E-learning: Learning Management System for the Next - Generation Libraries

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Abstract

Nowadays E-learning courses offering more flexibility about the pace, time, and place for making education widely accessible for each and every one. E-learning provides many benefits to the students as well as instructors to develop their skills. Successful implementation of e-learning requires the appropriate application of the Internet to support the delivery of learning, skills and knowledgeable courses, technologies, or infrastructures. The importance of e-learning paths that vary according to the student, the subject material, the level of competence, and corporate or student preferences etc.

In the present digital era selecting and purchasing of a learning management system has become a major financial and strategic decision for colleges and universities. So, the educational institutions need to have suitable strategies for successful deployment of the e-learning process. This paper covers different types of LMS, all the major e-learning tools, and standards, basic security issues, benefits and limitations of e-learning.

1.   Introduction

Many previous types of research show that e-learners gain significant learning benefits from computer or audio-visual media**.** The studies also suggest that the reason for those benefits is not the medium of instructions, but the main reason for those benefits is the strategies built into the learning materials.

E-learning: E-learning allows users to collapse time and space; however the learning materials must be designed to engage the learner and to promote the e-learning. The e-learning method allows for flexibility of access from any time and anywhere, but the e-learning must use sound instructional design principles.

According to Rossett (2002), online learning has many promises, but it takes commitment and resources and must be done right. For e-learning different terminologies have been used which make it difficult to develop a generic definition. Many terms used for e-learning include online learning, web-based learning, virtual learning, tele-learning, internet learning, computer-assisted learning, networked learning, distributed learning and distance learning. All these terms imply that the learner is at a distance from the instructor or tutor, that the learner uses some form of technology to access the materials.

Learning Management System (LMS): Learning Management System (LMS) is an educational technology that reached the level of adoption at higher education institutions never before seen. It is an example of the innovation of technology. All

commercial, as well as open-source LMS products, share the same capabilities, providing administrative functions such as student registration and assessment as well as different forms of content management.

2. Features of LMS

LMS provides a place for learning and teaching activities to occur within a seamless environment which is not dependent upon time and boundaries. Some of the important features of learning management system are as follows:

2.1 Content Creation and Display Tools

This tool helps us to generate text within an embedded text or HTML editor or upload the documents like spreadsheets, images, animations, audio or video to LMS.

2.2 Communication Tools

In LMS these tools provide an interaction of student to student or student to instructor into the course. LMS includes text chat, whiteboard and a sharable web browser. A group of people can do discussion and share files with-in the members of the group and by the instructor.

2.3 Assessment Tools

LMS provides some common tools like assessment manager for creating and deploying the exams, a generator for creating different types of questions and question pools to store questions can be used for multiple exams. An electronic grade book for managing student's assignment is also a feature of LMS.

2.4 Administrative Tools

For instructors, this tool include control panels with the ability to manage the settings for the content creation, communication and assessment tools, make tools customize the look of the course, move or copy the content, manage files, etc. The administrative tools allow managing the creation of courses and user accounts, enrolments and courses in the system.

3. Range of E-Learning Implementation in the Knowledge Society

The growing interest for e-learning seems to be coming from several directions. E-learning is of interest of residential campus-based educational organisations that see e-learning as a way of improving all their programs. The increasing significance of ICTs has become a factor defining contemporary influence. The generation and exploitation of knowledge is now the predominant factor in the creation of wealth in any organisation. The knowledge has always been a factor of production, and driver of economic and social development.

Unlike Information and knowledge, capital and labour have many of the characteristics of what economist call public goods. Once public knowledge can be shared at zero marginal cost and its value is not depleted in consumption. The next society will succeed in the current information society, will be a knowledgeable society. In any workplace knowledge will be its key resource, and knowledge workers will be the dominant group. At the time of the selection and use of information we must have skills and competencies regarding the information, it makes the information easier and less expensive.

In the 21st century workers at all the levels in the knowledge society will need to be lifelong learners, adapting continuously to change opportunities, work practices, business models and forms of

economic and social organisations. For the citizens and organisations, e-learning can offer lifelong, better, less expensive and fast education.

4. Types of LMS

An LMS has three different types, each with its own unique feature. The three major categories of LMS are corporate LMS, academic LMS, and integrated LCMS-LMS.

4.1 Corporate LMS

A corporate LMS is a connection between the learner and the program that they want to learn. Corporate LMS generally provides primarily short courses that may range from an hour or less to several days. The corporate LMS contains courses that may need related to sales, customer service, products, policies and procedures, soft skills, personal productivity, management and leadership, regulatory compliances and other relevant topics.

4.2 Academic LMS

It is an online extension or replacement for the classroom. It is a place where students and instructors can meet and collaborate online. In academic LMS instructors can post study materials and assignments and students can take help for their studies.

4.3 Integrated LCMS-LMS

A learning content management system (LCMS)-LMS provides many same course delivery features like Corporate LMS but it also provides features that not found in Corporate LMS. LCMS products are strictly focussed on content development. The growing number of products now offer both content creation and delivery capabilities. These types of hybrid products are called LCMS-LMS.

5. Principles of E-Learning

Different learners may be taught by the same instructional method, yet their performances may vary considerably but the learners with meta-cognitive ability are able to monitor their learning process and change strategies. With technology the learners from classrooms to corporations have access to self-paced, just-in-time education and training at their fingertips and e-Learning is ever-changing and evolving to meet lifelong learners exactly where they are and provide them with exactly what they need, exactly when they need it.

The principles of e-learning guide each course and are adjusted and customized to create the most impactful learning experience. Instructional designers have to balance and blend all the principles necessary to capitalize on each opportunity to engage and educate a learner. Here are some of the fundamental e-learning principles:

5.1 Contiguity Principles

This contiguity principle leverages words and corresponding graphics, presenting both elements in close proximity to one another, and it is of two subcategories: spatial and temporal contiguity. The Spatial Contiguity Principle relies on spatial relativity, keeping the words explaining a concept and their accompanying images together, and facilitates a learner's ability to fully understand and process the information. The Temporal Contiguity Principle presents corresponding words and images simultaneously, rather than successively.

5.2 Voice Principle

This principle suggests that informal friendly human voice rather than a robotic voice, people learn better when the narration is spoken in an intimate, often,

machine voices are more cost-effective but in the long run, retention and engagement suffer**.**

5.3 Multimedia Principle

This principle engages both visual and auditory elements as learners often prefer to learn from both words and pictures. With new innovations such as Virtual Reality, 3-D modelling and animation, and Augmented Reality courses are being brought to life like never before, creating maximum impact. This principle is economical and impactful for the learners.

5.4 Redundancy Principle

This principle basically explains visuals with words in audio or text, but not both. As such, both elements instead complement one another, rather than confound a learner with an overload of all available elements, using a less-is-more approach.

5.5 Coherence Principle

This application also adopts similar to the Redundancy principle. In this principle irrelevant, inapplicable or extraneous information is eliminated, including audio, visuals, and words, to avoid distraction and increase learning and retention. This principle allows the learner to concentrate on critical elements only.

5.6 Segmenting Principle

This principle gives more control to learners and allowing them to find what they need or expect. This principle also helps to reinforce that process, facilitating learning with user-paced segments, rather than as a continuous module.

5.7 Learner Engagement

This type of learning provides students to learn the high quality of digital learning applications. In this learning user interface is very friendly and easily accessible and avoids confusions and discouragements.

5.8 Effective Learning

E-learning has a variety of learning styles, languages, interests and ability and approach to learning. It is effective learning because it supports students by providing data on performance and curriculum assessment elements.

6. Major E-Learning Platforms to Use for Online Courses

A huge advancement of Internet technologies have resulted in the access of online learning made easier. Today's course content of many colleges and institutions were stored in electronic media, which allows institutions and consumers to store and manage their content and business information on online websites. Some of the major e-learning platforms to use for online courses are as follows:

6.1 eTachable

Teachable is a good e-learning platform to capitalize on the limitations that any e-learning tools have. Today, Teachable has more than 3 million students, 7500 instructors, and 20000 courses. The numbers are getting bigger and better day by day. Instructors should pay a monthly fee to access this platform.

6.2 Udemy

Udemy allows everyone to learn from its pool. This e-learning platform believes in disrupting and democratizing the educational ecosystem. Its pool has more than 20000 Subject Matter Experts. For instructors this online training platform can be used by free. However, Udemy makes big money by taking 50% per sale of the course. Udemy has more than 12 million students.

6.3 Educadium

Educadium is an e-learning program that is an ambitious mission to assist entrepreneurs and organizations to create, manage and profit from online teaching and training through its EasyCampus platform.

6.4 LearnWorlds

This is a platform which can complement course content with immense social learning and high interaction. They have many impressive features such as tools to build sales pages, simulators, intelligent sales engine, advanced analytics, etc.

6.5 WizIQ

WizIQ is a platform for e-learning, very common among academic course content creators. It's effortlessly easy to create courses and publish them on WizIQ online marketplace. WizIQ is known to provide a host of plug-ins for popular learning management software such as Moodle, Sakai etc. It is equipped with enough provisions such as slides, desktop sharing tools, audio, video etc.

6.6 Skillshare

In e-learning almost every course lesson entails two key components—video and class project. These courses are made up of a series of small videos whose duration is typically anywhere between 10 and 25 minutes.

6.7 Ruzuku

Ruzuku is one of the most valuable e-learning platforms. In this platform, instructors aren't required to have much knowledge of technology to use this platform. Ruzuku invests great efforts to make it easy for Subject Matter Experts to create and publish courses.

7. Standards of E-Learning - LMS System

E-learning standards are a set of common rules that apply to content, authoring software and learning management systems (LMSs). They provide all stakeholders with guidelines for designing and developing content, hey deploying it across platforms, and ensuring interoperability across devices. There are two main types of e-learning standards. Courseware design standards refer to the different aspects of course design and development, and technical standards refer to the deployment of courses on an LMS or another portal.
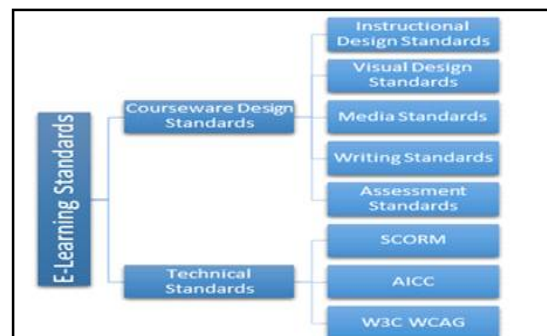

Figure: 1

7.1 Courseware Design Standards

In courseware design standards include mainly instructional design, visual design, media, writing and assessment standards.

7.1.1 Instructional Design Standards

Before developing a course helps developers clearly define the purpose, objectives, and strategies and choose content, interactivities, assessments, and feedback methods.

7.1.2 Visual Design Standards

The visual design standards refer to graphical user interface (GUI) and navigational elements. The

objective of visual design standards is to ensure design consistency across the lessons and modules.

7.1.3 Media Standards

Media standards ensure consistency and compatibility across the media elements used in a course, such as a screen layout/size, textual elements, graphics, animation, audio and video. It is always a good practice to have writing guidelines or a style guide for instructional designers and course developers.

7.1.4 Writing Standards

This type of standards act as a reference for the use of language, punctuation, bulleted lists, abbreviations, acronyms and other elements of the text.

7.1.5 Assessment Standards

Assessment standards should align with instructional objectives, define how we evaluate learners' understanding upon course completion.

7.2 Technical Standards

These technical standards pertaining to the interoperability and portability of e-learning courses across devices, browsers and platforms. The most commonly used technical standards are SCORM, AICC and WCAG.

7.2.1 SCORM

SCORM stands for Sharable Content Object Reference Model. It is a technical standard developed by the Advanced Distributed Learning Initiative (ADL). It defines how e-learning courses interact with LMSs to facilitate course tracking. SCORM compliance makes it easy to record elements such as course completion, a number of times a learner has accessed a course, time is taken to complete the course, assessment scores and points.

7.2.2 AICC

AICC stands for the Aviation Industry Computer-Based Training Committee, which developed technical standards for computer-based courses in the airline's industry. The **AICC standards'** is same as that of SCORM, they use HTTP messages to communicate with an LMS and involve multiple steps, and its popularity is diminishing due to that complexity.

7.2.3 WCAG

WCAG stands for Web Content Accessibility Guidelines, The World Wide Web Consortium developed in order to make web content more accessible to people with disabilities.

8. Present Scenario of E-Learning in India as Well as Abroad

The content is stored in electronic media, which allows institutions and consumers to store and manage their content and business information on online websites and on other applications from any place.

The scope of open distance education in India is actually much wider. Apart from proper course works, some E-learning portals in India are also conducting ridicule mock tests for various competitive examinations like engineering, medical, management etc. There are many E-learning portals in India which are providing tutorials for school students also. Thus, the reach of E-learning in India has expanded from adults to youth. The future of the E-learning industry in India seems to be vibrant as number of Internet users is growing in the country, at quite a reasonable rate and more.

North America alone will constitute 40% of the market totalling USD 120 billion by 2025. Emerging

technologies such as Augmented Reality (AR) and Virtual Reality (VR) devices, Artificial Intelligence (AI) platforms, Big Data, Machine Learning, and wearable devices will aid in the growth plan and is likely to quickly take over from other conventional methods of imparting learning.

9.   Basic Security Requirements

Following are some of the basic requirements for the computer and network security for any Learning Management System (LMS):

9.1 Secrecy

The most important security requirement is secrecy. Users can get access only to those objects that they have authorised by the institution or organisation. They will not grant to access the information that they must not see.

9.2 Integrity

Integrity is as important as the secrecy of the programs and data. If the integrity of the operating system is violated, the reference monitor might not work properly. The secrecy of the information cannot be guaranteed if this mechanism that checks and limits access to data is not working.

9.3 Availability

Availability of the information is one of the major security requirements for computer systems. If the internet-based applications are not available or the network is too slow, users can't get the information quickly.

9.4 Non-repudiation

Non-repudiation is the fourth important security requirement for any LMS. Non-repudiation can also be seen as a secondary security attribute of the

availability and integrity of the identity of the sender. In this case, it is possible to trace back the information of any deleted item.

10. Benefits of E-Learning - LMS

Many organizations are adopting e-learning method for the learner as well as to train the staff also. The educational institutions are moving towards the use of the internet to provide the services both on campus and at a distance level. Using e-learning provides major benefits; some of the benefits for the e-learners are detailed below:

10.1 Time zones, location and distance are no issues for e-learning.

10.2 E-learning allows real-time interaction between students and instructors.

10.3 E-learning provides up-to-date and relevant learning materials to the learners.

10.4 E-learning facilitates courses for working people also.

10.5 Instructors can also do tutoring from anywhere, anytime.

10.6 It is easier for the instructors to direct the learner's appropriate information based on their needs.

10.7 LMS brought content delivery, communication, assessment and administration of online instructions into a single secure platform.

10.8 Some LMS products have the ability to deliver instructions to mobile devices.

11. Limitations of E-Learning - LMS

As with most new evolving technologies the LMS also has some disadvantages. Some of the disadvantages are as follows:

11.1 At the time of using LMS many users found that sometimes the systems often confusing, slow and focussed more upon administrative needs than students need.

11.2 To compare with online social environments such as MySpace, Facebook and YouTube, LMS interface found dull and rigid.

11.3 LMS interface is not friendly in nature and should be simplified and made more intuitive.

11.4 Sometimes LMS not supports sound pedagogical practice.

12. Conclusion

With the rapid growth of e-learning, many organisations confront the difficulties like choosing and managing an appropriate technological environment that fits their budget, curriculum, technical resources, pedagogy and profile of the students. The major advantage of adopting this type of technology is that it transposes learning theories to a pedagogical model well understood by the instructors. But e-learning alone is not sufficient for implementing the dialogue phase of the learning cycle.

Multiple software products, e-learning and LMSs developers are involved in the development of e-learning courses. In the absence of clear standards, coordinating and integrating content would be a laborious and costly exercise. The end objective is to ensure that all stakeholders are on the same page with respect to the content and develop learning objects that can be used seamlessly across software programs, platforms and devices.

The teachers do not just convey the task-based activities; they must act as facilitators, guides and mentors, where dialogue plays a central role. Dialogue can be supported by tertiary courseware through online discussions, both synchronous asynchronous.

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