A VIRTUAL REALITY EDUCATIONAL SYSTEM

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Abstract: No doubt; today's world is witnessing an unprecedented explosion of information; where people's awareness of the importance of information has developed and consequently their interest to invest it has increased. This research deals with explaining and clarifying the concept of a virtual reality educational system. The research has adopted two methods, Descriptive method & experimental method. This research has also included sample: The study consists of (100) students from the eighth level at the faculty of computer science & information technology – Neelain university.

This research includes the concept of A virtual reality educational system for the development of computer networking skills, Contain this research on five chapters, Chapter I contains the general framework of the research, the importance of research, methodology and sample assignments and Chapter II contains theoretical framework and is divided into three axes (e-learning, virtual reality, educational software design model) and third chapter includes procedures for research and Chapter procedures includes Find and interpret the results of research and commandments

Introduction

It goes without saying that education is one of the basic pillars upon which nations build their renaissance and prosperity; and it is also one of the main axes of the development of civilizations; from this point of view; education ought to be looked at as being an essential, efficient and significant element of integrated systems of communities; because it is closely connected with economical, social, political, industrial, agricultural and other systems. Moreover; education must be considered as being an integrated body with specific objectives and comprising systems (Salahudeen Mohamed Tawfeeq 245, 2003).

No doubt; today's world is witnessing an unprecedented explosion of information; where people's awareness of the importance of information has developed and consequently their interest to invest it has increased. Therefore computer and information technology have

become the basic platform for development. Education is one the fundamental elements upon which nations and governments build the futures of their countries in this age of information technology in which we live today (Hasanain Shafeeq 161, 2008).

In view of the great changes witnessed by today's communities with the advent of information age and revolution of telecommunications, arises an urgent need to update educational programs and curriculums, particularly at this very time in order to cope with these changes. Since the past century we have moved from the industrial age through into the information age and now we have arrived at the "knowledge age". The ability to acquire correct knowledge, understand it and implement it efficiently shall be one the most significant skills of the current century and **education** is the key word to accomplish all that we had hoped for. In fact our existence in the twenty first century as individuals, institutes and nations will depend on our ability to learn and apply what we have learnt on our day to day life (Majdi Aziz Ibrahim 419, 2007).

Perhaps the great strides of our world today have put into a real problem those who are concerned with the profession of education, for; the traditional educational institutes failed to solve the educational problems of which the most important is the inflexible curriculums, traditional teaching methods, school tables system and some other problems. (Mohamed Atta Madani 11, 1995).

Modern education has become the only instrument by which our community can face the challenges of our time which are featured with many changes and constant developments in various fields; such as political, economical, social, educational and many other fields. Education is the foundation for future generations to come; it is also the way towards stability, prosperity, power and venturing into markets locally and abroad. (Mohamed Mohamed Al hadi 98,1995).

Therefore educational managements have always been concerned with topics of electronic education which is obviously has a brilliant future; some are convinced that it shall be the most ideal and most prevailing method of education and training in the future (Hasanain Shafeeq 162,2008).

Future technology will depend on (virtual reality) technique, it's a method of displaying images created by a computer that appear to surround the person looking at them and seem real and it has become an effective technological educational aid that help in developing new types of education and present curriculums terminology via software that

simplifies individual education at a reasonable time, with high competence and distinguished evaluation criteria (Mostafa Abdusamee Mohamd 163, 1999).

Virtual reality enables an individual to acquire experiences that cannot be learnt in reality due to many factors such as risk, high cost and time limit. This technique is a kind of mixture between fiction and reality by creating an artificial, live, imaginative environment capable of representing actual reality (Fabio, B & Frances, 2009, 620).

Virtual reality technique has been used in many fields such as Medicine, engineering, architecture and education, In view of the fact that virtual reality has very high potentialities in the field of education; specially those subjects and syllabuses that cannot be represented in reality; as (computer networks syllabus). Therefore the utilization of this technique is of a great importance when it comes to dealing with the immense progress of teaching methodology and multimedia. Hence, we need to employ the technology of virtual reality and benefit from it in respect of solving the different problems facing the educational process.

Research Problem

Today's world is characterized by rapid changes caused by scientific & technological progress and information technology, that is why it has become an incumbent necessity for the educational process to cope with those changes in order to face consequential problems such as abundance of information, increase of students, shortage of teachers and far distances. And solve them by furnishing new educational systems based on electronic teaching technology; specially those institutes which still use traditional methods in their education.

Research problem can be further elaborated by the following examples:

1-Students' need to be acquainted with the skills required for setting up networks in terms of assembling and choosing the type of network according to its location and financial cost.

2-In most instances there would be no networks laboratory available for the set up and control of the nets; and even if it were available, it would be very expensive.

3-There has always been a difficulty in imagining the overall components of networks; specially the large ones because of lack of knowledge of the elements comprising the network.

4-As a result of the difficulty in imagining the transmission of data among the layers of net works that comprise (Material layers, data channel layers, network layers and some others) a student needs assistance to help him understand the transmission of data and how to imagine layers.

5-The outcome of a questionnaire and personal interviews revealed to the researcher that, students' level of networks skills was weak due to the absence of **Hard ware** and that, their subject was abstract while in fact it needs imagination.

6-All the previously studied researches have confirmed the importance of using new technological innovations; such as the technology of virtual reality in education.

Hence, the problem of the research can be defined as follows: educational institutes are void of educational systems that depend on virtual reality technique; according to that; research problem can be reformulated in the following fundamental question:

The proposed virtual reality education system for the development of computer networks skills?

And from the above question come the following sub-questions:-

1-What is the nature of virtual reality education? And what are its principals?

2-What are the skills of computer network required to be represented by the technology of virtual reality?

3-What are the bases of building virtual reality educational programs?

4-What is the proposed conception for designing and producing the proposed program?

5-What is the efficiency of the program on developing computer network skills?

6-What are the necessary proposals and recommendations to increase and activate the usage of virtual education by educational institutes?

Objectives of the research:

1-To gain knowledge of the most significant skills of computer network.

2-Define the bases and criteria for designing the proposed virtual education system.

3-Present a conception for designing and producing the proposed system.

4-Try the efficiency of the proposed system on improving the skills of computer network at the level of fourth grade students "computer teachers branch".

5-Provide recommendations that might help in activating the usage of virtual education.

The importance of the research:

1-It could be useful in developing electronic education, Being one of the unconventional methods of education would improve the standards of teachers as well as students.

2-Perhaps it may help in filling up the gap in Arab researches handling the design of virtual educational systems.

3-Provide a model of virtual reality education system that can be designed & produced in the light of electronic education criteria and also benefit from it in carrying out more researches.

4-Large sectors of educational institutes may also benefit from it; such as faculty members & education designers, in addition to education institutes that commenced to design& develop their syllabus through internet.

5-Overcome some of the educational problems such as the upsurge in demand for education & the multiplying number of students.

Terminology of the research:

1-Electronic education: Defined by (Mohamed Hafiz and Adnan Sharif 15, 2010) as "it's an educational system & a method for learning by using special electronic systems, communication techniques, and modern technology such as computer & its networks, Multimedia, and internet portals for conveying an audio-visual data to learners; synchronous or asynchronous at the shortest – fastest time possible; from anywhere; at a low cost; high quality and in such a way that the education management can control it and assess and evaluate learners' performance."

2-**Virtual reality:** Defined by (Al Ghareeb Zahir Ismail 282,2001) as " a transfer of human consciousness to a virtual environment electronically formed by freeing the mind to become immersed in implementing what is imagined far away from the body, it's a world that is neither fictional nor real evidently because its occurrence surpasses the limits of simulation.

3-**Computer networks skills**: Defined by this research as (it's a combination of faculties when acquired by an individual; she/he can connect & assemble computer networks and understand the topography of networks along with gaining some speed, precession, and accuracy; which would save time, efforts and cost.

Research methodology:

The research has adopted two methods:

1-Descriptive method: the concept of descriptive method is about explaining the reality of events, and not merely limited to describing reality by simply stating its existing facts as they are, but goes further beyond that to analyze and interpret them for the purpose of deduction in order to correct, update or complete them. The descriptive method has been used for processing the theoretical framework of the research by describing, interpreting and analyzing the concepts of electronic education, virtual reality, principals of designing virtual educational systems and also developing computer networks skills.

2- Experimental method: for designing and producing a proposed virtual education system for developing computer networks skills and assess its efficiency in developing computer networks skills at the level of fourth grade students (teacher qualifying branch).

Research variables:

1.   Independent variable: the proposed virtual educational system.

2.   Dependent variable: computer networks skills intended to be developed on research's sample students.

Experimental design of the research:

In the light of the nature of this research; we have chosen the experimental design known as "Pre – post design" which employs two equivalent groups; one for experiments and the other for control.

Table (1) experimental design for the research

Research sample:

Study group	Pre assessment	Dependent variable	Post assessment
control group	Electronic application test	Present educational content in the traditional method	Electronic application test
Experiment group	Electronic application test	To present the proposed virtual reality educational system including contents & mediums	Electronic application test

The study consists of (100) students from the eighth level at the faculty of computer science & information technology – Neelain university:

1-   Experimental group consist of (50) students.

2-   control group consist of (50) students.

Instruments of the research:

1-   Aptitude test to assess computer networks skills of the study sample.

2-   A proposed virtual reality educational system for developing computer networks skills.

The results revealed the followings:

1-   Signified the importance of electronic education and its effective   role on enhancing the efficiency of learning and aiding.

2-   Students would acquire skills that help them to deal with the components of computer and expand their intellectual capacity.

3-   Statistically; some differences have been noticed on the intellectual capacity between the two assessments in favor of the "post assessment".

4-   Statistically; there have been some differences on the average of the degrees of the "post- test" between the controlled group and experiment group in favor of the latter.

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