

The Usage Impact of Biology Simulation Software in Learning and Reminding

Mojtaba Rezai Rad¹, Masoumeh Rezai²

¹*Department of Educational Sciences Faculty of Humanities, Sari Branch Islamic Azad University, Sari, Iran ²Nurse Mazandaran University of Medical Sciences

ABSTRACT

This study was done to assess the effect of using simulation software's on students educational improvement in Biology course. The type of study is quasi-experiment which was done by means of pre-test and post-test with control and experiment groups. The present study population were consist of all 160 high school female students ,grade 3in Sari in the academic year 2011-2012in which one class were selected as a experimental group and the students were thought by using educational software and the students of other class were considered as control group which were thought according to traditional education methods (without using simulation).To collect data , teacher made questions such as :pre-test questions ,learning post – test questions and remembering post-test questions were used. Data collected by SPSS software were described by using descriptive statistics indices like mean and standard deviation and then inferential statistics indices (independent T, dependent T) were used in order to generalize the results of pre test and post test questions. The study results show that training by using simulation software's method are more effective than traditional training method, but no significant difference was identified. In one hand, training by means of simulation software's method is more effective on students remembering in comparison with traditional training method.

KEY WORDS: training, learning, Biology educational software's, multimedia, simulation.

INTRODUCTION

Contemporary world is the universe of expansion, and transportation of communication and skills. Issues and challenges of contemporary education than two decades ago, have gained accelerated momentum. One of the rational ways of encountering with this information revolution is dedicated to education. (Ebadi, 2004, p 12). Today's world is expanding, which is demanding new skills and knowledge, that if educational processes integrate with technology it will have much usefulness than before (Zofan 2005, p 62). One of this new knowledge is usage of multi-media in teaching. In a case of training multimedia, different definitions are provided; (tsai, 2007). Meyer articulates the reasonable reason of multimedia using as follows: (the Logical reason of multimedia deliverance, the presentation of contents in words and pictures, is that the total capacity of human cognitive for processing information must be used. (Emadi, 1999 p 7). Intellectual students, go beyond the old educational limits. In fact, teachers are guidance of students' educational routs, and students are the core of education process (KeyNejad, 2001, p 30). Learning through Multimedia training is a more enjoyable process and more attractive and in terms of training it leads to different yields such as learning and concepts appliance. One of the main goals in using multimedia is to enhance the quality of education through increasing the learners' motivation for their active participation in learning (Kafashy, 2010).

On this base, many educational systems in recent decades have tried with entry and usage of innovative technologies, improved learning in less time. (Fahimi, 2001). Now the question is that whether the usage of educational psychological software can increase the motivation to learning, progression and self-perception of students in a psychology course? The majority of obtained analysis and researches in this field indicated to the usefulness of this tool in originating the better learning and its time-saving peculiarity for teachers and learners, for example we can cite these researches;

Zarei and Evazyzade's study (2006) entitled as (educational multi-media and teaching – learning process) showed that the educational multimedia with using various elements such as text, sound, image, graphics, animation and Video beside creating a multi sensory environment for learners, can also cover different learning styles too. Also, this type of media with interactive features can also increase the learners' motivation to learn. Also Salami (2008) in the research entitled as (the role of media and educational tools in the teaching – learning process)

^{*}Corresponding Author: Mojtaba Rezai Rad, Department of Educational Sciences Faculty of Humanities, Sari Branch Islamic Azad University, Sari, Iran. Email: mojtabarezaeirad@yahoo.com

achieved these results that using of various educational media and tools in a variety of topics and material have benefits such as shaping the first-hand learning experiences, originating motivation and learning enthusiasm and help to its continuance, time-saving and making training easier, making better communication and understanding, formation the learning process faster, deeper and more stable. In other research Jimoyiannis and Komis (2000) paid attention to (reviewing the computer stimulation in physics teaching and learning). They considered two groups of 15-16 year old students as experiment and control groups. To each group the topic of velocity and acceleration trajectory motion was taught in traditional way, but for testing groups in addition to the traditional teaching the simulation experiments were also employed. The research results showed that the experiment group achieved a better conceptual understanding of acceleration and speed in the trajectory motion and they also have earned higher grades.

Research hypotheses:

- The application of Biology simulation software's leads to increasing in students' learning motivation in the Biology lessons.
- The application of Biology simulation software's is effective in educational achievement of students in Biology courses.
- The application of Biology simulation software's will increase the students' self- percept.

RESEARCH METHODOLOGY

This study is in the form of quasi – experimental with designing of pre-test and post-test along with control group of non-random (unequal).

Sample population and sampling:

Statistical population of this study was selected of all the female students of first year in University based on academic year 2011-2012 of Sari Township in Mazandaran. The size of the statistical population, according to educational Department of Sari Township is equal to 160people. That from this number, 5 classes to 100 female students, which were selected from first year in high schools of Sari Township with replacement method, and was divided into testing (experiment)and control groups.

Research tools:

Tools used in this study included simulation software's (CD) of the first year of University in Biology course that has been prepared by the researcher. And also it included in improving motivation test, self-perception test which were prepared by language teacher. The validity of the tests made by teacher, was confirmed on several occasions with the experts and the final verification of the test is obtained through open statistical about 0/89. At the beginning of the experiment a pre-test were performed of each groups. The testing group was trained by educational software and the control groups were taught by traditional learning methods. At the end of training, from each tow groups the post-test to measure the motivation, self-perception and academic achievement were persecuted. For testing the research hypothesis, the t-test for every independent group was used.

RESULTS

In this section, at first, the average scores of students in variables such as an academic achievement, motivation and self-perception in the situation before the intervention (pre - test) were compared. Tables (1), show the students' average scores on the variables studied in the pre-test position. This comparison is done for the purpose of identification that whether these two testing and control groups at pre-intervention study have significant differences from each other or not. If the comparison of these two groups shows that between them there are not any significant differences, we can make sure that the elicited differences in the groups are from the impact of intervention and training.

Also, because the present study is a design of pretest – posttest with control group to analyze the obtained data the independent t-test was used for confirmation or rejection of hypotheses.

Variable	Group	Average	Standard deviation	t	df	Meaningful level
Motivation	testing	22/46	4/7	2/90	98	0/024
	control	20/00	3/7			
Educational achivement	testing	15/56	3/4	2/73	98	0/034
	control	13/69	3/9			
Self-perception	testing	53/29	5/6	1/83	98	0/036
	control	45/50	1/7			

To test hypothesis, T test was used. According to the results of table 1 ,the obtained P value (motivation=sig:0/024, educational achievement =sig : 0/034, self perception = sig : 0/036) with the confidence level of 95% is less than significant level of (α =0/05). So the observation is strongly confirmed research hypothesis H1.therefore statistically and with confidence level of 95%, it can be said that the usage of Biology educational software can be effective in increasing of students learning motivation in Biology lessons.

Conclusion and discussion

in General final summarization we can state that the research result with supporting of previous researches that computer and new multimedia are able to transform learning environment and make it attractive to learners, resulting in absorbing students and learners and make them to attract in learning process, these tools make this goal by injecting a reinforcing stimulus into the teaching and learning process to improve educational quality and in this way to increase learners' motivation to learn lessons. With increased efforts of students' motivation to learn more and thus they are effective in improving students' scores. By Increasing in motivation and obtaining higher scores, it leads to bring out the positive attitude of students towards their abilities and ultimately leads to a positive self-perception. Therefore, according to the research findings, it was showed that the educational Biology simulation software helps in the areas of motivation, self-perception and academic achievement of the first year of high school female students.

Since educational software is able to optimize learning and teaching process and provides diverse and rich learning environments, our educational system must create changes by the fit and well usage from it in the training process and curriculum. So multi- media can be useful and effective as an educational tool in all stages of issues related to learning, because they have potential facilities and capabilities to optimize the educational matters.

REFRENCES

1-Zofan, Shahnaz. (2004). Application of new technologies in education. Tehran, SAMT

2-Zavarky Zarei, Mohammad Ismail, and Avaz Zadeh, Iraj (2007). Principles of educational multimedia design. Of Educational Technology, No. 9-6-2

3-Fahimi, M. (2001). Role of information technology in education. Approach, F 25, 218-223

4-Kafashy, Hamid R., (2010) educational software. Journal of Educational Technology

5-Ebadi, Rahim. (2004) E-learning and education. Smart School Institute of Technology

6-Emadi, M. (1999) Construction of multi-media software, Tehran: Art Institute of Persian month

7-Key, Nejad, Hussain (2001) Multimedia Systems, Tehran, Art Institute

8- Tsai,R & Jenks M .(2008) using computer multimedia in the classroim in a teacher guided mode: vocabulary acquisition in a university EFL Setting in Taiwan.In C.Montgomeries & J. Seals (Eds), proceeding of world conference on educational multimedia, hypermedia and Telecommunication 2007 (pp.4038-4043)Chesapeake, VA:AACE

9- Jimoyiannis.Athanassios and Komis.Vassilis (2000).co,puter stimulations in physics teaching & learning :a case study on students understanding of trajectory motion.cpmputers and education. 36pp.183-204