Chapter XI

Testing and Evaluating Online Computer Labs

Introduction

The process of developing an online computer lab is not a linear process. It is a cycle of developing a new lab, testing, evaluating an existing lab, getting feedback from users, and improving the existing lab. An online computer lab is a complicated project, especially if it is a medium or large online computer lab. For such a complex project, it is difficult to make everything perfect the first time. Some of the implementation may not meet the requirements exactly. As we all know, there would be some mistakes. There could be some conflicts when multiple classes share the lab resources. Also, technology changes at a rapid pace. Following the change of technology, the content of technology-based courses will change with it. As a result, equipment, software, and services will be updated accordingly. These factors will lead to the redesign or update of the online computer lab. Testing and evaluation are critical steps for meeting the ever changing requirements of teaching and hands-on practice. All in all, testing and evaluation provide guidelines for improving support

for technology-based courses. In this chapter, we will discuss the issues related to testing and evaluation of an existing computer lab.

We will begin with the discussion of the requirements for testing and evaluation. The requirements include those for the testing of hardware, software, network equipment, remote accessibility, and course content. For lab evaluation, we will discuss what should be included in an evaluation report and how to collect information for the evaluation process.

Some tools are available for testing an operating system or a network. This chapter gives an overview of these testing tools. It provides some information about the usage of these tools.

Next, we will investigate various ways to carry out the testing and evaluation process. The tasks performed by a testing process may include the tests of the lab structure, lab computing environment, lab reliability, lab accessibility, lab security, hardware, software, and network devices.

Letting users test newly installed hardware and software is also important for testing and evaluation. After a software package or hardware equipment is installed or upgraded, ask the instructor to perform some activities to see if it works properly and meets the requirements of teaching and hands-on practice.

Getting feedback from students is one way to obtain the evaluation about an online computer lab. Students can be asked to provide feedback about the strengths and weaknesses of the lab. The students' evaluation can be used to further improve the lab construction and can be used by instructors to improve their online-based teaching. This chapter introduces some lab evaluation instruments that can be used to collect students' opinions.

The last topic covered in this chapter is related to the measurement of effectiveness of using an online computer lab. An effectiveness measurement process includes the selection of indicators and the values associated with each indicator. Several effectiveness measurement approaches will be discussed in this chapter.

Background

Most of the network infrastructure development processes include the stages of testing and evaluation. The tasks in these stages belong to the evaluation phase of the ADDIE model in the instructional design theory. Testing and evaluation are both necessary to correct mistakes made in the development process and to adapt to the fast changing technology. As part of the system development process, the tasks in a testing process include managing remote testing, writing bug reports, and testing outsourced projects (Black, 2002).

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