Proposed framework for open source based e-learning implementation in Uttarakhand

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ABSTRACT

With the evolution of information age teaching and learning has evolved to become more effective and easily available for everyone even in remote areas. E-learning is an important means of education which has the potential to enhance the traditional system and becoming an integral part of learning. E-learning is effective as it not only eliminates distances but also increased the productivity, and improved the training course and more. "Learning is the kindling of a flame, not the filling of a vessel" and every student has the right to learn new things. Learning something new and innovative and sharing their thoughts with friends, teachers and with everyone who willing to know the new inventions is the matter of happiness for the students. To make them more happier and responsible citizen we need to help them with a new and interactive way of learning, for this schools must needs to introduce better and much more than defined learning material, syllabi and examination. This way developing new attitude towards students to make them realize need of each and every hour. E -learning is a very powerful tool to develop new educational domain. Effective E-learning comes from using ICT (information and communication technology) to spread more educational opportunities and help students to develop skills so that they will be able to present their ideas more clearly. e-learning still exists to be in a static form and lot of skepticism exists about its usefulness. This study is done to figure out open source based e- learning to bridge knowledge divide in J&K and enlighten the people of rural areas about the e-age and iron out differences by combining IT services with education of any type. Open source based e- learning will be cost effective to implement and maintain. The e-learning model based on open source can be implemented on National Knowledge Network project of Govt. of India.

Keywords: E-Learning, Learning Management Systems (LMS), Open-Source LMS, Cyprus Universities

INTRODUCTION

- The distance education allows students, including on-campus students, greater flexibility in completing their programs of study.

- It increases access to educational opportunities, especially for those who have job and family responsibilities;

- It meet the needs of students who live a substantial distance from major educational centers as in hilly remote areas of Uttarakhand or in sparsely populated areas; and

- It helps achieve national educational goals with less expenditure than a traditional education system would require (Wright, 2001).

Increasingly, educators in both industrialized and developing countries are using distance education to resolve problems associated with resources, access, quality, and the need to educate more people (Perraton, 2000, p. 2).

One of the most recent innovations in distance education has been the implementation of course management or learning management systems that allow educators to develop and deliver instruction and learning opportunities in an organized and collaborative manner. These systems can incorporate a wide variety of materials, including text and multimedia resources. They can offer a variety of assignments that students can complete at a time that is convenient to them working alone or with other students. Learners can collaborate on projects and mentor each other. Instructors can provide timely and constructive feedback. Through the use of course management systems, educators are able to deliver the same quality learning experiences to students who are on campus and students who are many kilometers away. This paper focuses on selecting a framework of open source based e-learning for implementation in uttarakhand using the backbone of National Knowledge Network project

Synchronous and Asynchronous E-Learning

Synchronous E-Learning has the potential to support E-Learners in the development of learning communities as it is commonly supported by media such as audio/video conferencing, Instant Messaging (IM), and chat. On the other hand, asynchronous E-Learning supports work relations among learners and teachers even when the participants cannot be online simultaneously. In simpler terms, asynchronous E-Learning enables the learners to log on to an E-Learning environment at any time in order to download documents, upload projects and assignments, or send messages to teachers and/or peer students. Asynchronous E-Learning is supported by media such as E-mail, blogs, and discussion boards (Hrastinski, 2008). Synchronous E-Learning makes the learners to become more committed and motivated because a quick response from the teacher and/or other peers is expected. It is mainly used for discussing less complicated issues and task-

planning communications. Moreover, Kock"s media naturalness hypothesis predicts that synchronous communication increases psychological arousal (Kock, 2005).

Course / Learning Management Systems and Open Source Software

Course / Learning Management system are integrated and comprehensive software package of e-learning platforms which supports

- the development of online courses

- delivery of online courses

- evaluation or online testing
- Administration of online courses.
- Online chat and discussions

The main functional characteristics of a learning management system include administration tools, content accessibility, content development, content integration, skills management, assessment capabilities, reporting, standards adherence, and security (Ellis, 2009).

Open-source software is based on the following premise: "When programmers can read, redistribute, and modify the source code for a piece of software, the software evolves. People improve it, people adapt it, (and) people fix bugs…this rapid evolutionary process produces better software than the traditional closed model, in which only a very few programmers can see the source (code)." (Retrieved from http://www.opensource.org/ on July 12, 2006) Open-source software provides users with the actual source code that the courses will run on. In most cases, users can adapt this code to meet their requirements and participate in open-source communities that aim to improve and advance features of the software. However, the software may be encumbered with a licensing agreement that may limit what can be done with the code. Note also that open-source does not necessarily mean "free". You may still have to pay a fee to obtain it, but the fee is often minimal.

Various open source Learning / course management software's are available for implementation of e- learning project. Below are examples of several well-known open-source course delivery platforms.

1. Moodle
Probably one of the most recommended cms available today, it can serve from a teacher personal sharing website to hundreds of thousands of students university system. Moodle have more than 100 modules build by developers and teachers around the world. The standard favorite tool includes wikis, forum, assignments, quiz, exam, messaging, document, chat etc.Moodle also have been adapted by schools and universities around the world that they proudly listed on their website.

2. ATutor
Atutor is also favorite for online collaboration among students, it has good documentation and modular system for developers to build more features. Educators can quickly assemble, package, and redistribute Web-based instructional content, easily import prepackaged content, and conduct their courses online.

3. Claroline
Claroline allow teacher to easily build online courses and manage students activities for educational purpose. Initiated by University of Louvain, Belgium, it has been translated into 35 languages and have active members conduct training and conference around the world.

4. Dokeos
Dokeos is a learning suite with complete feature includes standard Learning Management functions, OOgie Rapid Learning to build online learning from templates or powerpoint, reporting system and video conferencing sessions.

5. Docebo

Docebo received important upgrade since version 3.0 and got itself good attention. It supports 18 languages and can support different didactic models. Including: Blended, Self-Directed, Collaborative and even Social Learning through Chat, Wiki, Forums and 53 other different functions.The latest version is 3.6 Beta that provide new reporting system, Ajax based and several update on the features.

6. eFront

eFront aims at building the most beautiful elearning cms on the web. It also focused on user friendliness and of course powerful features.eFront includes a wide variety of components that help user create lesson structure and add content, build online-tests, communicate with others, track users history and progress, conduct surveys, assign projects, and create certifications.It also have an active members and developers with latest updates and support.

7. SyndeoCMS

SyndeoCMS was built as follow up from SiteAtSchool intended for primary school system which is the reason it take great care on the simplicity for non technical staff to manage.

8. Ilias Learning Management

Ilias is a powerful Learning Management System coordinated by the University of Cologne Germany. A It receive wide acceptance in the European countries like Denmark, France and Italy. The system provides complete features from course management, podcasting, Google maps support and web service interface.It has good documentation and support as well.

9. DrupalEd

Drupal is one of the most popular Content Management System in the same level with joomla and wordpress. DrupalEd is the spinoff to give more emphasized on educational functions.
DrupalEd was build to create a flexible framework that allows users to set up a social learning environment or a more traditional learning environment.

10.Interact

Interact although build for e-learning purpose is focused on the social interactivity aspect of teaching and learning.

Points to consider while selecting a Course / Learning Management System platform

The questions below can serve as guidelines for selecting online course development and delivery platforms regardless of whether they are proprietary or open-source systems.

General

- Is the software proprietary or open-source?

- How long has the software been available?

- Is the software produced by a known and reputable institution or company?

- Are independent reviews of the software available? If so, how is the software rated relative to other options?

- What educational institutions currently use the software? Are software reviews available from these institutions?

- Is the software available for a trial period at no or minimal cost? What are the conditions for this trial?

- What languages will the software support?

- What kind of user and technical support is available for the software? Is the company that produced the software committed to friendly, quick, helpful, and accurate support? What proof is available from other institutions about the quality of the support that is provided?

Instructor Perspective

- Is the software intuitive, or do faculty require a lot of training to use it?

- Can an instructor easily establish and modify a course profile and calendar?

- Does the software provide authoring tools for course development?

- Does the platform provide or accommodate a variety of learning strategies?

- Are instructional templates available?

- Can instructors edit or modify course material without knowing programming languages? Can they easily add links to a course?

- Does the software easily accept OpenOffice.org files or Microsoft Word, PowerPoint, and Excel files? Does it accept any other software files such as those that are based on Linux, Mac OS, and Solaris?

- Can existing or future instructional materials, such as those that can be produced by Macromedia's Author ware, Dreamweaver, and Flash, be incorporated into the course development software?

- Can the online software accommodate publisher-produced software, sometimes referred to as course cartridges?

- Does the system easily support different media, such as audio and video files?

- Are presentations or synchronous communication tools, such as an electronic whiteboard, available?

- Are collaborative tools, such as discussion forums and chat, available? Can users exchange files easily?

- Can e-mail be sent to an individual student or groups of students registered in a particular course or program?

- Can the instructor provide learners with a variety of evaluation tools such as student self-tests, summative tests, and course evaluations?

- Can publisher-produced test banks be uploaded into the software?

- Can some assignments and tests be marked automatically and the grades posted?

- Can instructors change marks or grades once they have been entered?

- Is it possible for instructors to change how the grades are displayed and to export the grades into other software, such as Excel?

- Can instructors track and show students' progress graphically?

- Can instructors adjust the style of the course presentation? For example, can the course banner or header be modified easily?
- Will instructors be importing or adapting courses from other institutions? If so, are these courses mounted on compatible software?
- Do faculty have access to online help?

Learner Perspective

- Is the learner interface easy to use? Can learners navigate the software easily?
- What basic computer skills will students need in order to use the system competently?
- What are the browser requirements? Note that students may use a variety of browsers and different versions of a browser to access the software.
- Does the e-mail system support attachments?
- Can students send e-mails to other students using an e-mail address within the platform?
- Can students submit their assignments easily? Can they modify or withdraw an assignment once it has been submitted?
- Can students access their marks online?
- Are students able to track their progress?
- Are features such as bulletin boards and chat or discussion forums available? Can learners easily follow the discussion threads?
- Can students register, pay for a course, and receive their final grade online?

Student Record Keeping

- What student data can be recorded?
- What reports can be generated?
- Is the student database searchable via a variety of parameters?
- What levels of security are provided? Can the security system be customized? Is it password protected?
- Can instructors enroll and withdraw students in particular courses?
- What student tracking functions are available? Does the software record when students sign on to the system, what they do while they are on the system, and when they sign-off?
- What type of statistical reports can be produced?
- What administrative software will integrate seamlessly with the course delivery software or platform?

Technical

Academics who are not technical experts should seek assistance from their computer service department when seeking answers to the questions below.

- What are the hardware, software, and network requirements of the platform? What server platform is required?

- Does the software or platform comply with recognized standards? For example, does it comply with the Sharable Content Object Reference Model (SCORM) that promotes accessibility, interoperability, and reusability of learning content or the Instructional Management Systems (IMS) standards for locating content, reporting performance, and exchanging information between administrative systems? This latter standard is important if data from the course delivery software must be transferred to a student record system. Both of these standards allow for the development of content that can be exchanged between different software.

- Can information from the new software, such as student grades or marks, be transferred seamlessly to existing institutional software?

- Does current staff have experience with this hardware and software? If not, what type of training do they need? Is this training accessible?

- What are the minimum hardware, software, and network requirements for the learner?

- Can the technical requirements be met at study centres? If not, what changes are required at study centres?

- Will the software automatically adjust to the network speed of those trying to connect with it?

- Does the current software allow for text messaging and/or podcasting, or will these features be included in the future?

- Does the software have security features that prevent unauthorized access to information?

- Is this platform scaleable? Can it be expanded easily to accommodate a larger number of students and instructors?

- What backup features, if any, are provided? Can backup be done automatically?

- Can the platform be customized? What procedures must be followed in order to customize the software? What programming language is required to accomplish this customization?

- Can the software be administered easily?

- What type of support is available? When is the support available, and what is the cost of same-day or next-day support?

- What training will be provided by the software distributor?

Cost of Ownership

- What is the purchase or lease cost of the software? What are the incremental costs as the number of student registrations and courses increase?

- What are the maintenance costs?

- What are the training costs?

- What is the total cost of ownership?

- Are the purchase, lease, and maintenance costs sustainable?

Implementation of Framework

Step 1 - Selecting LMS / CMS platform of open source origin

Site and Software Administration with following functionalities

- Creating Course Categories
- Creating Courses
- Registering a new user
- Creating associates
- Adding users into the associates
- Enrolling students into a course
- Enrolling teachers into a course

(This can be implemented using existing Infrastructure and Cloud computing Technology of Universities and technical institutions of uttarakhand state)

Step 2- Content and Course Management

The courses can be created by administrator as a part of site administration. Once the course is created, teachers, students can be enrolled to that course either manually or by using self enrolment (if allowed) and they are assigned different roles. After teachers and students are assigned to the particular courses the role of teachers came into act . All the enrolled users can have access to the activities and resources added to that course.

Teacher can add different activities such as assignment, attendance, quiz, chat, etc. to the course. Along with these activities, resources including files, folders, labels and pages can also be added to a course.

- Content Management

- Activities Management

• Content Management:

Content management involves adding course contents in the form of labels, doc files, pdf files, ppts, videos, audios, pages, etc. After the resources are added by the teacher to the course, the students enrolled to that course can view all o f them and also can download them on their local system

2. Activities Management:

Teacher can manage different activities such as assignments, attendance, quiz, questionnaire, choices, etc. to the course.

(This can be implemented using existing Human Resource of Universities and technical institutions of Uttarakhand state)

Step 3- Using backbone of NKN project

E- Learning platform should then be implemented using back bone of **National Knowledge Network Project of Govt. of India**. Most of the universities and technical institutions are already connected with a high speed bandwidth connection under this project which makes it easy to implement across the state.

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