachers. Pankasz (2016), in a study "Online educational environments and ICT tools in higher education," found that among the results obtained from different groups of students, they are different based on their ages. Although the difference between the generations is not high, the behavior and attitude of youngsters have higher differences relative to ICT than adults. In other words, the use of ICT and its tools is more effective for students' learning. Education and the following duties and education functions have changed and the use of ICT and multimedia is an integral element of the educational system. Today, knowledge management in computer information systems has been increasingly considered. Organizing and managing knowledge followed by information management and educational resources has a specific importance in the electronic environment (Adib, Soleimani Rad, and Azimi, 2015, p. 22). Today, many problems that the development of ICT faced, including the lack of cultural platforms, lack of skilled human force, no familiarity with foreign languages, lowering attitude and research spirit, lack of willingness to work, effort, and practice, and decrease in capabilities in life skills induced by the incapability of traditional education system to response the society needs, are changing and evolving (Emamvirdi et al. (2013), p. 121). According to the raised subjects, this question was asked if ICT affects promoting the teaching-learning process.

In this study, researchers have selected the primary school due to its importance and basic role in the learning of students. To investigate the effect of employing ICT on increasing students' learning in elementary school, the extracurricular English course has been chosen. This lesson has been selected due to its importance for students in the sixth grade as well as its identity, including subjects that transfer through

involving different senses not only audial, and leads to increasing their learning.

RESEARCH METHOD

This research is an experimental study with an applicable goal, which uses the pretest and post-test design with a control group. The statistical population of this study is all female students from sixth-grade primary school in the 2nd district of Tehran who were studying in the academic year 2016-2017. This research was done by multiple-stage random-cluster sampling. In this way, first, the districts that have schools with capabilities of computers and networks (e.g. smart schools) were identified among the 22 districts of Tehran and one of them was chosen randomly. Then, all the usual and smart schools of that district were listed. Therefore, among these schools, those with extracurricular English courses were characterized, and one school was selected randomly from each of the usual and smart schools with extracurricular English courses. The class that was selected from the usual school was the control class and that from the smart one was the experimental group. Among the existing schools in the 2nd district of Tehran, "Manan Primary School for Girls" and "Rabbani Cultural Educational Complex for Girls", and among the students studying in these schools, in total, 58 students from the sixth-grade elementary school were selected. The sixth grade class of the Rabbani school with 29 students was considered as the experiment group and that of the Manan school, with the same number as the control group.

Research tool

The tool for gathering the information for this study is YLE tests, which have a reliable assessment of the learners' ability in speaking, listening, comprehension, and writing skills.

The YLE Starters are the first level of the YLE tests. Learners from 5 to 8 can usually participate in this exam, which consists of 3 parts speaking, listening, comprehension, and writing. At this level, the candidate can participate in the basic conversations, and speak, read, and write about subjects such as greetings, family, class and school, toys, animals, body organs, colors, buying, household appliances, etc.

The second level of the YLE tests is the YLE Movers test. At this level, the age of the learners is between 8 and 11. This test is also like the test before and consists of 3 parts speaking, comprehension, and writing. At this level, the learners should be informed about subjects such as meals, households, weather, seasons, feelings, tastes, and so on, and the higher level of Starters should be involved in activities related to every skill in addition to the above-mentioned.

In the third level of YLE is the Flyers test, where the learners have other skills, like exchanging information, establishing and maintaining social relationships, explaining opinions, etc. in addition to having a wider domain mentioned above. The learners usually participate in this test at the age of 9-12, which has 3 parts speaking, listening, comprehension, and writing.

These tests have been provided by the test department of Cambridge University, and their validity has been verified by experts. The reliability of these tests was also calculated by Cronbach's alpha and was 0.896.

In the current research, according to the age as well as the level of English knowledge of students, the sample questions for the Flyers test have been used, which have been designed and printed by the Oxford University Press. This test has 16 activities which have been classified into 3 main parts: listening, reading and writing, and speaking. The duration of this test for each student, without considering the waiting time for an interview, is 75 minutes.

Each of the 3 parts above creates 0 to 5 scores (in a logo form of Cambridge University) and if they're summed up, the total score of the learner's test is given. This test has been chosen due to its validity at the international level, accessibility, and popularity, as well as efficiency in different research.

Testing

The first part includes the listening activity and a total of 25 questions which should be answered within 25 minutes. For each activity, there is an example of a vocal file related to it, being played twice.

The first activity is to connect 5 printed names around the image to the associated characters in it. This activity tests the comprehension skill of the learner in addition to the listening. The third activity is also to put images together, considering the subject; the speaking can associate people with the activities they have done, where they went, etc. This activity also has 5 items. The fourth activity involves 5 questions with 3 options, and a learner should select the proper option according to the short speaking released. The fifth activity of the first part has an image that a learner should color parts of according to the speaking played and write the words in a proper place. This activity also tests the dictation skill of the learner, in addition to the listening skills more limited.

The second part includes 7 activities in comprehension, writing, and a total of 50 questions. The time for answering the questions on this part is 40 minutes.

The first activity involves 10 descriptive sentences that present a definition of objects, jobs, places, and stuff like that, and a learner should select a proper word among the proposed words and write it in the black space. In the second activity, a learner should identify 7 sentences with a visual study and "Yes" and "No" whether they are true or not. The third activity involves an incomplete conversation in which a learner should select the most proper sentence according to the conception and its overall intention among the proposed ones. This activity has 5 items. In the fourth activity, a learner is faced with a story test and 5 blank spaces that they should fill in with the proper word among the proposed ones while reading and understanding the subject; finally, they should select the best subject for a story among the proposed items. In the fifth activity, a story text is also presented to the learner, and they have to complete 7 incomplete ones

using the existing words in the story. The answers should have 1 to 4 words. This activity evaluates the amount of their accuracy as well. The sixth activity consists of a scientific text in a simple language for children along with blank spaces in which a learner fills a proper word among 3 proposed options.

The third part is associated with assessing the speaking skill of a learner and is held vocally. The duration required for this part is 9 to 10 minutes. In this part, an examiner, first, answers the questions about personal information such as name, age, place of residence, and so on, then, they explain the existing differences between two similar images. In the latter, a card including keywords with an answer and another card including ones without an answer are given to the learner. The interviewer also has the cards with the same subject with the difference that the first card has no answer and the second has. Now, the examinee and examiner should ask the questions using the keywords, and write the proper answers down on their cards. In the last step, a learner should narrate a story after observing 4 to 6 images that explain different and continuous scenes of that. The tests used in this research have been provided by the testing department of Cambridge University and their validity has been confirmed by the experts. According to the values, Cronbach's alpha of all is larger than 0.7. Therefore, this questionnaire has an acceptable reliability for all the components. Also, the total reliability of the whole questionnaire was calculated at 0.896.

The extracurricular English education was done by ICT tools during 12 sessions for half an hour (3 hours per week) for 1.5 months, based on the program for the students in the experimental group.

The sort of education is based on ICT and continues for 6 weeks. During this time, the control group followed the same general program and traditional methods of school education. After finishing the experimental activity, another time, another sample from the Flyers text was given to the experimental and control groups as a post-test.

To analyze inferentially the data of this study, the SPSS software has been used.

Research assumptions

- 1- The use of ICT tools is efficient for improving listening skills in the extracurricular English course of female students in sixth-grade elementary school (District 2, Tehran);
- 2- The use of ICT tools is efficient for improving the reading and writing skills of the extracurricular English course of female students in sixth-grade elementary school (District 2, Tehran);
- 3- The use of ICT tools is efficient for improving the speaking skills of the extracurricular English course of female students in sixth-grade elementary school (District 2, Tehran);

FINDINGS

Statistical indices like the mean and standard deviation of groups can be seen in the pre-test and post-test stages for the variables.

Table 1: Descriptive stat of both groups (Experimental and control).

Variable	Group		Mean	standard deviation
Listening skill	Control	Pre-test	20.3103	3.04846
		Post-test	22.1724	1.96521
	Experiment	Pre-test	20.6552	2.66292
		Post-test	24.2414	0.91242
Writing-reading skill	Control	Pre-test	38.2069	6.04376
		Post-test	44.1379	3.86120
	Experiment	Pre-test	39.8621	6.33428
		Post-test	47.3448	2.28779
Speaking skill	Control	Pre-test	34.4138	3.09974
		Post-test	37.8276	2.03661
	Experiment	Pre-test	32.3793	4.76156
		Post-test	38.7241	2.25034

Table 2: Consistency test of the three-assumption variance.

1 st assumption	Lavin stat	Degree of freedom	Degree of freedom 2	Significant level
	1.546	1	56	0.219
2 nd assumption	1.143	1	56	0.082
3 rd assumption	1.618	1	56	0.209

Based on Table 2, the significant level resulting from the groups is higher than 0.05. So, it can be said that

the variance of both groups is homogenous and there is no reason for their heterogeneity

Table 3: Covariance analysis of the first assumption in two experimental and control groups.

Variable	Sum of square	Average of squares	Freedom degree	F	Significant level
Pretest	97.841	97.841	1	160.124	0.000
Control-experimental group	52.684	52.684	1	86.221	0.000
Error	33.607	0.611	55		
Total	193.517		57		

As observed in Table (3), the significant value is less than 0.05; so, totally it can be said that there is a significant relationship in the level of 0.05 between the experimental and control groups considering the post-test use of ICT tools, improvement of listening skill of extracurricular English course of sixth-grade primary

school girls (District 2) with pretest control. In other words, it can be said that the use of ICT tools is effective in improving the listening skills of extracurricular English courses of sixth-grade primary school girls (District 2).

Table 4: Covariance analysis of the second assumption in two experimental and control groups.

Variable	Sum of square	Average of squares	Freedom degree	F	Significant level
Pretest	241.242	241.242	1	41.109	0.000
Control-experimental group	100.125	100.125	1	17.062	0.000
Error	322.758	5.868	55		
Total	713.121		57		

As observed in Table (4), the significant value is less than 0.05; so, totally it can be said that there is a significant relationship in the level of 0.05 between the use of ICT tools, writing-reading skills of extracurricular English course sixth-grade primary school girls (District 2) and pretest control. In other

words, it can be said that the use of ICT tools is effective in improving the reading-writing skills of extracurricular English courses of sixth-grade primary school girls (District 2).

Table 5: Covariance analysis of the third assumption in two experimental and control groups.

Variable	Sum of square	Average of squares	Freedom degree	F	Significant level
Pretest	175.344	175.344	1	116.772	0.000
Control-experimental group	43.695	43.695	1	29.099	0.000

Error	82.588	1.496	55		
Total	269.586		57		

As observed in Table (5), the significant value is less than 0.05; so, totally it can be said that the independent variable is efficient. There is a significant level between the experimental and control groups based on the post-test use of ICT tools, a relationship with improving the speaking skill of extracurricular English

course of sixth-grade primary school girls (District 2) and pretest control in the 0.05 level. In other words, it can be said that the use of ICT tools is effective in improving the speaking skills of an extracurricular English course of sixth-grade primary school girls (District 2).

Table 6: Testing the effect of using ICT tools on listening skill improvement.

			Pair comparison					t	Freedom degree	Significant level
			Mean	standard deviation	Averaged standard deviation	Confidence level				
						95%	Lower bound			
First assumption	Listening	Control-Experimental	-2.72414	1.91754	0.25179	3.22833	-2.21995	-10.819	57	0.000
Second assumption	Reading-Writing	Control-Experimental	-6.70690	2.93244	0.62853	-7.96550	-5.44830	-10.671	57	0.000
Third assumption	Speaking	Control-Experimental	-4.87931	2.93244	0.38505	-5.65036	-4.10826	-12.672	57	0.000

As observed in Table (6), the significant value is less than 0.05, and based on the t-stat out of [-1.96, 1.96], totally it can be said that the use of ICT tools is effective in the extracurricular listening skill of sixth-grade primary school of students (girls, district 2). Also, it can be said that the use of ICT tools is effective in improving the reading-writing skills of extracurricular English courses of sixth-grade primary school girls (District 2). On the other hand, the use of ICT tools is effective in improving the speaking skills of an extracurricular English course for sixth-grade primary school girls (District 2).

CONCLUSION

The results showed that the use of ICT tools is effective in improving the listening skills of the extracurricular English course of students in sixth-grade primary school (District 2, Tehran). Based on the significant level of 0.05 and the value obtained for it, it is concluded that ICT tools have affected the students' listening skills. This result is consistent with the results of Jabbari et al.'s research (2017) "Comparison of the effect of e-learning with the traditional method of teaching on student's English language learning skills", Shahamat and Shahamat's research (2017) "The Comparison of English Language Teaching Methods Through Educational Technologies in State University with Azad University in Shiraz", and Yazdani's research (2014) "The Effect of Computer Assisted Instruction (Cai) Vs. Traditional Instruction On the Second Grade students' learning English in The Female High Schools of District 1 In Tabriz".

The results showed the use of ICT tools is effective in improving the reading-writing skills of an extracurricular English course of sixth-grade primary

school students (District 2, Tehran). Based on the significant level, it is observed that there is a significant difference between the pre-test scores of the education group based on the ICT tools and the average post-test scores of this one in the speaking-writing skill spatially. This result is consistent with the results of Romney's research "Using an Educational Blog to Develop the Writing Skills of English Language Learners", and Ghochi Dawood's research (2015) "Investigating The Effects of Integrated Learning Method On Improving Vocabulary from The Students' View", and Simon So's research (2016) "Using SMS services in teaching-learning at high levels".

The results showed that the use of ICT tools is effective in improving the speaking skills of the extracurricular English course of students in sixth-grade primary school (District 2, Tehran). Based on the significance level, it is observed that there is a significant difference between the pre-test scores of the education group based on the ICT tools and the average post-test scores of this one in the speaking skill spatially. This result is consistent with Yarizadeh et al.'s results (2015) "The Role of smart schools in promoting student learning", and Ardabili's theoretical research (2015) "Investigating the Use of educational software and its Effectiveness on the teaching-learning Process of First-year high-school students in the second district of Tehran". Since that so far, little research has been done on this subject, so, a comparison of results has been done with the help of research that has led to ICT in education in other situations like this research.

As the use of ICT tools causes the teaching-learning process of students to improve, all schools should become smart as soon as possible and the plan of

educational activities must include related instructions. Based on the positive effect of education using computers and educational software on learning students, it is recommended that the basic computer courses and International Computer Driving License (ICDL) skills be held in a public form at a low cost (or free) in schools. According to the importance of educational software, it is better to prevent copying such software and support more by buying their main version from the manufacturing companies for better quality of educational software in each stage.

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