Chapter XII
Trends and Advances

INTRODUCTION

In this chapter, we will discuss the advances in open source products and the trends in the technologies used for developing online teaching/learning systems. The topics of trends and advances discussed in previous chapters will be summarized in this chapter. We will also look at new features and new ideas in the application of the open source products that will potentially have an impact on the online teaching/learning systems.

The discussion will start with the advances in the network related open source tools. As more and more university courses are taught online, there is an increasing demand for faster and more reliable network technologies. A lot of effort has been made to improve network hardware and software. In this chapter, we will examine some of the new network and telecommunication related technologies and how these new technologies will impact online teaching and learning.

Then, we will look at the advances in server operating systems and services. We will investigate the trends in server software, hardware, and services. We will discuss the new and emerging technologies that can potentially improve servers’ performance and reliability.

As more and more course materials are made available online, there will be a higher demand for databases to hold and manage the ever increasing data generated by various online courses. We will discuss the advances in database management systems and Web-based databases.

Learning management systems (LMSs) are rapidly changing. A lot of advances have been made in the LMSs, and many new LMS features are developed to enhance
the performance and functionality of the LMSs. In this chapter, we will examine some of the new features and technologies.

The next topic to be discussed in this chapter is about the advances of security related technologies. This chapter will provide some information about the trends in antivirus tools. We will also explore some new development in virtualization, access control, and data encryption.

The area of multimedia software, collaboration software, and other desktop application software is the most improved area. Especially, the open source multimedia and collaboration tools have been made much easier to use. This chapter will introduce some of the advances in this area, and we will take a closer look at some new features of the multimedia software, collaboration software, and other desktop application software.

The last topic in this chapter is about the trends in instructional technology. The advances in the theory and practice of instructional technology will be discussed. Online teaching/learning systems are getting more sophisticated and flexible. We will look into some of the new development in various future learning structures that have been proposed.

The rapid progress of technologies and ideas for online teaching and learning has made a tremendous difference in higher education. As the progress continues, we can expect education institutions to keep on improving their online teaching. This chapter will talk about how students and instructors will benefit from the progress and improvement.

BACKGROUND

Using open source products in e-learning is one of the trends in the area of e-learning technology. The open source products such as Web 2.0, Linux, Moodle, Apache, MySQL, and PHP are gaining popularity among higher education institutions. Many factors are contributing to this movement. Online teaching/learning systems are one of the major costs of universities’ operations. By using the open source products, universities can significantly reduce their spending on the online teaching/learning systems. The usability of the open source products has been improved significantly. The Firefox Web browser is such an example. Open source product companies are also making more effort on marketing and on support for their products.

The open source approach will continue to be a main way of inventing new technologies. MacManus (2007) picked the open source movement as the most promising trend for the Web in 2008. He predicted that Web browsers, social networks, mobile Web, open data, open ad networks, and microformats would significantly influence Web-based computing. Torkington (2007) has summarized some trends
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