

Three-Dimensional Technology in the Educational Process and Learning

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Abstract:-The need for extraordinary innovation in the field of electronics technology, has also changed the nature of education and the teaching process. On the other hand, as previous research has shown, the highest level of learning is done through the sense of sight. So it is worthy to use visual teaching aids, in order to achieve more, and we can also have it mixed with new technologies and prevent the vision students, to rely on the teachers only. One of these emerging technologies is the three-dimensional visual technology. This technology has a great potential, in most areas, that it has opened its place. The aim of this study is to evaluate the notice and interest of students in their learning process is technology the three-dimensional. The data which is needed; is collected with library research, and methodology of the study is cross-sectional in nature.

Keywords: *the three-dimensional technology, visual teaching aid, educational technology and potential.*

Introduction

The research results have shown that the different senses don't act as a unique performance and the same role. Results indicate that approximately 74% of a normal human is being learnt through the sense of sight, 13% through hearing, through the sense of touch 5%, and 3% through the sense of smell, also 3% sense of taste. It is noticed that although a large part of human learning occurs 75% through the use of visual sense, but in most cases, teachers' great emphasis on the use of 13% sense of hearing, while research and studies in the field of listening show that time learners is spent listening approximately 60 % of in primary schools and 90% of secondary schools and universities. Students are able to leave only a small part of what they heard (probably about one-fifth to one third). Even adults will also be able to save what they heard, on average 50% of their minds. About two months later, this rate will be reduced to half. As can be seen, human learns less, despite a lot of time spent in the use of hearing. The diagrams can motivate learners to pay attention, to understand better, help to remember and development of ideologies high level and the concepts of increase .Images valuable content with relatively low costs of production, distribution and mix. The graphics are also well illustrate abstract concepts or unfamiliar to them.

So it is worthy to use visual teaching aids, in order to achieve more, and we can also have it mixed with new technologies and prevent the vision students, to rely on the teachers only. One of these emerging technologies is the three-dimensional visual technology. This technology has a great potential, in most areas, that it has opened its place. It is true that not all centers and schools in the world, the help of three-dimensional technology is not universal, but it is time that the doors of school and our country will be opened to this visual technology.

Research purpose

In this study has been tried that first a minor review on important definitions such as: having information

technology and educational technology and also three-dimensional technology and then the parameters "to evaluate the notice and interest of students in their learning process is the three-dimensional technology ". The research question in this study includes:

- 1) How much are the rate of interests and the use of three-dimensional images by students in learning process?
- 2) Can three-dimensional images be a helping tool in teaching?
- 3) Is the three-dimensional technology noticed for educational purposes?

Theoretical study

Vahman (1997) has identified computers as teaching aid technologies (Hardman, Drew, Aegean, the translation of Alizadeh and etc. 2009). Martin (2005) has attracted to the benefits the purpose of incorporating information technology in the learning environment of students. He concluded also the result of a review article on the subject of technology and education between 2003-1963 that the failure of many students has because the technology is not correlated with disability of students. Lading (2005) writes in his book "the use of educational technology": technology can be used in its simplest such as holding a pencil in hand or to be effective in a more sophisticated form such as software designed. Gardner (2003) is concerned on the use of technology in the field of special education. He presented examples of combination of multimedia and software-related subjects as well as networking activities to improve teaching methods and show how to incorporate them into the curriculum and the positive effects (Tuttle, 2008).

In addition, supporters of the use of technology in education insist on its positive impact in terms of increased confidence, independence, quality of life and they believe the use of software is effective in normalization, integration and training (Hannifin, 2000). Studies have shown that multimedia-based education can help students'

comprehension and retention (Keppel, 2009; Web and Anta, 2008). In educational multimedia, including the media that provide different forms of engagement, learning easy and stable, so can be designed a number of activities to reduce educational problems in learning centers (Zare'i Zavaraki, 1999; Sharp, 2006, the translation of Yarznjany, 2008).

Mayer (2001) says that the rationale for providing multimedia presentations is using words and images and he considers the cognitive capacity to process information. Accordingly, a decision is on how to design multimedia messages reflect fundamental implication and on how human learning. The advantages of multimedia are creativity, save time, eliminate useless activity, add time to interact with students and discussion, presented in various forms, to identify different styles of learning, active learning and feedback, the possibility of repetition, learning control the pace of global learning process, facilitating participation in activities, interaction and mutual relations with the user (Wolfe Gram, 1994), combining language skills for example: reading, writing, listening and speaking (Chery, 2002), the performance of some phenomena, concepts concrete (Rosen and koi, 2001).

According to the theory of learning skills, learners should be allowed to choose their own teaching methods and form of presentation. Learners will be able focus to provide the format that is compatible with their learning style, if a particular subject in multiple formats such as video, written and spoken texts (Mayer, 2001). The use of multimedia has been positive, not only in normal teaching, but that is effective of future outcomes training. In addition Vacant Scree (1977) has shown the benefits of computer-based training, in comparison to traditional training or teacher-centered, providing immediate feedback, to avoid subjective judgments, facilitating the process of individualized education, increasing attention span and motivation of learners, learning various (Beach and Aveda, 1992). Research in the field of learning different senses suggests that when learners have the opportunity to hear, to see and can be interaction with the learning environment, they can remember up to 80 percent of information (Zoufan, 2000). Results of Kadivar and Shahamat (2008) about cognitive styles in computer assisted learning environment, suggests the impact of multimedia on improving the learning process. Multimedia environments to give depth knowledge with increasing comprehension, speed control (speech rate), the creation of mechanisms for storing the answers and evaluation (Pickering and etc., 2000) and they to correct and to facilitate learning in calm and desirable place (Asadzadeh, 2007). According to cognitive theory of Mayer (2007), optimize learning is possible when spatial intelligence (visualization) of students to be strengthened through the appropriate procedures.

Methodology

The data which is needed; is collected with library research, and methodology of the study is cross-sectional in nature

Findings

The review show that in spite of interest of students in their learning process is the three-dimensional technology,

unfortunately the use of three-dimensional visual technology, is not being well used for educational purposes and in use they are in the process of learning and teaching, are not impressive.

Information technology

Information Technology has various definitions. The following is a look at some of these definitions:

"Information Technology is the term that used to describe technologies, it can we help for recording, storing, processing, retrieving, transmitting and receiving information" (Behan & Holmes, 1998). Informatics High Council of Iran following is provided a definition for Information Technology in 1378: "IT is called the interlocking set of methods, hardware, software and communications equipment that provides information in various forms (audio, video and text) the collection, storage, retrieval, processing, transfer or offer" (Mohammad, 2003-04). "IT is like the center of a series of activities directed at the control, management, efficiency, production, training and upgrading a system with a center responsible." (Same source)

"Information Technology involves: collecting, organizing, storing, and disseminating of information in the form of sound, image, text or number with the use of computer and telecommunications." (Fahimi, 2001)

Educational technology

Technology or educational technology from the Greek word 'Technologia' means systematic approach. Educational technology is the means of knowledge for practical purposes. In the other hand, it applies to other educational technology tools and electronic technologies, to improve the quality of learning and education process. The "J. R. Gus" (Manager of Educational Innovations Research Center and the Organization for Economic Cooperation European countries) says educational technologies include the establishment of a system organized and learns with the benefits of modern methods of communication and new ways of teaching, tools visual equipment and enjoying the organized class. "James Brown" says educational technologies is systematically designed; implemented and evaluated with the use of art and communication sciences such as psychology. Hussein Zanganeh suggest in his book "the theoretical foundations of educational technology: "that is systematic use of hardware and software to solve the problem of learning". According to him, educational technology has both hardware and software aimed at solving learning.

History of educational technology

A very long time, there has been educational technology such as frescoes and hieroglyphics. The first used of this technology return to carved stone tablets of the Ten Commandments of God by Moses. Poetry of Homer and the Odyssey was orally administered to the public. They don't learn through reading these poems, but to remember when listening to it. Forwarding to others was with oral expression, not written. Later, papyrus and paper is provided the distribution widespread of knowledge and information

by monastic books and manuscripts. In spite of creation the printing press by Gutenberg, was not possible production of books in the fifteenth century. With the discovery of electricity in the twentieth century, was possible the invention of the telephone - Radio - TV - Computers, etc. Each of these inventions applied for training. First training programs were by Broadcast radio in mid-1920 and by TV inputs in half of 1950. Between 1930 and 1980, the videos 16mm use wide in training, and video cassette was gradually replaced. In 1970, the use of audio conferencing began for educational purposes. Computer technology was used with name "training machine" in the late 1970. The first Internet-based courses appeared in the mid-1980 and worldwide web has made significant progress in 1995. But we can say e-learning was entered to a new level by making three-dimensional technology. If yesterday, the training profit only the teachers and coaches; and the book was more important in education, today the training are met teaching methods and tools and new environments. Recent advances in the computer industry and information put, login information and the emergence of networks of local, national, regional and international, and especially the Internet, multimedia, communication technologies, tools and new technologies; including three-dimensional technology to the designers, program managers and program administrators of educational.

Computer assisted instruction system

Information Technology tools, has a long history. However, with the advent of the Internet have occurred major changes in the area of IT tools, but it is impossible to forget the most important tools of information technology: "computer". Computer is unique for storage capacity and provides comprehensive services within the audio, video, text and speech ability. The system includes multimedia systems, text, sound, images and material related to computer based and is generally complementary will be used in some cases to provide education on the individual or group of learners. In this approach, learning is not an individual task, but expert teamwork: media professionals, informational specialists, instructional design specialists and learning specialists. In this regard the computer is self-sufficient as a teaching machine. Computer-aided teaching modes including: practice, training, simulation, problem solving, and etc. . Spatial intelligence and stimulate individual progress is stimulated by computer environment. The computer is a tool that gives to learner the opportunity to be enhancing the space your learning environment by using a new method and with the benefit of the ability. Multimedia environment has taken large strides in the education process by offering different colors, image, film and animation, video entertainment, puzzle computer, software and graphic design, three-dimensional images and films. Image have attracted as a mediator of learning, the attention of many researchers in the field of education.

The benefits of using computers to learn

- computer can be accelerated learning and personalized training.
- Computers are multimedia tools with combines the

functionality of video, print, audio can be linked different technologies.

- Computers are a file interactive and highly flexible.
- Information technologies to reduce costs.
- Computers increase access.

Three-dimensional technology

Today most of us have heard about the three-dimensional technology. This technology is being developed with dizzying speed. 3D (abbreviation of 3Dimensional) means to be a three-dimensional object with width, height and length (depth). We should have a fair understanding of human vision for understanding this technique. Man has two eyes; these are approximate at a distance of 5 cm. This distance be minor differences in the presentation of image for your eyes and transmit it to the brain. The physical environment around us is a three-dimensional environment. In fact, we are on the move in a three-dimensional environment every day. Humans has been equipped to the eyes such as all other creatures, the eyes are side by side and at an angle. This placement means that each eye sees area of other eye and both see one area at a time. Of course, this area saw has very little angle, so when you look at an object with one eye and the other eye closed and the other once again see the same object, it feel difference of it's angle. The objects, that each eye sees, receive separately to the brain and brain converts them into a single image and therefore slight differences in the form of something called "depth". This function creates a three-dimensional image. Goal of the three-dimensional technology is to create distance and trick the brain to see two different images of a resource. It is necessary to see three-dimensional images to use three-dimensional glasses. The most common method for see three-dimensional images and films are two-dimensional, two-color glasses. That is different from the color point of view, part of the image, filtering out, causing small changes in view of each eye, brain two different images together, and thus becomes an image with depth. There are available currently two main types of three-dimensional glasses called active (active) and passive (passive). Active shutter glasses are electronic mail and it is used to display the image. But passive glasses are not a different way to rebuild their image.

History of three-dimensional technology

Stereoscopic is being used more than a century; it began initially with black and white photos then expanded range of color photos and videos. Stereoscopic is sometimes used in the geographical maps of the military, especially the Air Force, as well as in architecture, galleries, and industry as a recreational tool. So different companies have made special cameras for this purpose .History of stereoscopic 3D is from Motion pictures in the late 1890, but the mechanism was incomplete at that time. Finally, on November 27, 1952, Bwana Devil was shown the first three-dimensional film. Photographic film, making three-dimensional images and three-dimensional film for amateurs as well as very expensive and difficult, and only a handful of professionals and the rich were able to do it, but advances in digital devices has changed the rules.

Image and the learning process

Shepard revealed that 99% of subjects after two hours, the authenticity of the images that had been their recognition by doing experiments. Standing estimated that the set of one million images may to be see, 75% of them can hold in your memory after two years. In this study were used 116 students in fifth grade of elementary school and first year of middle school for measurement of the perceived impact on children's image of the word. Materials used in this study were 15 images and 15 texts with 150 to 200 words. Students participating in the study were analyzed 25 questions in each experimental condition. The results showed that the subjects' perception of "images" and "image with the inscription" was more and better than of "image without the inscription ". Another study tried to measure people's sensitivity to visual stimuli. Barack and V. Linger wanted to pull a group of subjects who were high school graduates, the names of her classmates with their pictures for measure the sensitivity of the image .90% of participants were able to afford to do this on their health.

The use of new technologies in the educational process

Youth interest to new technology is undeniable. The rate of this interest to the extent that even they use the technology in the process of studying and learning and benefit from them. A study examined by Joubert G. and under the auspices of the Institute of Political Studies in Aix-en-Provence of France which the tendency of students and educational organization managers and even the parents of these students to the technologies in 2013 (Fig. 1).

The result was not unexpected, but it was followed a surprise; students rate desire to use these technologies in the learning process was equal with the interest rate of educational managers. The statistics showed: managers and training centers aware as well as the impact of up-to-date technologies on youth and they can not recognize the reflection of these technologies on the learning process of students deny. On the other hand parents of students were opposed to the inclusion of these technologies in education a few years ago and they are think that these technologies hurts to learn their children, now they wanted that these technologies enter to the process of learning and teaching.

Another parameter that studied in this research was: the used of technologies is necessary or not for the teachers (educators)? The results were almost the same as before, students and managers have a single idea again and they considered use of new technologies by teachers is necessary. The votes of students and managers of educational institutions were different with the votes of the parents, but this satisfaction is shown also the parents were not disagreeing with this strategy. (Fig.2)

On the other hand, another study was examined on a number of seventh and eighth grade students, according to the usage of the students charts and images for learning, in collaboration with the Education Development Center (CRDE¹) and the Faculty of Education (FSE²), University of Moncton in Canada in 2007 (Fig.3).The students was noteworthy attention to the three-dimensional technology in

the seventh year .But we never forget the three-dimensional technology was in its infancy that time.

Conclusion

The image of education tomorrow is expressed this way: "Education will change in the new millennium. Students will not be visible with books and bags in the corridors. While there will be a school, there are many differences in the management class. They have limited means used to transfer information. Electronic information is able to write and an important source is not wasted, etc."

On the one hand we founded, the highest level of learning is through of visual sense, and on the other hand, with the advent of computers and the Internet communications revolution and boundless influence, three-dimensional technologies such as other technologies have opened in all ages and in all fields, even in the process of learning and teaching. This research accepted this matter. This technology should not be viewed solely as a hobby and for passing of time, but it can be used for educational purposes. Of course we should not forget that the arrival of this technology in the fields of education must be done by professionals. Getting serious this technology and using the national fund for technology and three-dimensional technology for education, can be an effective solution for greater efficiency scholars in each country. Parents and schools play a major role for this purpose, also advertising will be ineffective. In general, in spite of the great potential of this technology (in this study, we examined only one of the potential "the interest of researchers"); unfortunately still the bed is not properly being used in the training area. Is not better, to more properly used of new technologies as "three-dimensional technology"?

Suggestions and Solutions

Components that can be effective to achieve, includes:

- 1) Authorities and officers of educational planning.
- 2) Schools and the educational development system of the country.
- 3) Families.
- 4) Instructors (teachers, coaches and professor).

Solution representation

- 1) Understanding the new standings for technology by the authorities and those who are involved in planning and educational process, with goals for decision-making and right policy for other institutions; and earning the new ideas in this field.
- 2) Educator's awareness of the status of updated technologies for teaching and learning process.
- 3) Families awareness of the status of new technologies for teaching and learning process.
- 4) Specialized supervision on the preparation and distribution of teaching aids along with updated technology.
- 5) Considering the national capital for designing and production of teaching aids along with updated technologies and adapted to the local culture.
- 6) Opening the doors of school and our country to this visual technology.

¹ Centre de recherche et de développement en éducation

² La Faculté des sciences de l'éducation

- 7) Evaluation and reviewing the effects of new technologies in teaching and learning process.
- 8) Effective advertisement for used the technologies in teaching and learning process.

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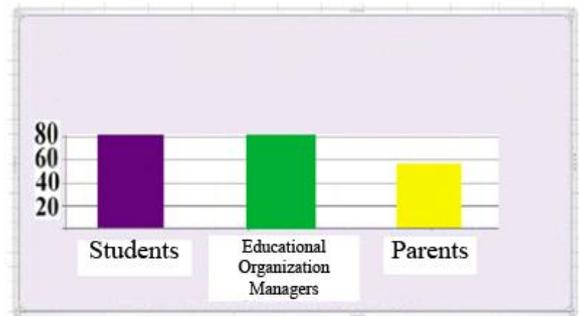


Figure 2 – the necessity of using new technologies by instructors

Different Educational Sketches	Seventh Grade	Eight Grade
Vertical Diagram	%42	%20
Circular Diagram	%25	%29
3d Diagram	%33	%57

Figure 3 –Evaluation the use of different sketches by students

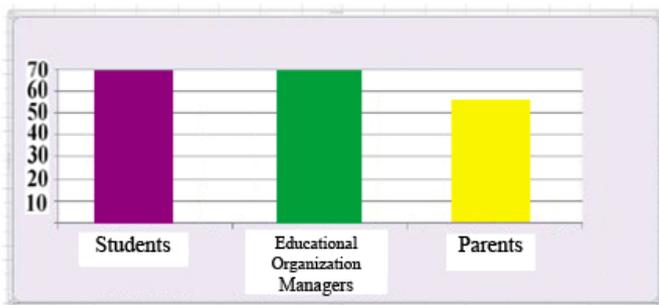


Figure 1 – Evaluation the notice to new technologies for education process