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Effect of applying informant on and communication technology (ICT) on learning level and information literacy of students

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Abstract

This study reviews the effects of information and communication technology (ICT) on learning and information literacy of students. We used experimental method with pre-test and post-test along with a control group. The statistical population of this research consisted of all male students of the third year of middle school (school year 89-90) in the city of Arak. Using random cluster sampling, 64 students were chosen and placed into two groups of experimental and control after pre-certification testing. Data collection instruments were educational improvement test and standardized information literacy questionnaire. Collected data were analysed using analysis of covariance method, t test, and non- parametric Mann-Whitney U test. Findings showed that general hypothesis of the research were true: information and communication technology (ICT) has a significant effect on learning rate of students; and there is a significant difference between the experimental group and control group regarding information literacy and its features. Based on the results of this study, we recommend educational authorities to use information and communication technologies (ICT) in educational senders in order to improve students' learning rate and educational quality.

Keywords: information and communication technology (ICT), learning, information literacy, students;

Introduction

Entrance information and communication technology to areas of men's activity and its extension in current century particularly in schools, become most effective instrument for experts and administrators of education in order to improvement of learning and teaching methods and promoting educational goals(Ryan, 1991). Current age is the information age, the age that require having information and making relation for getting required information(Block, 2002). Information and communication technology has changed social structure, living style, communicational process, and even education manner and caused to phenomenon namely information society and age named age of knowledge(Seidel 2007) . Many researchers view information society as multi structure and multi-dimensional society that all layer and levels require information(Jenks, 2003). In this way, educational situation and schools a senders that learning and information are usually its critical elements require to learners that can solve problems

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with enjoying of information and communication technology and with criticism thought and adapting strategic methods and achieve to increasing learning by this(Knezek, 2005).

Learning is one of most important area in today psychology and one of most difficult concepts for definition. Most known definition of learning is the process of making relative stable change in behaviour or behavioural potentiality that is result of experience and don't can contribute it to temporal state of body such as states that are results of illness, fatigue or using drug(Rumpagapon, 2007; Thompson 2003). This show that learning is activities that perform by learner and the role of teacher are just providing facilities and condition that facilitate learning(Alfasssi, 2005).

Educational technologies provide fields of creating and enjoying from these situations, because by it, getting required information(Barron, 1999). Knowledge and skills of successful living and manner of using communicational and informational were allowed(Ferguson, 2003). information and communication technology is collecting, organizing, storing, publishing and using information in graphic, text, number and etc using telegraph and computer(Hopson, 1998).

Undoubtedly, most effect was occurring communication and information technologies on educational context(Sonntag, 2007). Applying information and communication technology in education cause to educational context lead to become metaphorical.-world developments in information and communication technology helped to extension learning opportunities and access to educational resources and accelerating and facilitating to training process(Kramarki, 2000). In an educational definition about information and communication technology one can say that information and communication technology is planning, and facilitating of using compute, software's, internet and communicational devices that include teaching, learning and other educational activity with different method(Hadda, 2000). Daniel,j, assistant of UNESCO manager in training and education field say, information technology in short time transformation one of basic element of consisting modern society(Joiner, 2003).

Now many countries along to reading, writing, calculating, understanding information and communication technology and dominating to skill and basic concepts of information technology has been paid attention to as a part of central core of training and education(Lou, 2001). Now, many countries placed IT concepts and mastering in basic skill as a part of pay attention to education and learning in along to reading, writing and calculating.

New technologies that support training and education, caused to creating meaningful learning and can caused to change of traditional method and teacher-cantered to learner-cantered teaching and learning. From other progress of new technologies in education, there are strengthening searching spirit and questioning implementation and benefit of development of information technology in education is using multimedia devices(Flaspohler, 2003).

Totally, these existent changes can be considered on a span that at an end of this there are views, traditional structure and at other end there are views and modern and new structure. Enjoyment of information and communication technology with weighted planning is performable in all lessons particularly different educational stages. One of lessons that can teach with this method is experimental science(Bruce, 1997). Teachers can recognize communication and capacity of information technology and used them for creating meaningful learning in classroom and change in information rate of students(Hopson, 1998).

Since, junction point of usage of advanced tools was summarized in education and having information in a phenomenon named as producing knowledge, it is necessary that students and learners in all educational stages obtain skill in both fields to can move in the way of producing and promotion of knowledge independently. With regarding to importance and necessity of students problem, current study with considering effect of using information and communication technology on the rate of learning and information literacy of male students in third year at middle school in experimental science pay attention to importance of powering of students in using new technologies and its effect on learning rate and information literacy in this field.

Method:

This research is a experimental study with pre-test and post-test model with control group that in it effect of using information and communication technology (ICT) on learning rate and information literacy of male students in third year of middle school in experimental science have been studied. Statistic society in this research include all mall

students in third year of middle school of Arak city in educational year of 89-90 (N=1450) and using random cluster sampling, 64 students were chosen and placed into two groups of experimental and after pre-certification testing.

Hypothesis:

1. Using information and communication technology has positive effect on learning rate of male students in third year in middle school.
2. Using information and communication technology has negative effect on learning rate of male students in third year in middle school.
3. Using information and communication technology has positive effect on skill of determining and recognition information need of male students of third year in middle school.
4. Using information and communication technology has positive effect on skill of location and access to required information of male students of third year in middle school.

Scales:

For collecting information in this study, educational achievement test of experimental science and information literacy questionnaire has been used .Test of Educational progresses of experimental science is a test that researcher made it and has 30 question that has been provided with regard to content of experimental science in third year of middle school.

Justifiability of this test was supported by some researchers, teachers and perpetuity of this test was calculated by Cronbach's Alpha as %80

Information literacy questionnaire has been prepared based on four skills of information literacy.

1) These four skills include: determining and recognition information need

2) Location and access to required information

 3) Critical evaluation of information and integration it to basic knowledge.

4) Effective use of information in information literacy questionnaire.

Methods:

Method of performing study was as two classes selected as Arak experimental and control groups from Edalat middle school at Arak city as sample one randomly. In next stage, before performing independent variable and before performing experimental work, questioner and educational achievement test have been provide   to students in two groups.

They have been teach to during a session of manner of work with computer and using educational software and in next stage using didactic tools of communication and information technologies (software and multimedia) performed as independent variable for experimental group to experimented effect of these technologies on students. Using this technology instructed to students during 11 session (2hours per week) and for 7,5 months. In this time control group students were continued typical program and traditional methods. After completion of experimental work, again information literacy questionnaire and educational achievement test as post-test have been provided to two group's students.

Method of analysing data:

For analysing data in this part, software SPSS-18 has been used. For statistic analysing of data and for comparative considering of two groups student̊ score average, covariance analyse test and t-test and effect rate for independent group have been used. T-test used for sample average comparison it's a constant (one group) and comparison of average of two groups.

ANCOVA is suitable tool for control elementary differences among groups. Role of ANCOVA is that adequate compared groups based on one or more controller variable. Then because of information literacy questionnaire has been made using likert-scale and this scale is a ranking scale, non-parametric U-man. Whitney U test has been used for statistic analyse of information literacy.

Mann-Whitney u test when used that researcher can determined whether there is meaningful difference among dispersal of two independent samples. When calculated U value was meaningful statistic it conclude that score trend in one sinter of a society is move than other society.

Table 1: Summary results educational progress with pre-test and post-test

Groups	Pre-Test	Post-Test	Pre-Test Mean	Post-Test Mean
Control Group	32	32	11,50	11.01
Experimental Group 1	32	32	11,87	93.59

Test of first study theory.
Using information and communication technology has positive effect on learning rate of male students in middle school.

In order to measuring student̓ s learning rate of two experimental and control group, educational progress test has been used. Table 2 shows average, standard deviance, for scores of student̓ s post-test in learning rate of two groups.

Table 2: Summary results of ANCOVA test of educational progress with pre-test effect.

Statistic parameter of changes resources	Square sum	Freedom grade	Square mean	F	Unilateral meaning level
Pre-test	0,427	1	0,427	0,05	0,814
information and communication technology	295,69	1	295,629	38,62	0,000
Lapse variance	467,01	61	7,656		
sum	641341	64			

As table 2 show, ANOVAC test of progress with obtaining effect of pre-test among two control and experimental group is 38,62(p=0,000). Since this value is less than accepted lapse value in (0,05) so can understand there is meaningful difference among two control and experimental group, and using information and communication technology independent variable was effective in education.

The test of second study theory:
For considering   information literacy of students, Likert ranking scale in control and experiment group has been used. With regarding to than in this scale, measuring data in ranking level and in these
 Score of students is not cumulative, so far analysing data, Mann-Whitney u non parametric test has been used for showing scores of students of two groups in information literacy.

Table 3: Summary results of Mann-Whitney u analyse for post-test of students information literacy.

statistic	Z	Mann-Whitney u	Meaningful-level
information literacy post-test	6,63	18	0,000

As table 3 show, Mann-Whitney u value among two groups is 18 and since this value is less than %5, so second study based on effect of information and communication technology on student information literacy has been supported.

The test of third study theory:
Using information and communication technology has positive effect on skill of determining and recognition of information need of male students of third year in middle school.

Table4. Data result related to component of determining and recognition of student information need.

statistic	Z	Mann-Whitney u	Meaningful-level
determining and recognition of information need	4,520	225	0,000

As table 4 show, Mann-Whitney u value is 225 and meaningful value is 0,000, and since this is less than 0,05 , so can clime that using information and communication technology has positive effect on skill of determining and recognition of information need of male students.

The test of fourth study theory:
Using information and communication technology has positive effect on skill of location and access to required information of male students in middle school.

Table4. Data result related to component of location and access to students information.

statistic	Z	Mann-Whitney u	Meaningful-level
Component location and access to information	-3,381	288	0,001

As table 3 show, Mann-Whitney u value is 225 and meaningful value is 0,001, and since this is less than 0,05, so this theory was supported that information and communication technology has positive effect on skill of location and access to required information of male students in middle school.

Discussion and conclusion:
Considering first theory show that information and communication technology has increased learning rate of male students in experimental science. This is consistent with results of studies of [12- 14- 24- 18- 15- 16- 13] and [34, 40, 41, 43, 39]- also results of this study was discordant with same studies such as results of [17], [48]. Based on second theory can conclude using information and communication technology has increased information literacy of male students in experimental science.
Results of this study is consistent to studies such as [10- 24- 26- 28] [37- 35- 46].
Third studies showed that using information and communication technology has positive effect on skill of determining and recognition information literacy of male students in experimental science. Results were consistent with results of [10- 25- 16- 26- 28] and [41- 35]. Also, a result of this study was discordant with studies of [20] [47, 36].
Forth theory show that using information and communication technology has positive effect on skill of location and access to required information of male students in experimental science.
Results were consistent with results of [16, 10, 24, and 28] but is discordant with results of [30] with regarding to mentioned records, can know obtained results consistent with information and communication technology.
With regard to obtained results, it is propose that create and extend in computer workshop in all schools. And consider special planning related to information and communication for different stages students.

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