Online Reading and Learning in Virtual Instruction Environment

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Abstract— In classic educational systems, educational methods are based on asynchronous use of textual tools and these texts are considered as the most basic educational resources. Obviously, the exploitation of such a system and the study of texts are of the most important and fundamental issues in education. In the development of such education, the main issue is the promotion and encouragement of the learners to study. The Increasing use of ICT in education has led to the evolution of methods, systems and educational resources. The evolution of information resources from print mode to electronic mode has provided specific advantages for readers and transformed the exploitation of information resources. Over the time and with development of virtual education, the invention of new training methods and the use of modern tools have caused classical academic texts lose some of their previous positions and the based learning environment on training texts have been replaced with educational communication environment and collaborative learning environment. In this article it has been tried meanwhile pointing to the advantages and disadvantages of electronic studying re-sources, an overall approach applied to virtual educational systems and information resources used in this system, are known as learning object. With familiarity to new educational environments, the study position in these environments has also been considered.

Keywords— Electronic Information Resources, Electronic Education, Virtual Learning Environments, Study in Virtual Environment.

I. INTRODUCTION

Information technology has changed all aspects of the human life and has a fundamental role in most development programs of the countries. Information technology can be considered as a powerful tool for promotion of the study quality and effectiveness so, learning as one of essential human requirements affected by new methods of information technology applications. The exploitation of electronic resources using internet communication field as the web-based has increased by increasing development and worldwide web facilities. For the development of electronic learning, web access development and the study of resources in web environment as an essential field are taken into consideration. The word, electronic learning, is applied to total training activities which are done using electronic tools such as audio, video, computer, networking and distributed, internet and web-based or virtual tools, conceptually means active and intelligent learning which changes the learning and training processes also expands and deepens the presence of information technology and communications in learning and training.

In publishers, writers and readers' view, electronic resources available in the virtual environment have different advantages, the most advantage for such resources in publisher's view are their lower costs than printing molds. This is a significant issue that has taken many researchers attentions [1] [9], [10],[12], according to Harnad's view (1996)[2] [5] the cost of electronic resources 30% and according to Whisler and Rosenblatt's view [3](1997)[13] it causes 20% saving in production costs than printing molds.

However, the presentation of done researches and produced articles to other authors and in a least possible time is more important for authors. In readers' view, the advantages of electronic resources have taken more attention by libraries and librarians than other cases. The most important advantages can be classified as follows:

Are easily accessible

Resources are published more quickly

The possibility of easy searching within the text

Service to more users

The possibility of using multimedia environments

The range of time for using resources (Afzali, 2004: 189).[1]

II. VIRTUAL TRAINING

The history of learning technology moves backs to clay tablets, rocks writing and handmade papers before Gutenberg ra. Today in an age of communication, web and internet include in their own all kinds of learning technologies and different generations (Grrison and Anderson, 1383:81). [4] Currently, none of different types of training is more comprehensive in the world than potential of web-based virtual trainings. In the past, some organizations enjoyed these virtual learning environments electronically for holding the courses which was the same as traditional learning environment but some of electronic tools were added to them. Since then, technologies and learning theories for design of web-based virtual environments have widely been studied.

One of the researches essentially done in education through continuous web-based virtual classes and by use of continuous symposium experiences on distance train-ing is the researches of Marguerita McVay Lynch[4] re-search group. In recent years, some researches have also been done on efficient learning process in virtual environments, which the comparison of Distributed Passive Learning environment (DPL)[5] and Distributed Interactive Learning environment (DIL)[6] shows Distributed Interactive Learning environment (DIL) is markedly superior to the other. Consequently,

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1 Montgomery 2002; Kingma 2000; King and Tenopir 2000
2 Harnad.
3 Whisler and Rosenblatt
4 Marguerita McVay Lynch
5 Distributed Passive Learning environment
6 Distributed Interactive Learning environment

virtual learning systems such as WebCT, TopClass and Blackboard are widely used in daily universities lessons. These systems provide tools and learning materials and lots of studies for learners (Khalifa, 2002). [8]

Educational communication environment in virtual training, provide some tools in order to create and transfer learning materials, training/learning implied subjects and video conferences. Learning materials include some available documents and files. Training/learning implied information consists of status information, correspondence information and feedbacks. Learning materials and video lessons are available in two ways:

1. Live broadcasting
2. Archive recovery as immediate service

Learners are able to observe the lesson simultaneously in live broadcasting. Also, there is the possibility of saving it as a lesson tool for immediate service content.

A. *Characteristics Of Virtual Learning*

Educational strategies have been developed from traditional system (traditional classes) to virtual learning environments with the development of computer and communication technologies, and are moving towards continuous and virtual web-based training. To identify such environments, the identification of their characteristics is required. The characteristics of these systems can be defined as follows:

1) The promotion of self-education training: Learning environment in this context should be free risk environment[7] and learning material presented in self-centered and customized form to learners. Self-education learning promotes the learners' self-confidence and creativity and overcomes some barriers to learning such as anxiety and stress.

2) Promoting the interaction between teachers/learners, learners/learners and increasing of learners steadily participation in virtual classroom: interaction can cause the learners to share experiences and produce knowledge.

3) Helping to debate and implied training: In educational activities, different learners with various cultures have the conception of knowledge distinct from each other, so implied debates are very important.

4) Providing dynamic and living learning re-sources to learners (Yang and Liu, 2007) [14]

B. *Technologies of Virtual Training Since, Training*

Since, training materials in continuous virtual environment include large numbers of audio/video materials (video and audio), to ensure service quality about education content is difficult. In order to run these files, a wide bandwidth is required which hardly provided by network. So, streaming media technology[8] is used. Using streaming media technology, a Stream[9] or a file can be multi-audience.

Streaming media server is able to monitor and automatically control the bit rate in users' computers, which is according to available bandwidth and final users can receive the contents in the highest quality. Virtual training technologies in general refer to tools in formal educational activities for publication, explanation, communication or entering the learners and teachers to the designed meaningful activities and encourage to learning. Today, Continuous web-based virtual classrooms facilitate learning technology and classroom interactions including different types of interaction tools. Learning environment in these classrooms is also determined by the type of tools. Some of these tools are:

- Video conferencing
- Audio conference
- Chat
- Audio visual system
- Table discussion (bulletin board)
- MUDS/MOOS/MUSH
- Electronic whiteboard
- Video Streaming
- Simulation and virtual world
- Web casting
- Mailing lists
- Email
- Chain discussion board

Web Casting is one of effective tools among the mentioned training tools which is able to combine all text, audio and video environments. This technology was introduced in 1997 in order to give the possibility to users for having the information according to their requirements and personal interests (i.e. the information related to different subjects such as sports, political, cultural, economical news and etc.). These information are up-dated automatically and regularly. This technology al-lows users to specify type of information that they want to observe. This technology also allows data suppliers to deliver the information to user directly. There are different methods to develop amongst ASP, Activex, ISAPI, CGI and JSP can be pointed.

In web casting method, the course is located on a site with different methods of site planning and the university students learn their desired lesson using internet lines. Considering the used method bandwidth is also different. In this method, information technology is used efficiently, temporal and locality dependence are eliminated by the availability of professor all the time. However, this method cost is more than bilateral conferences and audio/video methods, it is good because the student can use it in any place and at any time (Arabgari, 2006).[2]

This may be seemed that in classrooms like continuous web-based virtual classes, some asynchronous textual tools have not necessary application but the experience shows when they are applied appropriately, some useful and new experiences produced to learners. After audio/video conferences, asynchronous communications have taken many attentions by learners and teachers personal and audio

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7 Free Risk Environment
8 Streaming Media
9 Stream

communication with learners attract them more to chain discussions and the course will be no fail of learners. So, the important point is our planning of time, sequencing and utilization rate of each above mentioned facility; of course, it is different according to each class, lesson and learner.

III. TRAINING OBJECT IN VIRTUAL VIRONMENT

A learning object is[10] a basic constituent of educational subjects independent of educational content and follows a training goal. From operational perspective, learning objects are small pieces of data which are used in educational systems and electronic learning. They are written in these systems, collection, storage, cataloguing and classification presented and they are reported. From another perspective, learning objects are a digital part of a lesson which can be variable in size and complexity (from a simple image to all lessons). So, in virtual environment each lesson is divided into small parts called learning object. Learning objects are a symbol of object-oriented thinking in learning environment, they are objects in dig-ital shapes or not that can be used when ICT-based learning occurs. For example: educational goals, design software, materials, software tools, the referred people and events, provide a part of an educational content such as a test, a simulation and a part of a lesson which can be offered on the internet and allows reusing, simpler adoption with different contents and capability of expansion (ISIRI,2010).[7]

Thus, it can be claimed that learning objects used in virtual education environment are like available books in a traditional library and the information are kept by learning object in a high quality to facilitate the training. The characteristic of learning object can be defined as:

The reader knows in an ordinary book should be start the studying from the cover, its page , contents and then the text, respectively, but digital contents have no starting point or continuous structure. In a web browser, each learning object runs. The texts used in learning object are Hypertext[11] . The texts which are related to each other in complex and non sequential form in web communication and the user can search through related is-sues.

Metadata files of learning data containing information about the object that are used to store and retrieve them in a database. Metadata identifies that what is in a learning object related to a part of learning, XML file contains the names, organizational relationship, object classification, target, pre requirements and many other types of information (Moeni, 396,1383).[11]

Virtual learning environments

A virtual learning system is designed with the goal of helping learners to promote free discussion and also gives the possibility to communicate with each other. Learning communicational environment is basically used for transmission of learning materials and to help the teachers

and learners to communicate immediately and in time. Some practical tools such as BBS[12] , chat rooms[13] and like them are utilized in order to promote the level of two-way dialog. Collaborative learning environment also encourages the learner to explore and communicate freely. This environment provides some other learning tools such as video lesson, chat rooms, Contextual discussing forums[14] , Frequently Asked Questions [15] and like them. Thus, the environment has utilized supportive theory of passive environments (Hsu Sam, et. Al. ,2000).[6] Virtual learning includes two parts: instruction communication environment (ICE) and collaborative learning environment (CLE). Instruction communication environment is used for controlling of learning process by teachers and also for determining the resources required by learners. Collaborative learning environment is used to active the learning environment and collaborate the learner in learning process.

Project manager should imagine the results of his work in planning of each information system and with designing the utilization process to extract users' requirements. Accordingly, the process of teaching and the requirements of virtual learning systems which utilize the two instruction communication environment and collaborative learning environment, respectively, are investigated:

IV. INSTRUCTION COMMUNICATION ENVIRONMENT

A web-based virtual classroom in such an environment consists of:

a) Centre of Living broadcast
b) Client

There are two sets of facilities and video sampling equipments in centre of living broadcast. One records learning environmental information and another for sampling the stage of teaching. Teaching/learning process is also scheduled as follows: First, a teacher loads learning materials on the server and then regulates system related parameters for it. After that, review learning materials and they arranged. A learner studies the learning materials distributed form distribution centre.

If there is a question and problem, learner can introduce it using electronic hand and asking the permission from teacher. As it is observed in figure 4, the teacher allows the question and debate is done and he switches to video resource to display the dialog. These video resources require an appropriate bandwidth for all learners. In order to overcome the limitations of bandwidth, multiple bit rates can be set on 56, 100 or 300 to transmit the video resources and it can be convey by network equipments such as modem, ADSL and network card. Also, video files are compacted by streaming media with MPEG4 format. Other learning resources are also stored on the learning resources server.

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10 Learning Object
11 Hypertext

12 Bulletin Board System
13 Chat Room
14 Contextual discussing forums
15 Frequently Asked Questions

Materials available in electronic whiteboard in textual form (text format) are recorded and transmitted. Client receives the materials and re displays them. Thereby, the quality of educational content services are guaranteed so, content-based conversational learning will be possible.

A. Learning Collaborative Environment

A content-based conversational learning environment consists of 4 parts:

Video Lecture[16]
Content Display Area[17]
Navigator Bar[18]
Relative Information Area [19] (Cheng K. , et.al , 2005) [3]

During the display of video documentation, the materials are simultaneously displayed in content display area, when navigated bar is selected, video reminded or forwarded. Recorded educational software and learning tools such as email, discussion and chat room, FAQ and etc. can be utilized in a collaborative environment. Remote learners with access to Recorded educational software in this environment will be able to use the class another time. Also, remote learners are able to review all materials and select their interests randomly from the covered topic in classroom. First, the learner observes educational videos and then answers the questions. If he/she needs to curricular lesson clicks on the related link and studies the matter. Moreover, he/she is able to chat with teachers and other learners about a part of his/ her questions or using email to debate and chat personally about a subject with them or finally he/she can search his / her questions on the learning resource server.

There are a set of questions in this area which help the learners searching on the booklets to find their answers to study. In addition, they enforce to study other mate-rials on searching and can ask their questions from advisor professor or other participants in the class.

V. CONCLUSION

Now, web-based virtual learning environment have necessary conditions for development in the world while educational strategies have developed from traditional system (traditional classrooms) to virtual learning environment and moved towards web-based, continuous and virtual educations with growth of computer science and ICTs.

In traditional learning environments, the reader knows the study starts in a learning resource (paper book) from cover, contents and then the text, respectively. Means the starting point and continuing trend is completely clear. But in digital contents, the starting point is not usually clear based on their structure and type. The texts used in learning object (as hypertext) work in a web browser. These texts are connected to each other in web communications and in the complex and non-sequence form and the reader can search through

related subjects. Means, the author did not provide a previous determined certain structure to study and the reader should adjust his/her study requirements with the text itself. Overall, it can be said that development of research resources in virtual environment is a direct consequences of modern technology developed according to their needs and potential abilities. These resources specially, in the field of distance education and electronic learning, in terms of learning objects have an importance and particular position. These resources are always available to users, and learners and readers of curriculum resources study the desired links by control and guidance of teachers to reach their destination. Dynamics of this object: relationship with infinite information world, teachers and learners permanent access, integration of various media writing and hypertext are among the advantages of study in a virtual environment which makes the study environment rich and completely pleasure.

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16 Video Lecture
17 Content Display Area
18 Navigator Bar
19 Ralative Information Area

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