Facilitating an Online CIS Course: A Case Study

Lissa F. Pollacia
Jack Russell
Thomas Hanson
Computer Information Systems
Northwestern State University of Louisiana
Natchitoches, LA 71497 USA

Abstract

Many institutions are beginning to offer courses and, in some cases, entire degree programs using electronic learning technologies. Instructors, accustomed to the traditional classroom, struggle to understand the new technology and the new pedagogy required in the "virtual classroom." To be successful in this new environment, it is not sufficient to put lecture notes and some assignments on the Web for students to access. The instructor must convert each unit of material into a variety of activities that help the student achieve the learning objectives. Assessment of student learning must also be adjusted to reflect the online environment. This paper describes the various learning activities and assessments that comprise an online Computer Information Systems (CIS) course currently offered at our institution. The course, *Introduction to Information Technology*, provides a broad coverage of topics such as hardware, software, applications, networking, etc. We present the components of the online course, along with observations based on experience that we have had during the planning, development, and facilitation phases of the course.

Keywords: Online learning, virtual classroom, web-based instruction.

1. THE VIRUTAL CLASSROOM

One of the most dramatic trends in higher education is the emergence of courses, and in some cases entire degree programs, which are not delivered in the traditional teaching/classroom environment. Rather they are presented through the Internet or the World Wide Web. This newest method of college-level instruction has been called "the cyber league," "the electronic university," or "the virtual classroom." These terms refer to a particular type of distance education in which the teaching/learning takes place via a computer network. The network can consist of a local area network, an intranet within an organization, or it can be web-based and hosted on the Internet. This type of distance education is gaining tremendous momentum as institutions seek to provide for a more diverse student population who are demanding learning "any time -- any place."

A recent survey by the U.S. Department of Education's National Center for Education Statistics indicates that the number of distance education programs increased by 72 percent from 1995 to 1998, with an additional 20 percent of the institutions surveyed planning to implement distance education programs within the next three years. Those institutions reported that they planned to use Internet-based technology and two-way interactive video as the primary delivery systems (Lewis 1999).

There is, of course, a very real difference between the virtual classroom and a traditional classroom in that its walls are not made of bricks and mortar. Rather the virtual environment contains "classrooms" that are constructed from computer software and provide meeting places where an instructor and students communicate, interact with each other, and participate in the learning experience. The interaction with the material or content of a course, and the "interpersonal" interaction of participants, has been established as the two types of interaction that are required for learning to take place.

Participation is generally *asynchronous* meaning that all participants do not have to be online and "meet" at a pre-determined time. Students may login and read, post questions, complete assignments, and respond to other students' postings at any time and from any location with convenient access to the Internet (ALN).

For the development of an effective distance education program, there must be careful planning and a focused understanding of student needs and course requirements (Moore 1999). While technology plays an important role in web-based delivery, educators must remain focused on instructional outcomes, not the technology of delivery. The key to an effective online program is to

focus on the needs of the learners, the requirements of the content, and the constraints faced by the teacher, before selecting a delivery system (Tarver 1999). Once these elements are understood, the appropriate technologies can then be selected. For an online distance education program to be successful there must be dedicated, hard working individuals and organizations, including students, faculty, support staff, and administrators (Pollacia 1999).

The faculty member must break away from the old paradigm of lecturing and testing on those lectures. Because the faculty member plays such a different role in the virtual classroom as opposed to the traditional classroom, s/he is sometimes referred to as the course "facilitator" rather than the course "instructor." The facilitator provides information online, makes appropriate assignments, leads discussions, establishes timelines, assists students in solving both technical problems and content-related problems, and provides feedback on students' submissions.

Many are asking the question: do online student learns at the same level as students in the traditional "on-ground" classroom? Research comparing distance education to traditional face-to-face instruction indicates that teaching and learning at a distance **can be** as effective as that achieved with traditional instruction (Crow 1999). This is based on the assumption that the method and technologies used are appropriate to the instructional tasks, there is interaction between participants, and there is timely instructor-to-student feedback (Phipps 1999). A recent report prepared by the Institute for Higher Education Policy identifies 24 benchmarks that are considered essential to educational quality for online learning (Phipps 2000). In this next section, we describe several learning activities here that are designed to utilize the technology appropriately and to incorporate strategies outlined by these benchmarks.

2. LEARNING ACTIVITIES FOR THE VIRTUAL CLASSROOM

The course that we have converted to the virtual environment is titled *Introduction to Information Technology*. This is the introductory course for CIS majors, and provides broad coverage of the Internet, hardware and software, IT in business, communications, and social/ethical issues in IT. Short units in word processing, desktop publishing, spreadsheet, database, and visual programming are also covered. This class was selected to be the first to go online in the CIS program for several reasons: (1) the material is introductory and thus easier to facilitate online, (2) there was a need to reach students at satellite campuses, particularly at a military installation, (3) we wanted to reach out to non-traditional, working students, and (4) limited resources and faculty prohibit traveling back and forth between the campuses.

Our institution provides use of a course management software system called Blackboard™ (Blackboard) that provides a web-based skeleton around which you can build the course. For example, the student can view Announcements, Course Documents, Assignments, and Course Information. There is a Discussion Board, a Virtual Chat and Email available for Communication. Several tools assist the instructor, such as a built-in gradebook, a "group-work" feature, and an online testing component.

Here are the learning activities, which we have developed to facilitate this course online:

Lecture/Presentation

The lecture is replaced with a PowerPoint presentation covering the major elements of the unit. The presentation is professionally formatted, with transitions between pages and bullets, and many graphics are included. However, a PowerPoint presentation can be very lifeless without any accompanying explanation. Therefore, we have recorded a short audio clip to accompany each and every slide of the presentation. In addition, we provide a "swiss-cheese" version of the presentation (one with key words and phrases missing), which the student is encouraged to print out prior to viewing and listening to the presentation. Thus as the student works through the presentation, s/he also must fill in the key words and phrases—not just passively view and listen. We feel this enhances the students' participation in the "lecture" and facilitates the learning of the material.

Written assignments/discussion

Assignments should encourage writing and interaction between students, and should utilize the resources of the Internet as much as possible. One typical assignment will require the student to conduct some research, write up an answer and post that answer to the Discussion Board. Students are also required to read and respond to other students' postings. Here is an example of that type of assignment:

Computer Security. A computer with an always-on connection has a permanent IP address, which makes it especially vulnerable to hackers, "Trojan horses" or so-called "Spyware" attacks. Traditional firewall products are unable to stop these attacks on your computer inadvertently introduced by trusted users via email or other methods. Once this type of unknown application installs itself on a PC, it can initiate an Internet connection without the user's knowledge and send data back out over the Internet allowing hackers to commit fraud.

a. Explain what this paragraph means ***in your own words***. Explain what is meant by IP address. What does

IP stand for? Give the URL(s) of any web sites where you found this information.
b. What is meant by a Trojan Horse as described above? Explain where the term originated from historically. Give the URL(s) of any web sites where you found this information.
c. What is firewall software? Name one company that makes this kind of software. Give the URL(s) of any web sites where you found this information.

In another type of assignment, you can provide the URL of the site you wish the student to view, and then ask questions concerning that site. Use this type of assignment when you want the student to visit a particular Internet site for a topic. Be sure to include a warning about copying information directly from a web site. For example:

21st Century Storage. Visit the site and read the article at http://www8.zdnet.com/pcmag/features/cdrom/_open.htm. Answer the following *questions in your own words*:

1) What industry is the main force behind the development of DVD?
2) How much data will a DVD disk hold and how does this compare to a CD-ROM disk?
3) What does the article mean when it says that DVD will be "backward compatible" with CD's?
4) What is the prediction for the future of DVD technology?

Tutorials and Interactive CD's

Many textbooks contain excellent tutorials that the students can do to get hands-on experience. The textbook for this particular course contains an interactive CD that illustrates many of the concepts with simulations and other exploring exercises. We have found that self-paced tutorials are an effective learning activity. In addition to the textbook CD, we have developed some short tutorials for the visual programming unit. The student works through the tutorials on his/her own, and submits the programs to the facilitator for grading.

Group Assignments

We feel that students today need to learn to work with other people at a distance via electronic communication. To accomplish this, students are placed in small groups (5-6 students) and are given group assignments throughout the semester. At first it is difficult for students to learn to work together with no face-to-face interaction. However, they become much more proficient as the semester progresses. Here is a sample group assignment from the Internet unit:

Foreign Country: Choose one foreign country (for example: England, China, Australia or any other country) to research using the Internet. Write at least 3 pages giving information about its capital, major cities, tourist attractions, what the weather will be like this time of the year, and so forth. Also tell how much a $100 (US Dollars) will equal in that country's currency. Your group answer should be longer and more comprehensive than if you were doing it by yourself. List the URL's of the sites where the group members found this information. For all group questions, be sure to include the names of those students in your group who participated**.** Choose **one person** to post your answer to the Discussion Board under the folder **Foreign Country**. I will not accept multiple postings. Put the ***name of the country*** and your ***Group Name*** in the ***Subject Line***.

Interactive Chat

Throughout the semester, we hold interactive sessions, which we call "Town Meetings." All students are required to attend at least one Town Meeting at the beginning of the semester. We have found this useful for answering questions and clearing up problems that students have getting started. The size of the Town Meeting should not exceed six students and the instructor should try to keep the conversation "on track" and related to the class. The Town Meetings are rather informal and function mostly as a help sessions. Students have indicated that they like this *immediate* form of communication, and it helps them feel more connected to the instructor and the others in the class. Some students will not attend any chat sessions, whereas others participate frequently.

Guest Lectures

We arrange for one or more "guest lecturers" to post a lecture on a relevant topic. For example, in the unit on IT in Business, the local Chamber of Commerce Executive Vice President writes about the effect of the Internet and e-commerce on local businesses. Students are required to respond to the lecturer with either a question or a comment. It is best if the guest lecturer can be available after the initial posting to answer questions and interact with the students. This will vary, depending on the availability of the lecturer.

Assessment

The type of assessment will depend on the nature of the course. For this particular course, the assessments that we use are the written discussions, written homework emailed to the instructor, group projects, participation in various Town Meetings and Guest Lectures, and also the creation of Web pages for certain topics. It is important that you tell students the specific grading criteria in advance so that they know how they will be graded, and then apply the criteria fairly. We also give quizzes and exams, as in a traditional class. We allow students to take quizzes online, but we require the student to physically travel to a testing center for administration of major exams. A proctor may be arranged for "long distance" students.

3. OBSERVATIONS/CONCLUSIONS

Our university currently offers approximately 60 online courses to over 2000 students. Others are being developed and plans are underway for the development of complete online associate degrees in Computer Information Systems and Business Administration. We have been involved with the development and delivering of online courses for approximately three years. Here are a few observations concerning the impact of the online paradigm based on our own experience.

- Focus on what the students should KNOW and UNDERSTAND when the course is completed, i.e. the learning outcomes—not on your teaching. Teaching becomes guiding, facilitating, problem-solving, and assessing, rather than instructing (Pollacia 2000).
- You must protect the integrity of the course, that is, you must insure that the online course achieves the same learning outcomes as the traditional, classroom version.
- Initial development and implementation of the course requires a great deal of time and effort, much more than for the traditional version. However, once the basic course materials have been developed, you have facilitated the class at least once, and the class size is manageable (20 or less), the actual work to conduct the class is about the same as for a traditional class.
- You develop your presentations, learning activities, tutorials, guides, etc. and place it on the Web. Then you set deadlines and make yourself available as a guide/mentor and let the students go. Each student is in charge of his or her own progress.
- Some students are not adequately prepared for this responsibility. A degree of self-discipline and level of maturity are required of the online student.
- An orientation session covering the fundamentals of the delivery system is important. Additional time must be built into the startup of a class to allow the "rounding-up" of those students who are "lost in cyber space."
- Be prepared to spend a great deal of time reading and typing written responses to students' questions.
- Evaluate and revise. Evaluation determines if the instructional methods will accomplish the established goals and objectives. Even the most carefully developed e-learning course will have room for improvement.
- A good site that we have found for online learning and distance education resources is *Teaching and Learning with Technology* at http://www.stjohns.edu/library/staugustine/technology.html.

REFERENCES

ALN, The Asynchronous Learning Network Web Site, http://www.aln.org.

Blackboard, Inc. Web Site, http://www.blackboard.com.

Crow, Steven, 1999, "Virtual Universities Can Meet High Standards." *Chronicle of Higher Education*, October 29, 1999: B5.

Lewis, Laurie, Kyle Snow, and Elizabeth Farris, 1999, "Distance Education at Postsecondary Education Institutions: 1997-98." National Center for Education Statistics (NCES), U.S. Department of Education, NCES #2000-013, Washington, D.C., U.S. Government Printing Office, (http://nces.ed.gov/pubs2000/2000013.pdf).

Moore, Michael G., 1999, Editorial. *American Journal of Distance Education*, Vol. 13, No. 2, (http://www.ed.psu.edu/acsde/ajde/ed132.asp).

Phipps, Ronald A. and Jamie P. Merisotis, 1999, "What's the Difference? A Review of Contemporary Research on the Effectiveness of Distance Learning in Higher Education." Institute for Higher Education Policy, Washington D.C., (http://www.ihelp.com/difference.pdf).

Phipps, Ronald A. and Jamie P. Merisotis, 2000, "Quality on the Line: Benchmarks for Success in Internet-Based Distance Education." Institute for Higher Education Policy, Washington D.C., (http://www.ihep.com/quality.pdf).

Pollacia, Lissa, and A. Richard Tarver, 1999, "Key Elements in Implementing an Online Program." Proceedings of 10th Annual Consortium for Computing in Small Colleges: South Central Conference, Austin, Texas, April 16-17.

Pollacia, Lissa, et. al., 2000, "Distance/On-Line Education: Do's and Don'ts." Proceedings of International Association for Computer Information Systems (IACIS) 2000, Las Vegas, Nevada, Oct 4 - 8.

Tarver, A. Richard and Lissa Pollacia, 1999, "What Decision-Makers Should Know About Web Based Delivery of Distance Education." Proceedings of the 10th Annual International Conference Society for Information Technology and Teacher Education, Association for the Advancement of Computing in Education, San Antonio, Texas, Feb. 28 - Mar. 4.