

E-ENVIRONMENT IN EDUCATION: UUM PERSPECTIVE

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Abstract

Many universities around the globe have established e-learning, whether as a teaching medium or as one of the courses. To support these initiatives and to fulfill e-learning agenda, e-learning required support from other “e” domains which is called e-environment. Different features are available in the e-environment that can be fulfill wholly or partly, e-learning knowledge requirement. E-learning contents which are traditionally published, as printed materials can be very consuming in term of cost and mobility. Hence, e-publishing which is one of the features in e-environment is vital to support e-learning initiatives. This approach may contribute to the implementation of the total e-environment in education. This paper discusses e-publishing model, which aims to capitalize on the features of the Internet and the web technology. Apart from that it also touches on the experiences of the Universiti Utara Malaysia (UUM) in adopting the e-environment in its education.

Keywords: E-Learning, E-Publishing, E-Environment, Education

INTRODUCTION

The revolution in the information and communication technology (ICT) era has produced a techno-savvy and media-hungry generation, which uses digital media as a way to learn and communicate with each other (Tapscott, 1998). It is affecting the environment in learning and training, education and instructional technology. The Internet and World Wide Web (WWW) are the technologies that evolving rapidly and unpredictably. As defined by the WWW consortium, “The World Wide Web is the universe of network-accessible information, an embodiment of human knowledge”. The WWW incorporates the entire Internet services such as e-mail, web publishing, file transfer protocol (FTP) and much more. We can retrieve documents, view images, animation, and video, listen to sound files, speak and hear voice, and view programs that run on practically any software in the world, providing the computer has the hardware and software to do these things.

These advantages of the Internet and WWW, individual and organizations move towards incorporating the digital technology or known as electronic environment (e-environment) in their education, management, socio-economics and many more. E-learning, e-commerce, e-book, e-notes and e-government are the examples of such applications that using the electronic variation. E-learning most often means an approach to facilitate and enhance learning by means of personal computers, CDROMs, Digital Television, Mobile Devices and the Internet. This may include email, discussion forums, and collaborative software. E-learning may also be used to support distance learning through the use of the Internet, and may also be considered to be a form of flexible learning.

In order to provide the content of e-learning environment, academicians need to prepare and publish their materials electronically; this is called as electronic publishing (e-publishing). E-publishing refers to using the computer as the means of producing and distributing publications that conventionally has been done in a paper form. E-publishing encompasses the whole process of creating, distributing, searching, and disseminating knowledge in electronic format (Smith *et al.*, 2003). The new reality of Internet technology is that it is far cheaper to send out electronic versions of a paper than to have it printed in paper. Unlike their mediaeval counterparts, modern academics can now run electronic contents and distribute academic materials without the need for publishers.

E-ENVIRONMENT IN EDUCATION

E-environment in education could be described as an environment that utilizing the use of ICT with paperless documents and material in preparing, creating and producing learning materials; managing and organizing learning process; and interacting among people in particular education organization. Many kinds of hardware, software and Internet resources are adopted in the environment. Moreover, it is anticipated that online education and virtual classrooms will dramatically increase in the coming years. In fact the growth of online courses over the past several years has taken many people in the higher education establishment by surprise (Rickman & Roger, 2001).

Layton (2000) highlights nine common characteristics that make electronic education environment differ from traditional education environment. In addition, three other general characteristics i.e. interaction, management, and technology are also vital in making the education a success. These characteristics depict in Figure 1.

The first one is time. In student perspective, life is a balance between working, learning, playing, and tending to physical and spiritual needs and all these are not broken up into concrete and nearly immobile blocks of time. Instead, working, learning, and playing are interspersed throughout the day and throughout the year. Learning is something that is a constant throughout the day, as are work and play. Second is an activity. Activities are no longer compartmentalized according to time and place; the time for recesses, the place at school or university where the computers are housed and that has tended to blur the lines.

Relationship is the third characteristic. Relationships with other people are the most important aspect of life. Together, friend relationships, family relationships, personal

relationships, community relationships, working relationships, and learning relationships form the fabric of the student's existence. They interact with people whose age, religion, culture, economic status, and first language are quite different from their own or those of their parents and, most likely, a significant number of these relationships are with people who live thousands of miles away.

Students swim in an ocean of changing technologies. Quite at home in this swirling sea, the digital student learns to take advantage of each new technological advancement, making the most of its contributions to his or her professional and personal life and confidently awaiting the next new breakthrough. These children have had lots of practice. After all, they are the first generation in history that is, as Tapscott (1998) has put it, "more comfortable, knowledgeable, and literate than their parents about an innovation central to society."

Digital student do not learn in isolation. They might work alone, but they learn in groups. Waves of understanding wash over the digital classroom. Working out an answer and sharing it with your digital classmate is no longer considered cheating. The digital curriculum must produce citizens who are extremely discerning. With access to an avalanche of information and countless numbers of human beings, the digital child must learn to distinguish the useful from the hype, the genuine from the imitation, the sincere from the con, the quality from the flash, the truth from the propaganda and to do so quickly and repeatedly.

Next, flexibility is quite important, especially the opportunity to choose from a wide range of educational choices. Choice has been tremendously expanded. The time, place, frequency, and content of instruction are individualized but not isolated. Digital students, as a result, are much more likely to get what they need or want whenever and wherever they need or want it. The digital community demands quality in education above everything else. In addition, instructional technology infrastructure implemented to support fully online courses has the potential to replace existing activities and their associated costs, such as the traditional lecture, laboratory or other classroom activities (Kreijns *et al.*, 2002).

As previous discussion with illustrated from Figure 1, these characteristics could be used either to implement or utilize the ICT technologies for the e-environment in education. Wan Husain (2004) has discussed the used of ICT in education to support teaching and learning environment. WWW is one of the most significant technologies that enhance the teaching and learning techniques and tools. E-mail, e-group, web pages, and LearnCare (Abdul-Malek, 2003) are such examples of teaching and learning supporting tools.

In addition other applications are quite useful in supporting teaching and learning for the e-environment in education such as electronic notes (e-notes), electronic forum (e-forum), electronic contents (e-contents) centre, electronic counseling (e-counseling), short messaging system (SMS), and web portal for electronic application (e-applications). Figure 2 shows some of the applications of e-environment that have been explored by UUM in its educational systems.

- Electronic contents centre like the E-information Centre which is a model for publishing and marketing the university's owned e-publications. Books, journals, teaching modules are created and published in electronic form to be marketed.

- Electronic Forum of Courses for example the e-Java Forum enables student to discuss and post a thread on a certain topics relating to a course.
- Electronic Groups for example the Yahoo Groups enables students to form and interact within their own groups and provides the facilities for sharing documents, setting a forum and many more.
- SMS (short-messages-services) system enables students to receive messages regarding their studies, such as their exam results and courses timetable through mobile devices.
- Electronic Counseling system facilitates students to seek for advices and have their counseling session on-line.
- Electronic Mail such as the E-web mail is a facility that is established to allow the community within university to send mail messages. Despite that it also has other capabilities such as shoutbox (for making announcement or advertisement), forum (for sharing thoughts), web manager (to manage personal website), calendar (to keep track of personal activities) and so on.
- Web page is a facility provided to enable the community to set and manage their own personal homepage.
- Electronic Learning Management System such as the UUM LearnCare enables lecturers to create teaching portfolios; upload lecture notes, set online quizzes, manage students' record, make announcements and more.
- Portal for Electronic University acts as a one-stop centre for the electronic community. It provides facilities for students, lecturers as well as the management such as course registration, managing personnel records, managing students' records, and access to other university's systems.

E-PUBLISHING TO SUPPORT E-LEARNING

E-publishing is currently a new initiative in publishing reading materials. This initiative powered by the World Wide Web (WWW), where users and providers are connected through a huge cyber network. From this networking, users and providers can communicate and bargain for their goods. Previously, WWW have been utilized by the traders, which introduce e-commerce. E-commerce is a virtual market place where people selling and buying product as in physical market. Products that being trade are physical product and the buyer has to wait for several minutes, hours, or even days for delivery. This initiative did save some time such as reduce queuing time, reduce driving time, reduce parking space, and etc.

Reading materials such as books, journals, technical report, white papers, proceedings, magazines, and newspapers are also have been trade in e-commerce. However as time is the most important aspect in pursuing the success and updated information broadcasting, these materials have been publishing as an electronic version. This initiative is call e-publishing. E-publishing also utilizes e-commerce technology, where e-notes, e-books, e-journals, e-reports, e-papers, e-proceedings, e-magazines, and e-newspapers being trade via WWW. The different is that, what receives by the buyer is not a printed copy of the materials, but a softcopy. Hence, the delivery of the materials can be made through the WWW, instead of ordinary postage or courier. This initiative not only saves time but also money.

In e-learning information and reading materials are needed as fast as it can be. Sometimes certain books or papers are crucial in finishing or finalizing assignment or report. Thus, high-speed delivery will be very helpful. In addition, e-publishing also

secured the availability of the materials. Papers written and published in early 1990s for example, can be made online, thus can be retrieved at any time with minimum cost. Sometimes, old books can be very important reference. However most of these books are no longer in print, thus converting these books into e-book will be very helpful. E-books also very easy to store and can be carried anywhere. This can increase the popularity of the e-books.

The cost for producing electronic materials is very much cheaper compare to printed version. Even though, the publication processes are the same, but the cost for publishing it is cheaper. Hence, students with limited funding will no longer facing difficulties in buying books. Further more, e-publishing technologies are very easy to find. Computer installed with Microsoft Word can convert the ordinary document into HTML format. This can later be uploaded into the server for WWW access.

Some providers or publishers store their electronic documents in an online repository such as digital library, search engine databases, and etc. These documents collection are very helpful to the students and instructors. Most of this repository has their own search facility, which will aid the searching. The instructors also can create their own repository by converting their lectures notes and reference into HTML documents called e-notes. This facility will help students to retrieve the documents easily. Figure 3 shows the example of interaction between teacher and students in e-learning environment. Students communicate with their teacher through WWW. The teacher posts the reading materials to online repository and informed the students to download them.

MODEL OF THE FIFTH GENERATION DISTANCE EDUCATION

Influential scientists are urging electronic publishers to free their published works, so they can be accessed in comprehensive digital archives. That would create the opportunity for new services that dynamically interconnect material in the archives. To archive this, e-publishing workflow need to be tackled and involved e-publishing process. It was predicted that, enabled by links, e-publishing will become more distributed. E-publishing workflow combines the functions of a review journal with original materials and access to full-text papers on a focused topic, in this case on e-publishing, in a single coherent package that indexes and links selected works. It is causing major changes to the publishing industry especially in distance education and provided internet-based access to WWW resources. This criterion is one of the fifth generation models in distance education. The technology involve in distance education can be run in various channel such as electronic medium. E-learning and e-publishing can support the distance education by providing the students an alternative to access the course materials and etc. Hence, students no longer need attending the physical classroom, but still capable to manage and retrieve information or course contents through WWW.

For many years, universities with a significant commitment to distance and open education institutions have been at the forefront of adopting new technologies to increase access to education and training opportunities. Distance education operations have evolved through the following five generations, as illustrated in Figure 4.

Although many universities are just beginning to implement fourth generation distance education initiatives, the fifth generation is already emerge based on the

further exploitation of new technologies. The fifth generation of distance education is essentially a derivation of the fourth generation, which aims to capitalize on the features the Internet and the Web. Some of the characteristics of the various models of distance education that are relevant to the quality of teaching and learning are summarized in Table 1, along with an indicator of institutional variables cost (Taylor, 2001).

DISCUSSION & CONCLUSION

The advantages of the Internet and WWW, individual and organizations are moving towards incorporating the digital technology or known as electronic environment in different kind of areas such as management, education, economics, social, laws, and many more. E-publishing or the process creating, distributing, searching, and disseminating of e-contents in e-environment is a vital for academicians to support the e-learning environment. E-learning can be utilized for distance education because of the same advantages of their processes.

The fifth generation distance education has the potential to decrease significantly the costs associated with providing access to institutional processes and online publishing. Here, the important of e-publishing workflow is developed, as a model for management tool, that provided supported in varies parties and as a scholars communication. Further, the model can be catered for the development of automated e-learning systems.

UUM is one of the many universities that have adopted the e-environment in its educational systems and still exploring the capabilities to make the full use of it. Significance contribution of e-environment has been seen in providing a more meaningful and rich educational experiences. Through the development and implementation of automated e-learning systems in e-environment, the fifth generation of distance education has the potential to deliver a quantum leap in economies of scale and associated cost-effectiveness. In effect, fifth-generation distance education is not only less expensive, it is also provides students with better quality learning, and more effective pedagogical and administrative support services.

Table 1: Models of Distance Education – A Conceptual Framework

Models of Distance and Associated Delivery Technologies	Characteristics of Delivery Technologies					
	Flexibility			Highly Refined Materials	Advanced Interactive Delivery	Institutional Variable Costs Approaching Zero
	Time	Place	Pace			
First Generation The Correspondence Model ▪ Print	Yes	Yes	Yes	Yes	No	No
Second Generation The Multimedia Model ▪ Print ▪ Audiotape ▪ Videotape ▪ CBL (CML/CAL/IMM) ▪ Int. video (disk and tape)	Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes	Yes Yes Yes Yes Yes	No No No Yes Yes	No No No No No
Third Generation The Tele-learning Model ▪ Audio teleconferencing ▪ Video-conferencing ▪ Audio-graphic Communication ▪ Broadcast TV/Radio and Audio-teleconferencing	No No No No	No No No No	No No No No	No No Yes Yes	Yes Yes Yes Yes	No No No No
Fourth Generation The Flexible Learning Model ▪ IMM online ▪ Internet-based access to WWW resources ▪ Computer-mediated communication	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Yes Yes No
Fifth Generation The Intelligent Flexible Learning Model ▪ IMM online ▪ Internet-based access to WWW resources ▪ Computer-mediated communication, using automated response systems ▪ Campus portal access to institutional processes and resources	Yes Yes Yes Yes	Yes Yes Yes Yes	Yes Yes Yes Yes	Yes Yes Yes Yes	Yes Yes Yes Yes	Yes Yes Yes Yes

Figure 1: Common characteristics to differentiate between e-environment and traditional environment of education

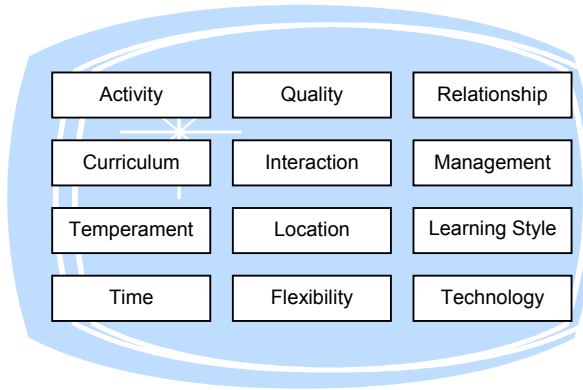


Figure 2: Different kind of facilities for the e-environment in education

This figure displays nine different types of e-environment facilities, each shown as a screenshot of a web browser window with a caption below it:

- Electronic Contents Centre:** A screenshot of the 'e-Information Centre' website, showing navigation menus and a list of categories.
- Electronic Forum of Courses:** A screenshot of the 'eJava Learning Center' forum, displaying a table of course discussions with columns for topic, author, replies, and views.
- Electronic Groups:** A screenshot of a 'YAHOO! GROUPS' page, showing a list of groups and search options.
- SMS System:** A screenshot of an 'SMS System' interface, showing a list of messages with columns for recipient, date, and status.
- Electronic Counseling System:** A screenshot of the 'e-Kounseling' website, featuring a header with the university name and a central image.
- Electronic Mail:** A screenshot of a 'GroupWeb' email interface, showing a list of messages and a search bar.
- Web Pages:** A screenshot of a 'Sistem Rujukan' website, showing a navigation menu and a list of resources.
- Electronic Learning System:** A screenshot of a 'LearningCare' website, displaying a 'My Desktop' area with various learning tools and resources.
- Portal for Electronic University:** A screenshot of the 'Portal Komuniti e-Universiti' website, showing a search bar, navigation menu, and a list of services.

Figure 3: *Interaction in E-learning environment*

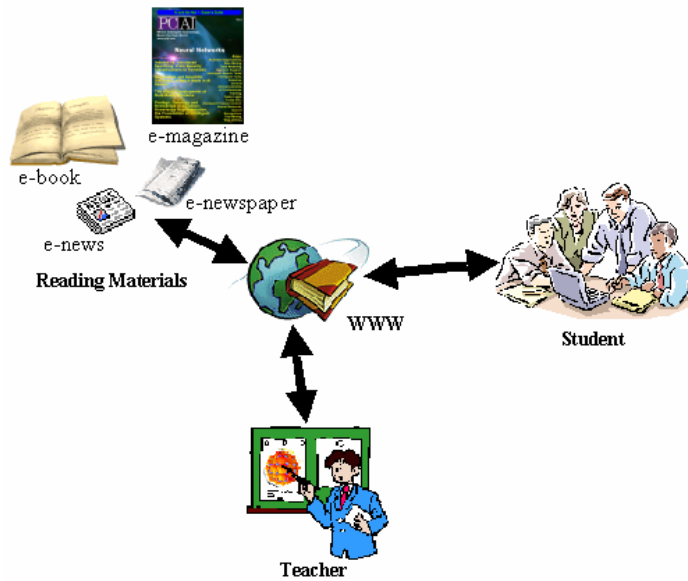
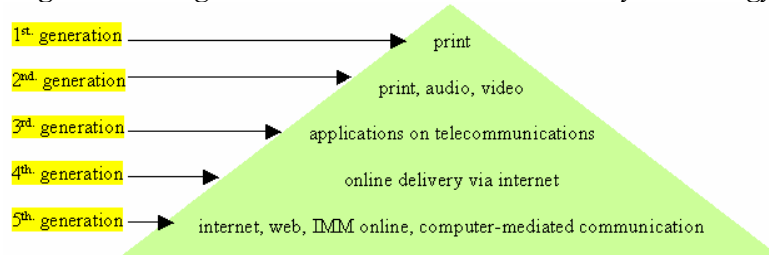


Figure 4: *Five generations with associated delivery technology*



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