

The Study on Education Resource Management System Based on OSS

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Abstract—As various information resource of education and teaching process, implementation and using the education resource is the nucleus of education information-based. By the analysis to education resource management system, this text search according to the feasibility that OSS sets up resource management system, then Liferay can become the technique platform that sets up resource management portal; the Online teaching platform of Moodle implement carried out course and information technical to integrate; adopting SCORM creation education resource, study resource can ensure to be shared.

Keywords— Education Resource Management ; OSS ; E-Learning ; SCORM

I. INTRODUCTION

Education information-based is the process that making use of a modern information technique to promote education reform and shape, and carry out modern information technique and education integration. The development of education information-based great changes education form and study method, through digitize, network, the intelligence and the multimedia, establishes the study environment of opens, shares, alternation and cooperation, uses an information technique changes traditional education mode.

Education resource is various information resource of education and teaching process, implementation and using the education resource is nucleus of educate information-based. It provides efficiently of the storage manage for each kind of education resource, that provides the education resource of contents abundance and superior quality application for the learner, and provide a share education the resource for the user.

The construction of education resource is two major types, education software resource with education information and education management information resource taking the foundation data of management information systems as nucleus. Among them, education management information resource mainly means by way of implementation modern education manage, creat kinds of databases resource, with education, education contents , education object, education resource and service system for main contents.

Consequently, educate resource construction is the foundation of educate information-based, education resource management system carried out the plan, organization, cooperativeness and appraisal of each kind of teaching resource, is useful teaching material and the management tool of the Online teaching platform and the outlet of the resource share. This text study the research on education resource management system based on OSS to implement the function of the education resource management.

II. THE RELATED THEORY THAT THE SYSTEM SETS UP

A. OSS

OSS (Open Source Software) doesn't just mean access to the source code. It can free redistribution. The program must include source code, and must allow distribution in source code as well as compiled form. The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software. The license must not discriminate against any person or group of persons. The license must not restrict anyone from making use of the program in a specific field of endeavor. The rights attached to the program must apply to all to whom the program is redistributed without the need for execution of an additional license by those parties, and must not place restrictions on other software that is distributed along with the licensed software, must be technology-neutral.

The OSS of this text adoption mainly is *Liferay*, *Moodle* and *eXe*.

B. SCORM standard

E-learning is essentially the computer and network-enabled transfer of skills and knowledge. E-learning applications and processes include Web-based learning, computer-based learning, virtual classroom opportunities and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. It can be self-paced or instructor-led and includes media in the form of text, image, animation, streaming video and audio.

E-Learning based on internet, put together the digitize contents and the network resource. Through studying and teaching activity of Internet progress, it makes use of the study environment of modern information technique provides and has all new communication and abundance resource, carries out a kind of all new study method.

E-Learning is a kind of new study method, is online study or network study, establish Internet platform, the student approval PC gets to the Internet, study by network. Obviously, this kind of study mode can not get away from network study environment constitute from the multi-media network study resource, internet study community and network technique platform. Study environment in the network, collected study resources, such as the mass data, file data and procedure, teaching software and interest discussion set and news set...etc., form the education resource of a high synthesis integration database.

Currently, the organizations Established of E-Learning standard are AICC, ADL, ARIADNE, IEEE LTSC, IMS Global Learning Consortium, Inc., ISO/IEC JTC1, LMML Framework, SIF Association, ELF, etc.. Among them, SCORM by ADL has influence most. It integrated CMI specification and contents structure by AICC, Meta-data Dictionary by IEEE, Content Packaging, metadata XML Binding and Best Practice standard by IMS.

SCORM is a set of technical standards for E-Learning software products. SCORM tells programmers how to write their code so that it can “play well” with other E-Learning software. Specifically, SCORM governs how E-Learning content and Learning Management Systems (LMSs) communicate with each other. SCORM does not speak to instructional design or any other pedagogical concern, it is purely a technical standard.

III. SYSTEM STRUCTURE

According to 《Distance Education Resources Technical Specifications》, education resource construction has four meanings of levels, material education resource construction, the network course construction, the resource constructive evaluation, the tapping of education resource management system.

In these four levels, the construction of network course and material education resource is foundation, need specification point and nucleus. The third level is the appraisal and sieving to the resource, need normalize the standard to the appraisal. The forth level is the construction of the tool level, the concrete contents of network course and material education resource are ever-changing, each of form has special feature, the management must adapt to the change of this kind of form, well make use of special features.

According to Modern Distance Education Resource System Structure, the construction, implementation and run of education resource is underpin with the Internet network environment, include the construction of medium material database, database, case database and Courseware database and network course, and development of teaching system and education management system to suit various teaching modes. These contents and the relation compose education resource system structure.

A. Educational Resources Database System

The medium material database is the most fundamental in the whole resource, the Courseware in the Courseware database, network course, Even database, may use the medium material medium data within database, the Courseware of several knowledge or different teaching link, measure or examination database synthesis a network course. All above-mentioned resource libraries set up its index information respectively, so that they are quickly searched, browsed and accessed.

B. Education Support System

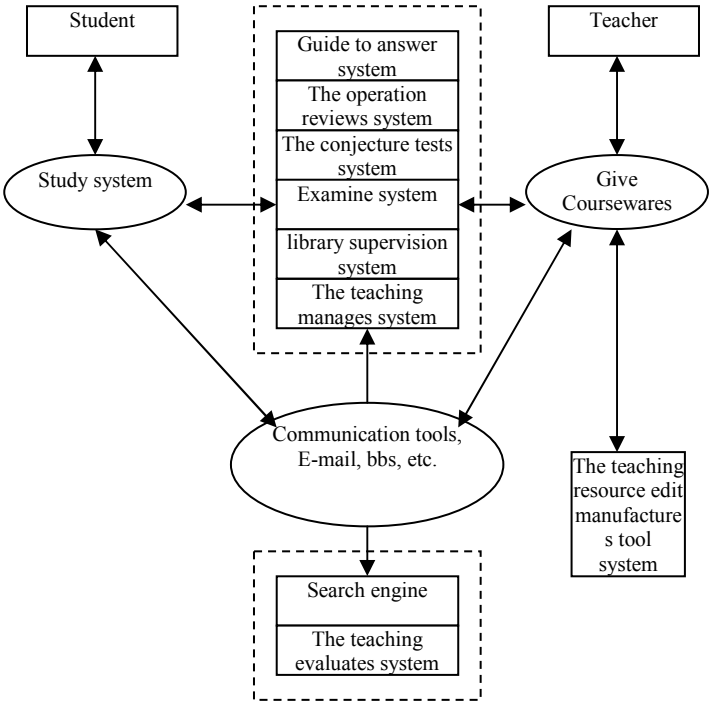


Figure 1 Education Support System

Education Support System, such as figure 1 show, constitute by a series teaching tool that is favored various teaching modes, main include studies system (not real time/real time), give Coursewares system (not real time/real time), the teaching resource edit manufactures system, guide to answer system, the operation reviews system, examine system, evaluate system, communication tool, the conjecture tests system and search engine, etc.. All of these teaching tools is

according to the education resource database, in order to complete each teaching activity in the distance teaching and carry out distance cooperation. Study system and give Coursewares system, teaching resource edit and creation system may take place correlation with the medium material database, the database, Courseware database, case database and network course, examine system to want to take place correlation with database system, evaluate system involve each fraction of teaching resource.

C. Education management system

- Education management system include the supervision of resource database, teaching, and system.
- The supervision of resource database include medium material database, database, case database, Courseware, network course, etc..
- The supervision of teaching include the teacher, the student, student status, educational administration, study, examination etc..
- The system management include safety, performance, fault etc..

IV. SYSTEM FUNCTION AND IMPLEMENTATION

According to above-mentioned system structure, education resource management system adopt Liferay to develop the portal of resources system, adopt Moodle, Exe to develop E-Learning platform, combine a Tomcat application server, the first floor databases server adopts Oracle. In the data stability, the system adopt identity verifies mode, decentralize limit manages aim at consumers.

A. Development of resource management system based on Liferay Portal

Liferay Portal is an open source portal item, includes an integrity J2EE application. The item use techniques such as Web, EJB and JMS etc., especially its interface use a Struts frame technique, the portlet install document according to XML can at liberty watch to expand, use Web Services to favor obtaining of some distance informationses, use Apache Lucene to carry out full text search function.

1) User rights management

User rights management adopt Liferay consumer-consumer's team-role-Portlet correlation method to carry out. The consumer belongs to consumer's team, can also exist alone. Consumer's team has a certain or various roles. The role can divide the supply consumer's team, can also give a consumer with the direct distribution, operating a certain Portlet need the role of having its designation.

In the portal of resource management system, the consumer is divided into the three per stage consumer's team, Is teacher, student and portal intendant. Teacher is divided into teacher

and teaching assistant. The student can be divided into the set of different professional and different grade.

Each group allocate corresponds of role, the different role can visit different service, and run different operation

2) implementation of services

The resource management system has two service functions:

a) Grouped according to user groups.

When the consumer lands a resource management system, the system will receive the consumer's ID first, then search the set that this ID belongs to in the databases, combine to judge the role of belonging to the set and authorith, finally indicate that ministrant contents according to the set and its role belonged to. Entry system, consumer enter different customer's port according to the different extent of authorith:

- The student consumer enters the course that need to be studied.
- The teacher enters a teaching supervision.
- The deluxe consumer is an intendant, carry on system management.

In the same serving, the different set will display a different service contents. For example, when the student consumer of different academics set visits resource supervision at the same time system, system will display oneself academics related contents.

b) Customized according to user groups

There are 3 kinds of modes in Portlet, namely view, edit, help. Generally, in some setups of edit mode containment to this service, the consumer can make to order own hobby. For example, in the teaching resource information service the consumer can make to order an interested information in teaching category of he or she.

c) Implementation of e-learning platform services.

The service of Online teaching platform provides to the consumer develop according to Moodle. Use Portlet postting to set up a Portal platform. The consumer can be according to needing to add this service, carry on a characteristic setup, such as order the external appearance for setting up etc.. The implementation of Online teaching platform need operate and deploy the key document of Liferay Portal, mainly include Portlet.xml, Liferay Portlet.xml, and Liferay-display.xml

B. Development of e-learning platform based on Moodle

Moodle (Modular Object-Oriented Dynamic Learning Environment) is an Open Source Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE). It has become very popular among educators around the world as a tool for creating online teaching dynamic web sites for their students. To work, it needs to be installed on a web server somewhere,

either on one of your own computers or one at a web hosting company.

Moodle emphasize that educating and learners is all equal masters, in the teaching, they mutual cooperation, according to experience, receive knowledge together. The course of management system is a software of opening source code, that create the software package according to the course of Internet and of the website.

Moodle has features that allow it to scale to very large deployments and hundreds of thousands of students, yet it can also be used for a primary school or an education hobbyist. Many institutions use it as their platform to conduct fully online courses, while some use it simply to augment face-to-face courses (known as blended learning). Many of our users love to use the activity modules (such as forums, databases and wikis) to build richly collaborative communities of learning around their subject matter (in the social constructionist tradition), while others prefer to use Moodle as a way to deliver content to students (such as standard SCORM packages) and assess learning using assignments or quizzes.

1) Moodle system architecture

Moodle is created According to Linux system , Apache(WEB server), MySQL databases and PHP language system. The Moodle platform adopt the develops method that the structure design of mold mass and with face to object. From the system structure, it match the structure of treble B/S, fundamentally carried out the disconnect of data calling, the traffic logic and consumer's interface.

2) Moodle course structure

See from the Moodle network course structure, the whole system constitutes from several academics categories. One academics category Can include many course with different portals, course is constituted by three mold masses, such as version mass, resource and activity

3) Moodle management capabilities

Moodle provided the extent of authorith role the supervision: The platform favors system management member, the intendant of the course, teacher, teaching assistant, and student...etc..

- The intendant's main task is building the soft hardware environment of favoring Online, establish course system, recognize which persons can allow to use the system inside the range. The intendant is divided into the platform favors system management member and the intendant of the course. The platform favors system management member is mainly responsible for modifying a system arrangement, support information of course and consumer, establish a station to click a home page, setup and Support function mold mass etc.. The intendant of the course is mainly responsible for establishing a new course, establish a course information and appointment teacher.

- The teacher is divided into teacher and teaching assistant. While specifying teacher, if don't give the teacher the edit extent of authorith, the teacher is teaching assistant. The teacher can edit curricular resource and organize teaching activity. The teaching assistant has extent of authorith, such as manage result, look into daily record and look into a student activity report, enter a teacher BBS etc. His task is some day-to-day teaching supervisions, speed up student study, Anti participation the course design.
- Student can online read material and take part in study an activity, combine own study process and feeling record on own Blog.

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C. Production of educational resources meet SCORM standards.

The form of educating resource is varied, such as HTML, PPT, GIF, Flash, RM, etc.. But the Courseware have to match SCORM standard.

For example, an education resource according to SCORM standard can be created in eXe(The eLearning XHTML editor).

The eXe project developed a freely available Open Source authoring application to assist teachers and academics in the publishing of web content without the need to become proficient in HTML or XML markup. Resources authored in eXe can be exported in IMS Content Package, SCORM 1.2, or IMS Common Cartridge formats or as simple self-contained web pages.

V. CONCLUSION

By the analysis to education resource management system, and the study on Liferay portal system, Moodle, and education resource according to SCORM standard, this text search according to the feasibility that OSS sets up resource management system, then Liferay can become the technique platform that sets up resource management portal; the Online teaching platform of Moodle implement carried out course and information technical to integrate; adopting SCORM creation education resource, study resource can ensure to be shared.

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