A Distance Instructional System with Learning Performance Evaluation Mechanism: Moodle-Based Educational System Design

Ying-Chen Lee, Waseda University, Japan
Nobuyoshi Terashima, Waseda University, Japan

ABSTRACT

In this paper, a Moodle-based educational system has been constructed by providing friendly interface to fit most students in e-learning. For the website implementation, the authors take the course “Multimedia Implementation Using JAVA” as a case study. From the modified Moodle-based educational system, the browsing time of each web page for students can be obtained. By analyzing the recorded information, teachers can find out factors which will affect students’ learning performance, so as to apply the proposed learning performance evaluation mechanism to evaluate students’ learning performance for providing adequate auxiliary learning materials to individual students.

Keywords: Educational System Design, e-Learning, Moodle, Multimedia Implementation, Performance Evaluation

INTRODUCTION

To achieve the effective study, reduce the learning period, promote the learning efficiency, and improve the learning attitude of students in distance education, it is necessary to build a well designed web-based instructional system. By applying the web-based instruction, the time-space limitation can be released, multiple teaching materials and individual teaching can also be provided. Currently, the use of learning management systems (LMS) has grown considerably in the universities around the world (Baker, Hale, & Gifford, 1997; Carvalho, Areal, & Silva, 2011; Leung, 2003). A learning management system is a software application for the administration, documentation, tracking, and reporting of training programs, classroom and online events, e-learning programs, and training content (Ellis, 2009). It is used to handle learning and teaching processes, and is necessary to offer electronic learning materials to the students online.

Many universities have their own web-based educational systems, such as CEIBA of National Taiwan University, The Cyber
University of National Sun Yat-sen University, Moodle-based educational system of Ming Chuan University. Functions of web-based educational systems in different universities are not the same and most of them are closed systems which cannot be used by teachers or students of other universities. Nowadays, one of the most commonly used is Modular Object Oriented Developmental Learning Environment (Moodle, http://moodle.org), a free learning management system enabling the creation of powerful, flexible and engaging online courses and experiences (Rice, 2006). Moodle-based educational system, used by many universities, such as Ming Chuan University, is an open platform which supports more than 40 different languages and can be modified according to the purposes of users.

Web-based learning is currently one of the major applications of the Internet and it is to be a new and sophistically tool of the distance education. While implementing any kind of distance instruction, it is necessary to setup a curriculum homepage for teachers and students to interact after class and for students to download related information from the curriculum homepage if necessary. It is very important for teachers to make sure if students really use the curriculum homepage to discuss or read related data. Most of the current educational web systems have functions to record students’ learning portfolio, provide on-line tests, and support group discussion, but lack the function to provide a suitable assistance for individual students.

The user-friendly software is necessary for designing a distance learning website. According to the research of Uzunboylu, Ozdamli, and Ozcinar (2006), we know that Moodle has communication tools, productivity tools and supports group work. For students, they can discuss with others, share file, access context sensitive help, and have a home page that includes their personal information and their photos. Through the Moodle-based system, instructors can schedule a chat using the course calendar; assign students to groups, and the system is able to create groups and build student community randomly. Unfortunately, these platforms do not provide specific tools to allow educators to thoroughly track and assess all learners’ activities while evaluating the structure and contents of the course and its effectiveness in the learning process (Zorrilla, Menasalvas, Marin, Mora, & Segovia, 2005). Thus, implementing an effective mechanism to evaluate students’ learning performance for improving the effectiveness in the distance learning process is very important. In this paper, a novel learning performance evaluation mechanism has been augmented to achieve these ends.

The purpose of this research is to present suggestions for designing and implementing a Moodle-based intelligent distance educational system and to evaluate students’ learning performance through the modified distance educational system by applying the proposed learning performance evaluation mechanism.

RELATED WORK

Web-Based Educational System

As mentioned previously, many universities have their own web-based educational systems. Most systems are closed and offered for their own faculty members and students only. Since Moodle system released, more and more schools develop their own web-based educational system based on Moodle. Moodle is a learning management system (LMS), a free, open source software package designed by using sound pedagogical principles, to help educators create effective online learning communities. It was developed to facilitate the collaborative creation of content, organization, control, and to manage the publication of documents in a centralized environment (Gutiérrez, Trenas, Ramos, Corbera, & Romero, 2010; Martín-blas & Serrano-Fernández, 2009).

A learning management system can be defined as a software application or Web-based technology used to plan, implement, and assess a specific learning process (Alias & Zainuddin, 2005). Moodle can accumulate a vast amount of information which is very valuable for analyzing
Project Smart Remote Classroom Providing Novel Real-Time Interactive Distance Learning Technologies
Yuanchun Shi, Weikai Xie, Guangyou Xu, Peifung Xiang and Baoping Zhang (2003). *International Journal of Distance Education Technologies* (pp. 28-45).
www.igi-global.com/article/project-smart-remote-classroom-providing/1613?camid=4v1a