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ABSTRACT

This paper describes a cybercourse model that was designed and created by infusing the following four beneficial telecomputing activities into a World Wide Web-based learning system: collaborative learning; demonstration; interactive discussion; and problem solving. Differences between the regular Web-based distance learning system and the innovative model are compared and contrasted, using the contrast perspectives of active learning versus passive learning and mindful teaching versus thoughtless teaching. The advantages (i.e., no time and space limit, synchronous and asynchronous communication, and linear and nonlinear learning) and disadvantages (i.e., difficulty in documenting student performance and in tracking student access to Web sites) of the model are discussed. The following issues related to applying the Web as a distance learning medium are considered: (1) the effectiveness of electronic conversations versus face-to-face conversation; (2) the effect of field dependence/independence on student performance; and (3) the quality of the information available on the Web. Two figures representing the regular model and the innovative model are included. (DLS)

Web-Based Distance Instruction: Design and Implications of a Cybercourse Model

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Abstract

The Web has drawn more and more distance educators' attention and been employed extensively as a distance learning delivery tool. The key concept of Web-based distance education focuses on applying the Web as a bridge to provide instructional communications and activities between students and teachers. However, without pedagogical considerations and effective distance learning activities, Web-based distance learning could be inactive and dangerous. Therefore, a cybercourse model is designed and created by infusing four beneficial telecomputing activities into Web-based distance learning system. Differences between the regular system and innovative model are compared and contrasted. The advantages and limits of the model are discussed. Finally, implications and conclusions are provided.

Introduction

The World Wide Web (WWW) holds a great potential for distance education. The most prominent characteristics of employing the Web as a distance learning tool is that it becomes available not only in classrooms, but dormitory rooms, public library, and indeed, anywhere in the world. As more and more distance learning activities occur on the Web, a comprehensive web-based model with effective pedagogical considerations is relatively crucial for distance educators.

In distance education, there is a high need to vary both the curriculum materials and instructional activities to engage students in learning. With the Web, instructors could design and develop interactive curriculum materials, build interactive pedagogical animation and sounds to motivate students' learning, and utilize a variety of web-based distance educational activities such as collaborative learning, demonstrations, interactive discussion, and problem solving.

The model presented in this paper is not for distance educators to follow instead it aims to provide a distance activity structure for them to contemplate, to apply, and then to be able to design and develop their own distance learning course which could best meet their specific instructional needs. In this paper, basic Web-based distance learning concept is first synthesized and systematized. Then, a cybercourse model is presented by weaving four beneficial telecomputing activities into Web-based distance instruction. A comparison between the regular system and new model is followed. Discussions on the strengths and weaknesses of the model are made. Finally, implications and conclusions are included.

Web-based Distance Education System

Utilizing the Web as an instructional delivery system is the basic concept of Web-based distance education. Applying WWW as a demonstration tool is the key instructional activity held by Web-based distance educators. Instructors post course syllabus, curriculum materials, and resources guidance on the Web to allow students to read, learn, and conducting electronic field trips.

In a Web-based distance instructional system, teachers should prepare, post, and update their course syllabus, curriculum materials on the Web regularly. In the course syllabus, teachers should clearly and specifically addressed what type of hardware and software configuration is needed for the course; what instructional activities will be conducted and how to perform those activities during the semester; and when the specific learning activities will be conducted. How summative and formative evaluation will be permeated into the whole learning process also have to be considered.

On the other hand, students are required to access the Web to review course materials, perform learning activities and publish their course products on the Web. In the Web-based distance learning system, the Web

performs as a bridge to serve the teaching and learning activities occurring between teachers and students. Based on the notion, a regular Web-based distance learning is systematized (See Figure 1).

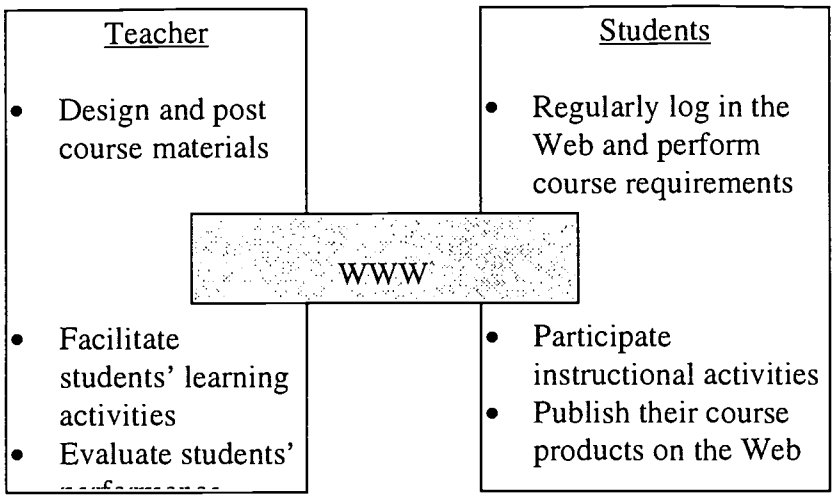

Figure 1: A Regular Web-based Distance Education System

A Cybercourse Model

Based on the above-mentioned distance instructional system, a Web-based cybercourse model is designed and formed by infusion four beneficial distance educational telecomputing activities into such system. The four beneficial distance learning activities are collaborative learning, demonstration, interactive discussion, and problem solving. Following are specific discussions on how to apply these four major beneficial learning activities in the Web-based distance learning system.

Collaborative Learning

Literature review suggests that collaborative learning is a type of instruction that could meet the needs of students of any styles (Ellsworth, 1994). Collaborative learning is supported by the use of research-based projects via the Web. Instructors could assign students into either large or small groups to conduct electronic researching on course related topics.

Demonstration

Instructors could apply WWW as a demonstration tool for instruction. Instructors post course syllabus, curriculum materials, or students' products for learners to read, discuss, and evaluate. In addition, instructors could provide guidance about the content-related educational resources and allow students to conduct an electronic field trip in viewing those resources.

Interactive On-line Discussion

Interactive Web-based discussion provides on-going information sharing, facilitates active learning, and can be controlled by the teachers. The Web with its great capability offers various methods for encouraging on-line conversations between teachers and students. The electronic conversation between teachers and students could be made through Email, Listserv, newsgroups, Web conference page, and synchronous discussion (chatting). Email is the most simple, direct, and effective instructional strategy in a Web-based distance cybercourse. It can become the principal tool for maintaining interactions between students and teachers.

Listserv are automatic mailing lists. In the cybercourse model, instructors could create a listserv for their specific class discussion. Through the listserv, instructional materials and messages could be mailed mandatory and automatically to all of the students' email addresses subscribing to the listserv.

In addition, interactive electronic conversation could be implemented by creating a private discussion newsgroup to allow students conduct on-line discussion and post their opinions and responses. Newsgroups could also be used to broadcast and post information to students about courses, schedules, events, speakers, and so on.

Web conference pages offer another alternative for interactive on-line discussion. Web conference indicates creating a Web site that allows learners to submit their discussion contents and opinions in a designated Web page so that each student in the class is able to read their peer's comments and ideas and respond his/her own discussion contents simultaneously or asynchronously.

Different from Email, synchronous discussion (chatting) allows both teachers and students connect and discuss at the same time. Such discussion provides a great group opportunity for distance learning via the Web.

Problem Solving

Problem solving activities are one of the most beneficial educational activities for students of any age (Ellsworth 1994). Such activities could be integrated by Usenet and extensive use of the search tools, online gathering from rich educational Web sites, and electronic information exchange tools.

Accordingly, with interweaving the four distance learning activities into the regular Web-based distance education system, a cybercourse model is created. Figure Two shows the innovative model of Web-based cybercourse.

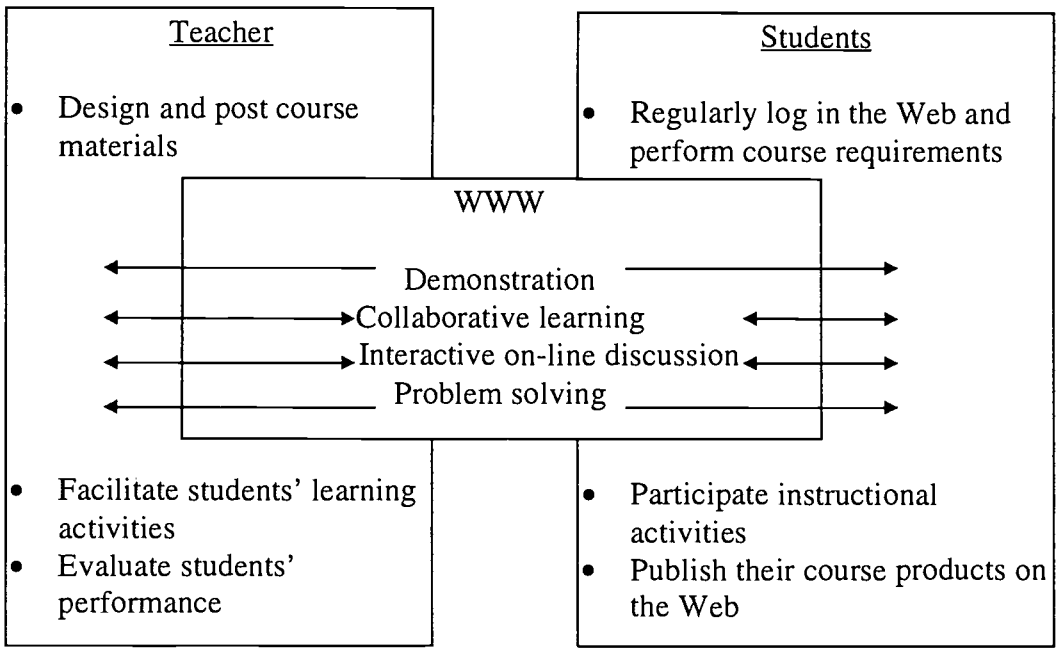

Figure 2: The Cybercourse Model

Comparison

The significant difference between the regular Web-based distance learning system and the innovative cybercourse model is the four instructional telecomputing activities. The four activities not only activate the entire cyber learning but also help instructors contemplate about their teaching. Therefore, two contrast perspectives are pointed out and discussed in the following:

Active Learning Versus Passive Learning

The Web could be a very passive tool if students just browse the posted materials and randomly clicking without any thoughtful or interactive activities. If an instructor skillfully weaves the four telecomputing activities into his/her Web-based distance instruction, students' learning will be totally different. Collaborative learning allows students to have interaction with their classmates and engaged in the learning process. Electronic conversation provides excellent opportunities to stimulate computer-mediated communication between teachers and students. Problem solving activity facilitates students' synthesizing and organizing skills.

Mindful Teaching Versus Thoughtless Teaching

It is always easy for an instructor to follow and perform the instructional agenda listed in the regular Web-based distance learning system. However, to integrate the four instructional telecomputing activities requires

extensive and deep thinking. Several questions have to be considered. For example, how is the collaborative learning going to occur between the remote students via the Web? What types of problem-solving activities are able to meet the curriculum purposes?

Discussions

Good application of the Web-based cybercourse model could promote not only active teaching but also effective learning. To ensure a practical utilization of the model in distance education, instructors should realize its advantages, limits, and implications.

Advantages

Web-based distance learning provides three advantages over other distance educational technology systems. The three benefits are: no time and space limit, synchronous and asynchronous communication, and linear and nonlinear learning. Specific discussions about the three advantages are as follows:

No Time and Space Limit

Through the cybercourse, learning can be taken place at any convenient time and anywhere in the world. Teachers can contact with any one of their students or students can contact any one of other students taking the same course early in the day, after midnight, while traveling, at conference, at home or at the office, without being tied to fixed schedules.

Synchronous and Asynchronous Communication

Communication between teachers and students could occur at the same time or at different time in such a Web-based distance course. The great power of the Web-based instruction is that both instructors and students could express their thoughts and opinions at any time and at any location.

Linear and Nonlinear Learning

Learning via the Web allows students to proceed self-paced learning. Students can have great latitude in directing their own learning in a manner compatible with their learning styles.

Disadvantages

Because of the Web's advantages of allowing access at any time and any place, there are two corresponding disadvantages. They are the difficulty of document students' performance and difficulty in tracking students' exploration on the Web. Following is the specific discussions.

Difficult of Documenting Students' Performance

So far, it is still very difficulty to document students' efforts or performance on the Web. Although most of the hypermedia programs such as HyperCard are able to get an indication of time on task for students using the instructional software. There is no easy way to record students' time on task while they use the WWW.

Difficult in Tracking Students' Access

It is also difficult to track whether students have been to a Web site that could mark as an effective choice for great learning. "The Web's greatest intrinsic power is that it encourages branched and nonlinear instruction (Brooks, 1997. P. 28)." Students can not only jump around the materials that the instructors have created for them, but also can access information created by other.

Considerations

When applying the Web as a distance learning medium, instructors have to take into considered the following three points. First, are electronic conversations less effective than face-to-face conversation? While electronic conversations are the major channel to communicate between teachers and students, its instructional effect become an essential issue. The importance of face-to-face instruction has been emphasized in the distance learning fields (Brooks, 1997). Thus, an instructor might consider offering one or two sessions for meeting with their students at remote sites.

Second, does Web-based distance learning provide less favorable learning for a field dependent person? Research studies indicated that students' learning style did make a difference in their learning (Witkin et al, 1967;

Greenbowe, 1996). While Web-based distance learning is mainly delivered via electronic conversation, will field dependent learners perform poorer than the field independent learners just because such course offer less scenic interaction between teachers and students than the traditional teaching? Witkin (1949) also found that there was a significant sex difference in field-dependent/independent performances. Females tend to be more field-dependent. Accordingly, an interesting research question was generated: Will male students perform better than female students in a Web-based distance learning course?

A final consideration regards to the issue of "Web-based misinformation (Brooks, 1997. P. 28)." We all know that the WWW contains huge information and resources. The quality of the information resided in the Web varies a lot. Some are with professional knowledge; some are not. Students are quite possible to access misinformation on the Internet. To avoid our students wasting too much time in assimilating the misinformation has been an enormous challenge for distance learning educators.

Implications and Conclusions

The Web-based cybercourse model implies not only the applicability of distance learning but also the expansion in infusing technology into the entire educational setting. Undoubtedly, Web-based distance learning could be applied to all levels of education because its rich resources containing knowledge in all levels. Further research studies regarding the instructional effects of Web-based distance learning will be and should be investigated. No matter what research results will be generated, the Web will definitely continue to encourage educators to integrate it in their teaching and learning process.

In sum, there is no question that Web-based distance course with its unique advantages and beneficiary learning activities will attract more and more educators to adopt such instructional strategy. Indeed, the Web with its flexible and universal capabilities is just the right tool to design and develop an effective and versatile distance educational course.

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