Chapter 20
Modular E-Learning Course Design

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ABSTRACT

Generally it is difficult for an instructor to prepare and disseminate electronic course contents via Web. Therefore it is necessary to study and develop methodology and tools for supporting instructors, experts and even students to manage and access their online course contents easily, conveniently, flexibly and reliably. In order to do some jobs, module technology was introduced to e-learning to provide modularity in conducting educational development of courses and e-learning. Modules can best perform tasks independently on behalf of what was designed in a modular architecture. In modular design modules can be optimized independently of other modules, so that failure of one module does not cause other modules to stop and in general makes it easier to understand, design and manage web-based course system.

INTRODUCTION

Available knowledge, data and information are evolving huge in the Internet. It is difficult to organize, update, maintain, search and publish course content easily and optimally. Educational activities in Internet have increased with the fast growth. However, there are many lacks in e-learning procedures. Thus it is sometimes slow and difficult the use of web based learning. Hence, it would be beneficial if there are some more easy ways to adapt, design and use web for learning (Gunal, Tan & Hua, 2009).

There are a number of different authoring tools developed for assisting course content preparations in e-learning systems and multimedia distributed learning environment. When course contents are ready, the next steps for instructors are content management and course instruction. For this purpose, many different tools have been developed for supporting learning. Most of the instructors have to manually manage course contents, such as controlling and publishing content, adding homework answers periodically, putting announcements on time, and checking availability of hyperlinks inside the contents very frequently. All these management works are trivial but mistakes may often happen when done manually and with less knowledge. To avoid above problems and be simple and get rid of students’ complains due
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to the possible mistakes, a lot of instructors just put the contents on the web servers, and almost without any change them during course periods. In this case, the course contents look like an ordinary textbook only appearing in electronic format in e-learning environment. These are dead materials and can not be optimally used to reach the maximum teaching/learning effectiveness. Course contents should be alive, dynamic and can even be growing.

Modular course design enables instructors in any field to develop well-organized online courses that are to be used. These courses are also easy for students to use, give them a sense of accomplishment as they perform the requirements of each module, and enable them to build on prior knowledge to build new skills.

A modular Web-based application can be a separate application in their own right, which interact with the main application and other modules to perform some set of tasks. A modular approach to web page design can save time in developing and maintaining a course web site. A template page can be created and the different components of the page plugged in where appropriate. No tools other than a text editor are required. This will involve “including” files within one another. Since this necessitates server-side processing some kind of server will be required. But these jobs should be done by technical people more than course instructors (Cargnelutti, 2008).

Modular approach is advantageous for web-based education. A modular Web based course architecture consists of a core framework combined with the required modules to build a custom-tailored course. The resulting system should offer required functionality that the user needs. If a course requires a specialized functionality that is currently not offered by any module, an additional module should be developed by programmer but to be used by instructor of the course. The new module should be compatible with well-defined communication rules and behavioural patterns (Jenny et al., 2006).

Designing course and course content for online delivery requires consideration of curricular obligations, available development tools and materials, but it also requires careful analysis of teaching and learning techniques. A modular design of web-based education courses can facilitate teaching, course delivery, course design, student and instructor response and grading, and the well-structured growth of students. Lecture modules provide tutorials, scripts, interfaces, flexibility and richness for web-based classes. The course modules also should offer the instructor the ability to enhance, interrupt, change order of materials to be covered, or deliver chronological and sequential of instruction. This chapter will examine the concept of an agent-based modular system in web-based e-learning course.

E-LEARNING AND MODULAR DESIGN

E-learning has attracted a lot of attention from researchers and practitioners. Various types of e-learning platforms and tools include web services have been introduced in different education institutions and private training centres. Authors and learners are the main players and administrators and trainers as well. Authors or instructional designers can create e-learning content by using an authoring systems as well as traditional tools. The main part of e-learning system typically consists of a learning management system (LMS) and learning content management system (LCMS). An LMS provides managing learners and their profiles, tracking their progress, easing collaboration, or scheduling events. An LCMS manages learning content which is typically stored in a database and eases content reusability, provides workflow support during content development, or delivers content by predefined interfaces and presentation layers (Pankratius, Sandel& Stucky, 2005).