The Overall Aspects of E-Leaning Issues, Developments, Opportunities and Challenges

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Abstract—Rapid steps made in the field of Information and Communication Technology (ICT) has facilitated the development of teaching and learning methods and prepared them to serve the needs of an assorted educational institution. In other words, the information age has redefined the fundamentals and transformed the institutions and method of services delivery forever. The vision is the articulation of a desire to transform the method of teaching and learning could proceed through e-learning. E-learning is commonly deliberated to use of networked information and communications technology in teaching and learning practice. This paper deals the general aspects of the e-leaning with its issues, developments, opportunities and challenges, which can the higher institutions own.

Keywords—2D & 3D Animations, challenges, E-learning, Flash, HTML, issues, Multimedia, opportunities, VRML

I. INTRODUCTION

THE term e-learning includes a lot more than online learning, virtual learning, distributed learning, networked or web-based learning. As the letter "e" in e-learning stands for the word "electronic", e-learning [1] would incorporate all educational activities that are carried out by individuals or groups working online or offline via networked or standalone computers and other electronic devices.

A key attribute of information and communications technology is its ability to enable flexible access to information and resources. Flexible access refers to access and use of information and resources at a time, place and pace that are suitable and convenient to individual learners rather than the teacher and/or the educational any higher institution.

II. E-LEARNING ISSUES

The growing interest in e-learning seems to be coming from several directions. These include institutions that have traditionally offered distance education programs either in a single, dual or mixed mode setting. They see the incorporation of online learning in their assortment with the logical extension of their distance education activities.

E-learning is very interested to residential and off-campus based educational provided by any higher institution as well. They see e-learning as a way of improving access to their programs and also as a way of tapping into growing markets. The growth of e-learning is directly related to the increasing

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access to information and communications technology, as well it's decreasing cost wise. The capacity of information and communications technology to support multimedia [2] resource-based learning and teaching is also relevant to the growing interest in e-learning. The growing numbers of teachers are increasingly using information and communications technology to support their teaching.

The concept of distance education was founded on the principles of flexible access [1]. It aimed to allow distance learners, who were generally adult learners in full or part-time employment to be able to study at a time, place, and pace that suited their convenience. The goal of distance education was to free these learners from the constraints of conventional residential educational settings. They would not be required to live or attend lectures in locations away from where they may be living and working. The printed distance study materials, which each distance learner received, would carry the core subject matter content they would need including all their learning activities and assessment tasks. Students would be required to complete these tasks, submit their assignments and take their examinations within a set time frame. While these printed study materials allowed distance learners a great deal of freedom from time, place and pace of study, it had its limitations. For one thing, non-printed subject matter content and simulations etc. could not be easily represented in print form.

III. OPPORTUNITIES OF E-LEARNING

A growing body of literature on learning and teaching is suggesting that learning is greatly enhanced when it is anchored or situated in meaningful and authentic problem-solving activities. It places or confronts learners with authentic situations and scenarios which are motivating and which require learners to carry out tasks or solve problems and reflect upon their actions [1]. While such learning designs are suited for any learning and teaching context or media, their effectiveness and efficiency can be somewhat constrained by the fixed time, space and pace limitations of learning and teaching in conventional campus-based classroom settings. Similarly, printed study materials, while they afford transportability, are limited by their inability to capture and carry much else other than text, pictures, and illustrations. Information and communications technologies, on the other hand, afford us a wide range of opportunities to capture, store and distribute information and resources of all

types and formats. Along with text, pictures and illustrations, these include multimedia-based simulations of complex processes from all sorts of domains such as the biological and medical sciences, agriculture, engineering and educational practice which are not easily or cheaply accessible in real time and settings.

IV. DEVELOPMENTS ON E-LEARNING

A. *Methods of online course developments*

A "partially online" course is one that integrates existing resource materials that are available either in print or non-print form such as textbooks etc. with some elements of online learning. This might include the use of a learning management system or simply a mailing list for some asynchronous discussion [1] Such courses promote the concept of what is commonly referred to as "blended learning", where more than one mode is used to teach a course. Most distance educators have known such courses as "wrap around courses" because much of the teaching and learning activities in such courses are wrapped around existing resource materials such as textbooks.

A "fully online" course, on the other hand, is one that will have most of its learning and teaching activities carried out online. I say "most of its learning and teaching activities" because invariably everything about a course could not possibly be carried out online. Moreover, it might not be advisable to do so. For instance, students would always be studying away from the computer from printed materials, textbooks and other resources from libraries. There would be no real need to put these online, and it might not be possible to do so for reasons that have to do with costs and copyright laws. Mason calls this "integrated courses".

A "wrap around" model of online-learning relies on study materials, which may comprise online study guides, activities and discussion "wrapped" around existing previously published resources such as textbooks or CD-ROMs etc. This model represents a resource-based approach to learning, as it seeks to use existing material that is relatively unchanging and is already available online of offline. Such courses, once they are developed, can be taught or tutored by persons other than the course developers. Collaborative learning activities in the form of group work, discussion among peers, and online assessments may be supported by computer conferencing, or mailing lists [1] Unfortunately, quite often, these online learning elements tend to be added to the course and do not form an integral part of the assessment requirements of the course.

A "integrated or hyprid" model is closest to a full online-learning course. Such courses are often offered via a comprehensive learning management system. They comprise availability of much of the subject matter in electronic format, opportunities for computer conferencing, small group-based collaborative online learning activities, and online assessment of learning outcomes. For the moment though, some of the subject matter content will be best-accessed offline in already published textbooks and other sources. The learning and teaching in these courses takes place in the computer conferences, in which the prescribed readings and the assigned tasks are discussed. Much of this learning and teaching activity is fairly fluid and dynamic as it is largely determined by individual and group activities in the course. To some extent, this integrates model dissolves the distinctions between "teaching" and "learning" in favor of the facilitation of learning.

B. *Methods of website developments*

There are several methods, we may follow to produce attractive website for e-learning. The learning objects developed and delivered in this research project are digital and software or website based learning objects [3] can be viewed as small interactive [4] and attractive multimedia [5] elements. Commercial multimedia authoring software provides many tools that can be used to develop learning objects and deliver them across a variety of platforms, for example Adobe Flash. While a range of authoring applications were utilized in the development of the learning objects, can be created in interactive and attractive way of websites by using HTML, VRML, Animations.

Hypertext Mark-up Language (HTML) [6] is a SGML application complete with DTD. It is designed to tell a browser how to display documents on the web. Unlike SGML, HTML has a pre-defined set of codes that are easy to learn and use and build tools for writing HTML pages. HTML codes are embedded into the text that communicates to a web browser such as, Netscape Navigator or Microsoft Internet Explorer. Like SGML, it also uses simple text or ASCII for text as well as for the HTML codes. An HTML page can thus be built using a word processing package or a text editor.

HTML files are tiny since they are simple text files. Further, the static HTML web pages can be transformed into vibrant, dynamic and interactive [4] [5]web creations using ever evolving web technologies [6] like CGI Script, Perl, Java, JavaScript, ASP, DHTML, XML and Open Database Connectivity (ODBC) for incorporating interactivity on a web page. The competency of HTML at presenting text has further been enhanced with use of Cascaded Style Sheet (CSS).

HTML is competent at presenting text, graphics, images in a reasonably decent layout on web browsers readily accommodate a multitude of plug-ins that allow inclusion of audio, video, 3-D and other specialized files. Any of these can also be included as a link in a standard HTML page. Clicking the link loads the plug-in to view or play the file. HTML is default language for website, which will allows us to insert any VRML programs, animations to construct attractive to be used in e-learning websites.

The Virtual Reality Modeling Language (VRML) [7] can be seen as a 3-D visual extension with animations of the World Wide Web (WWW). Since, it can construct websites with very attractively to be used in e-learning process such as virtual class rooms. People can navigate through 3-D space and click on objects representing URLs. VRML inserts itself

seamlessly in the Web's connectivity. VRML browsers [7] can access other VRML files via an URL. They can access any other format that then is passed to another application. On the other hand HTML browsers can be configured to fire up VRML helper applications (or plug-ins). HTTP servers, finally, can be configured to tell the client that a VRML (*.wrl) document is transferred. The structure of a WRL File or VRML (*.wrl) files have 3 basic elements:

1. A header which tells the browser that the file is VRML and which version also. A header line is mandatory field.

2. Comments are preceded by #.

3. Most everything else is nodes. Nodes generally contain the following

a. The type of nodes. Nodes always are in Capital letters.

b. A set of curly braces {...}

c. A number of fields, all or some of which are optional.

d. Fields with that can have multiple values require braces.

Typical VRML program 1 (simple.wrl) written with a single node to draw box with blue color.

<div align="center">Program 1- simple.wrl</div>

```
#VRML V2.0 utf8
Transform {
 translation 0 1 0
 children [
   Shape {
    geometry Box {}
    appearance Appearance {
material Material { diffuseColor .3 .5 9 }
   }  }
     ]   }
```
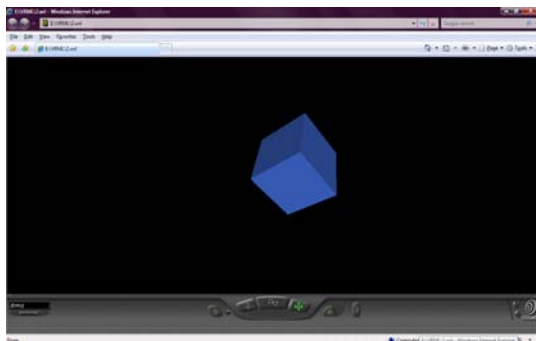

Fig. 1 Sample VRML Output

#VRML V2.0 utf8 is the header, which tells the browser that the file is VRML. Transform is a parent node and Shape, Box, Appearance and Material are the nodes are child of Transform. Likewise Shape is parent for Box, Appearance and Materials. There are numerous kinds of nodes available in VRML, which are enables us to buildup attractive websites. The output of the above program displayed on the Fig. 1. There are software's which are exploit to generate computer animations. Two of them are here:

Learning Adobe Flash can quite complex, but you can do almost anything with it. You can develop presentations, websites, portions of websites, games, or full-length feature,

animated cartoons. You can import just about anything into Flash. You can drop in images of almost any file format, video clips, sounds and more will enables us to create attractive website to be used in e-learning websites.

2D&3D Animator produces high-quality images, titles, banner ads and buttons for your Web page or for a presentation. It comes with an object-oriented design interface that enables you to edit graphics, manipulate text and layers (graphic animations), apply special effects, and then compile the animated graphic all from within the same program. You can add shadow to object, make it glow, and draw it with opacity. Further add cool deformation, transition and color adjustment effects. You can create animations from your own pictures (JPG, GIF, BMP, AVI, ICO, and PNG) and add 3D text and shapes. In addition to font size and color, you can use colored lighting, textures and more. The layers technology helps to control over the object's placement, size, motion, and appearance. The ready-made templates make the product easier to use. You can choose one of several ready-made templates for banners, buttons or logos. Once you select a template, you can begin to alter it any way you want. By double-clicking on objects you bring up tool bars and options. To cut loading time for your visitors, have the program optimize your graphic by removing extraneous material. Once finished, output may be exported as GIF or AVI clips as well as JPEG, ICO, PNG or Bitmap images.

C. Online Learning Management Systems

Online learning management systems [1] [3] [5] are a suite of software tools that enable the management and facilitation of a range of learning and teaching activities and services. In large-scale operations, online learning management systems (or LMSs as they are commonly known) can save costs and time. In conventional educational settings, online-learning [8] management systems can help to improve the speed and effectiveness of the educational processes, communication among learners, and also staff and students. Use of LMSs in nontraditional educational settings (such as in distance education contexts) allows organizations to maximize their value by enabling flexible access to its resources and services. A few of the widely known LMSs are WebCT (http://www.blackboard.com),Joomla(http://www.joomla.org), and Moodle (http://www.moodle.org). Most online learning management systems also incorporate a learning content management system (LCMS), which is a set of software tools that enables the, storage, use and reuse of the subject matter content.

V. CHALLENGES AND LIMITATIONS

However, e-learning in itself does not guarantee efficient or effective learning and teaching. For it to be efficient and effective with more attraction, a great deal of care and attention needs to go into its implementation. The efficiency of multimedia in online training can also be measured by evaluating the bandwidth, i.e., the speed through which data is transferred. Basically, the larger the multimedia file, the more

time it will take to download. The amount of information that can be sent over an analog telephone line is limited by the bandwidth of the transmission. Most consumer telephone lines have very limited bandwidth. They are too slow to deliver large files acceptably. An online training course must be designed and developed for all individuals, not just the ones with quicker connections.

Assessing learning outcomes is concerned with determining whether or not learners have acquired the desired type or level of capability, and whether they have benefited from the educational experience. A measure of learning outcomes requires learners to complete tasks, which demonstrate that they have achieved the standards specified in the learning outcomes. In order to ascertain the most realistic and valid assessment of performance, these task(s) have to be as similar to on-the-job conditions, that is, as authentic as possible.

VI. CONCLUSION

E-learning uses Information and Communications Technology (ICT) that enables the presentation of subject matter content in an alternative forms, as such freeing up lecture time which can now be more usefully devoted to the facilitation and support of learning activities. This paper emphasizes various aspects of the e-leaning with its issues, developments, opportunities and challenges, which the higher institutions usually meet.

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