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Evaluation of Open-Source LMS for e-Learning courses

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Abstract

The goal of this paper is to introduce an adaptive e-learning model which enables personalized learning experience and more intelligent decision making. It consists of the students' model, the adaptation module, the expert system for data analysis and decision making, the repository of learning objects, and database of educational methods. The designed model provides adaptively through a learning management system, considering individual characteristics of the student, such as their learning styles and prior knowledge. It is capable to adapt course content, structure, and assessments based on the specific student's needs and performance. The model is implemented within the widely used open-source LMS.

Keywords—LMS, Open source, Moodle.e-learning.

I. INTRODUCTION

E-Learning is the new generation's learning methodology which facilitates learner's flexibility to learn at their own pace, place & time. The e-learning, in fact is learning or training that is prepared, delivered or managed using a variety of learning technologies and which may be deployed either locally or globally.A Learning Management System (LMS) is a software system that provides tools to support a learning/teaching process. LMS provides communication tools such as video-conferencing, email, evaluation tools such as survey, quizzes, or grading tools. The use of a LMS is very interesting for any kind of learning, but in the case of distance learning, there is a wide variety of LMSs, both open-source such as Moodle, Sakai and proprietary such as Blackboard. A key point with regard to the use of a LMS is which LMS should be used for each specific case. This decision must be made taking into account objective data such as the levels of use of the hardware on which the LMS will be hosted and subjective information such as the experience and opinion of users of the

system.

In this paper we will evaluate the common feature of four widely-used open-source LMSs, namely Moodle, Sakai, eFront and Forma Lms.

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II. LEARNING MANAGEMENT SYSTEM

The Learning Management System or LMS is the backbone of e-learning which provides the essential components required for hosting of the e-learning contents

The Learning Management System is a software application which is used to automate the administration, tracking and reporting the education and training activities. e-Learning is now become the primary delivery mode of the education in higher education sector. The course related activity such as lecture, online assignments, discussion and quizzes are available to the students through this system. It provide common platform to both teacher and student for online learning and training. For user point of view LMS must be interoperable and integrate well with existing systems. It should be flexible and adaptable to changing pedagogical needs. It must be cost effective, scalable and sustainable.

A most general feature of any e-Learning system has

1. Centralise and automate administration
2. Uploading and publishing of course content.
3. Delivery of course content over web-based system
4. Interaction between students and teacher, such as instant messaging, email, and discussion forums.
5. Assessment and Grading

A. Types of LMS

There are basically two types of e-Learning Management System available for the users.

Open Source e-Learning System: The open source Learning Management System is a software which source code is available to public. Which allow to anyone to copy and make changes without any restriction .The Open source LMS which source code is freely available. It means that we can access the code customized according our need without and license and copy right issue. For high level of customization according to our requirements. The open source e-Learning System are Moodle, eFront, sakai etc.

Proprietary e-Learning System: Proprietary LMS software is developed and owned by a profit-generating entity that does not let users access and make adjustments to the computer code that determines the structure of the software and the activities it can execute. This system is available on payment of the license fee for the use of the system. Source code and customization is restricted to the organization which develop the system. The example of proprietary LMS is Blackboard, Courseera, Desire2Learn etc.

III. WHY USE AN OPEN SOURCE LMS

Now a day's open Source System is as much as popular as any proprietary software .For example Joomla, Drupal, Moodle is as much as popular to the proprietary software

Like Blackboard, WebCT. There are some criteria for the selection of any system is Budget, Stability , Flexibility , Usability and Adaptability to various cross platforms and hardware like mobile, internet, tablet pcs, etc

Most of the open source LMS full fill the above criteria due to cost effectiveness open source LMS can be used.

IV. REVIEW OF OPEN SOURCE LMS

In this section, we briefly review the open-source e-learning platforms considered in this work for comparison from the user and technical point of view.

A.Moodle

[3] Moodle (modular object-oriented dynamic learning environment**)** is a good alternative to proprietary commercial online learning solutions, and is distributed free under open source licensing. An organization has complete access to the source code and can make changes if needed. Moodle's modular design makes it easy to create new courses, adding content that will engage learners. It is free web based application available to the educator to create the online line learning courses effectively. Moodle.org is the community site where Moodle is made and discussed. There are various features available in Moodle such as Forums, Wikis, Databases and online student tracking, Grading and many more to build richly collaborative communities of learning around their subject matter, 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.

Sakai is used for teaching, research and collaboration. Systems of this type are also known as Course Management Systems (CMS), Learning Management Systems (LMS), or Virtual Learning Environments (VLE).The Sakai Project's software is a Java- based, service-oriented application suite that is designed to be scalable, reliable, interoperable and extensible.

B.eFront

[5] eFront has been designed to minimize the clicks to go from one point of the interface to another. The sidebar helps as a central navigation or search point throughout the system.

The use of AJAX technology minimizes the need to transfer data between the server and the client improving the system response time and the users' experience. eFront comes with a complete set of features to create content, tests, assessments, track progress, issue certifications and dozens of add-ons to support wikis, blogs, youtube videos, picture lists F.A.Qs, external links etc. It has also been tested and improved from a wide community of users throughout the world that is very active and helpful. In all aspects,eFront is a mature system that has been built to offer a rich learning experience, to be better than open-source systems and at the same time more effective than other professional learning solutions. eFront is certified for its compliance with SCORM standard.

C. Forma Lms

[1] Forma Lms is an open-source, web-based elearning platform (Learning Management System - LMS), used to manage and deliver online training courses. Forma LMS was **awarded with best open source e-Learning Solution award.** It's based on a network of companies that support its development and it's focused on corporate training needs, rather than on academic needs as many other open-source projects forma Lms is an open-source, web- based elearning platform (Learning Management System - LMS), used to manage and deliver online training courses. It's based on a network of companies that support its development and

V. COMPARISON OF LMS FEATURE

*a) System Requirement***:** To run any software we needs certain hardware components or software resources on a computer .It is termed as system requirement. For Sakai which is develop in java we Tomcat or other web server which compatible to run java application. And for Moodle,eFront, Forma lms developed in PHp so we require web server which will support php application.

b) Multiple languages support: Multilingual support is very crucial for any LMS. All the LMS are supported in more than one language. The highest number of language support is available in Moodle.

c) User Authentication: Authentication is the process which allows a *user* to login to the system. All the four LMS has this feature available.

d) Content authoring editing tool: It is a software package which is used to create and package e-learning content deliverable to end users.

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