Lab Development for Delivering Information Systems Courses Online at Small Campuses

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EXECUTIVE SUMMARY

In this case study, you will encounter some of the issues of lab development for delivering lab-based information systems courses online. Many small campuses have very limited budget or no budget at all for the computer lab specifically designed for information systems majors. Sometimes, even with new computers purchased, very few people know how to set them up for lab-based information systems (IS) courses. What are the software and hardware requirements for getting the lab online? How much will it cost? Where can you find resources for the lab development? To ensure quality teaching on IS-related topics, you have to deal with these issues. This case study will discuss how to create a lab that allows students to get hands-on practice for courses such as network management or database processing online with a shoestring budget.

Keywords: computer science education; course implementation; distance education; higher education; instructional technology; IS curriculum; IS skills; online teaching

ORGANIZATIONAL BACKGROUND

Jackson University was founded in 1973. The university’s primary teaching site is established in a rural area surrounded by ranches, farms, and small towns. The primary role of the university is to provide junior, senior, and graduate level courses for the students graduated from several local community colleges. The university offers bachelor’s and master’s degrees in education, business administration, accounting, marketing, management, computer science, mathematics, English, psychology, communication, criminal justice, history, biology, and other areas of arts and sciences. About 1,600 students are taking classes in three major teaching sites that are about 100 miles away. Some of our students may need to drive 50 to 100 miles to attend classes. Faculty members travel from campus to campus to teach the classes. There are some online
courses; most of them are lecture-based courses. The computer science and computer information systems program currently has about 100 students enrolled. The program offers more than 30 undergraduate and graduate courses for the upper division (junior and senior level) undergraduate and graduate students. On today’s job market, students majoring in information systems-related fields are expected to know the theories about information technology and have hands-on skills for problem solving. To prepare information systems students to meet these expectations, the emphasis should be on both theory and hands-on practice in teaching. There are many publications emphasizing the combination of theory and practice (Swanson & Fouad, 1999). For the hands-on practice, the information systems majors need a teaching lab specifically designed for them. The students also should be able to access the labs through the Internet to reduce the burden of long-distance driving. However, like many small campuses, there is limited budget and support from computer service for the technology-based courses. The following sections will discuss the challenges and how to overcome the difficulties in order to meet the needs of teaching and learning of information systems courses.

SETTING THE STAGE

In this section, let us get started with philosophy, technology utilization, and management practice. First, the discussion will be on the description of various IS courses and their lab needs, particularly those that use the same resources but have conflicting requirements. After describing the courses and lab needs, the discussion will be on why a special lab is necessary for our information systems students. Then, it will focus on how the students use the lab and on the conflicts caused by multiple courses using the same resources. It will include current computer service staffing, resources, and requirements vs. needs. This discussion will illustrate why it is hard to put information systems courses online. Finally, you will see how much budget and support a small campus can get.

From the previous section, it is known that multiple teaching sites are involved in this case study. For each teaching site, a special teaching lab should be developed for hands-on practice. Each special teaching lab is designed to handle multiple courses. Each of these courses has its own requirements for lab resources.

This case study will include several hands-on practice-intense courses that are required courses for computer science and computer information systems majors. These courses are offered in multiple teaching sites and require the computer labs to perform hands-on practice. Multiple courses often share the same resources in a computer lab. As mentioned in the previous section, the teaching sites are away from each other, and all the students live off campus. Therefore, these courses also require that students be able to access the labs through the Internet.

Normally, there are about 20 classes offered each semester, and some of the classes may be offered at multiple teaching sites. There are about 15 students enrolled in each class. Often, the same course offered at different teaching sites is taught by different instructors, and therefore, the class needs its own lab and only allows its own students to access the lab.

To secure these computers, Windows Service Pack 2 and MacAfee VirusScan will be installed on each computer. The lab should be separated from the university’s main network to protect the university’s normal business operations. Since the main objective of the labs is for learning, the security requirement for the teaching labs is less restricted than that in the production environment for reliable business operations. However, for the teaching labs, reinstallation is often due to malfunction caused by students’ mistakes. Also, at the end of each semester, the computers in the labs will be reimaged for the next semester.
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