LMS, CMS or LCMS

Student: Stephanie J. Lionel St.Ville
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LMS, CMS and LCMS

Introduction

The evolution of educational and instructional needs of learners, along with technological enhancements have over the years, influenced the creation of distance learning opportunities, and online or eLearning experiences. These have themselves, influenced the development of Learning Management Systems (LMS), Content Management Systems (CMS) and Learning Content Management Systems (LCMS). In this document, the author seeks to distinguish among these technologies both in terms of their development and their present use worldwide and at the organization where she is employed.

Learning Management System (LMS)

An LMS such as ATutor and Litmos, is a tool which manages, controls or processes every aspect of the learning process (Shepherd, 2000; Pandey & Pandey, 2009; Watson & Watson, 2007). These are designed to deliver and manage instructional content; to identify, track and assess each individual's learning and training goals; to identify, track and assess the organization's learning and training goals; and to present data collected, for the supervision of the learning process of that organization (Szabo & Flesher, 2002 in Watson & Watson, 2007).

History of LMS

While contemporary LMSs are multifaceted and complex both for designers and learners, the earliest documented LMS, the Teaching Machine or Machine for Intelligence Test (see link in Appendix A), developed in 1924 and patented in 1928, by
psychologist Sidney Pressey, was far simpler. This was an automatic device which presented a unit of new information, enabled the student’s response that information, and then provided feedback (Benjamin, 1988). In the testing phase, students selected one of four or five multiple choice answers, and even got candy based on their success. B.F. Skinner’s teaching machine, developed later on, required learners to construct their responses, to write out their answers on paper, and then to insert them into the machine (Benjamin, 1988) not to select an option as done earlier.

**At My Institution**

At my institution, we still have a few games, which follow these principles. Students place the activity sheet (such as punctuation, computation, and comprehension) on the electronic board, they enter the activity sheet’s code, read the questions, select the multiple choice answers by pressing a button and get an audio feedback such as ‘Job Well Done’.

Technological advancements responding to designers’ and learners’ needs, while improving the competition in the market, have made more resources available to instructional designers. By 1956, SAKI, a teaching system that would, based on the learner’s illustrated performance, adapt the level of the questions given, was developed. Later on, the Programmed Logic for Automated Teaching Operations (PLATO), the first computer based system which enabled online collaboration (iSpringSolutions, 2015) through content exchange, and allowed learners to complete assignments anywhere was developed by University of Illinois at Urbana-Champaign faculty.

Now, although I entered the education profession in the 1990s, to date, at my
institution 1) we have no technology like SAKI which in this sense can fast track students, and 2) very few teachers use LMS with capabilities like PLATO. Teachers are responsible for assessment and may choose to fast track or differentiate as they should. Despite the evolutions in the field, very few teachers make use of the resources.

**Content Management System (CMS)**

A Content Management System is software which facilitates the effective and mechanical control and management of content (Boiko, 2005) be it in graphic, text, audio or any other form. They are employed in various spheres including newspapers, libraries, online stores, academic journals ... online photo albums, diaries, and music collecting (Winters, 2003). Prior to this, the web developer was responsible for using the authors content and formatting it be it in HTML code to be accessed by public on static Web pages. Things have changed and now multiple authors and editors without web developing skills can help format, store, catalogue the content accessible for public retrieval and consumption. SharePoint, WebCT Campus and Joomla, Drupal are examples of this.

**History of CMS**

CMSs responded to many needs including the cost of web development and maintenance and only came about in the 1990s. America Online Inc (AOL) developed Remote Automated Information Network Manager (RAINMAN) around 1995 an easy to use tool which allowed the creation, modification and removal of information which was stored on AOL servers (AOL, 1995).
At My Institution

In 2016 the Ministry of Education through national competition finally got my institution to use WordPress, a well-known CMS to create the school website. Maintenance and update have since dropped. The teachers in the junior block use a few CMSs but only one has actual websites with authored or curated content.

Learning Content Management System (LCMS)

A particular CMS which relates to eLearning is an LCMS since its predominant use is that of developing, maintaining, tag and storing instructional content. Lessonly, E-Education Suite and GeMS SWIFT and are examples of these. They allow instructional designers and subject matter experts to individually or collaboratively author and manage, modify and mutate content while maintaining all the versions in a server for future use. These were created in the 21st century. LCMS feature authoring tools, content delivery interface, administrative capabilities to launch courses, manage learner student records and track their progress and a central database which contains and manages content (Donello, 2002, p. 1 in Irlbeck & Mowat, 2007)

At My Institution

At my institution we do not yet use these.

A Comparison of the Systems

While there are similarities among these systems, it is the subtle or vast differences among them which an instructional designer needs to attend to when designing programmes of study.

Administration. LMS can be likened to overall class management while CMS can
be likened to a particular lesson. The training administrator is the one more oriented with the LMS. Via a CMS an instructional designer or the instructional design team, to create and supervise enterprise content such as Microsoft Office documents, PDFs and graphics and website content. This means then that in Joomla for example, a team can add or remove audio, video, graphic which was once placed there and was stored on a database. Thus, users, the students, can listen to, can view, can download or upload files or media. CMS enables learners to access content, while LMS enables access to, and interaction with, the content. A CMS serves more of a repository and retrieval purpose for the designer to organize and present the content. The LMS administrators can then create a description for the content, create, add metadata, and assign users to consume the content (Newell, 2016). A LMS however, not only stores and organizes the information but also keeps records of who has accessed or completed it and with what level of success. An LCMS extends even further than the LMS or the CMS to not only create the content, administer it and manage it but also to personalize it. So that a LCMS fuses features of both the LMS and CMS.

Administration. LMSs work at the superstructure level allowing administrator of user profiles, definition of roles, assignment of tutors and setting of curricular (Giurgiu, Bârsan & Mosteanu, 2014). The built in assessment of LMS noted even in the teaching machines fosters individualization of learning paths for students. The designer can decide what can be viewed and when. LMSs manage content at the course and curriculum levels while LCMS go into more detail management including learning objects such as the lesson, the page and even the media. This management capability
allows LMSs to present a catalogue of courses. As with UWI’s improved system upon registration, students, having entered their data are able to select their programme, whereupon they are led to a catalogue of courses from which they can choose. LCMSs go further to examine student progress not only in the programme but in individual objectives of courses.

A CMS can be individualized and provide content to a particular student. While a LMS generally is not individualized it can help keep records of individual students, deliver assessment and match his achievement with the desired standard. This allows the administrator then to better determine a performance gap and design a CMS to meet his needs.

Instructional designers need assessment as part of the instruction process which are available in both LMSs and LCMSs (Horton & Horton, 2003, p. 170). An LMS “tracks learner progress through a learning programme, provides a forum for collaboration, centralizes programme information and scheduling, provides a forum for synchronous and asynchronous courseware, and enables the assessment of learning effectiveness” (Sun Microsystems Inc., 2001, in Chapman, 2005).

Reusability. As with a CMS, content can be developed in the LCMS. This can then be added to a LMS using a Shareable Content Object Reference Model (SCORM) package or another package such as the more contemporary Tin Can (xAPI). These help ensure that the content developed in repurposeable, reusable and shareable. These learning objects include Microsoft file types, PDF files, audio and video. Thus, in future years, this can be modified or reused.
Platforms. All systems are for online use but CMS can be used for blended learning experiences. A LMS offers more than a CMS. It is an ecosystem in which eLearning inhabits but also one which monitors learners and presents that information to the administrators.

Authoring tools. This is a major difference between LMSs and LCMSs as LMSs have no built-in authoring tools and the content and course is imported into the LMS while with LCMSs authoring tools are added on or built in (Horton & Horton, 2003 p. 171)

Instructional designers use all three systems but in difference capacities. As content developers who will create, arrange and sequence content for learners, they require CMSs and LCMSs. However, as training managers or administrators who will monitor user performance they need LMSs. With CMSs and LCMS there are workflow tools which enable the designers to manage the content development process, modifying, changing it, adapting it to the needs of individual learners and arranging it on individual learner’s interfaces. This is not a feature of the LMS.

The Form Four Laptop Programme brought laptops to secondary school students with the hope that teachers would use them to improve use of these systems. This has improved use of LMSs like Edmodo and Google in the secondary schools especially since training in collaborative teaching and use of web 2.0 tools was part of that programme. So nationally we are moving forward. At my organization about 3/15 of the teachers make use of these. Most teachers use Google.com to access and display content. The unpredictability of internet access influences this. Currently I use Weebly.com more as a
CMS creating a unit of work for students which outlines step by step what direction they must follow. They can access this both in school and at home, on smartphones, tablets, and desktops. Students ten years old, can access the various documents, videos, and audio. However, they can also access collaborative documents to input data. When quizzes are completed the emails are sent to me because of the online software I used. Reports are generated based on the completion.

**Future**

Cloud based computing, the availability of open-source management systems with unlimited features and individual students ability to afford the smart technologies will certainly help move schools forward as the cost of some of the better systems is not something which schools can independently afford. However, the costs of internet service and online security too need to improve.

LMSs to need to be customizable to the needs of instructional designers and other administrators. According to Anderson (2004) “higher education requires a menu approach” which will allow designers and users to select features of LMSs which they need and not be burdened with the exhaustive use of technological resources to run an entire LMS. For example, at my institution, since at least 75% of students have no personal devices and only have access to the laboratory once weekly, there is little need for tools such as calendar or collaboration with parents especially since they already respond (or not) to Whatsapp. Some systems take more time to load because of their resources, many of which are not used by all users.

Additionally, LMSs need to be more standardized, user friendly and adaptable to
all browsers. Using personal experience during course registration, navigating and being redirected repeatedly on some LMSs can be unnerving to say the least.

Conclusion

Despite the distinctive and non-distinctive differences among these systems, instructional designers must be care to select systems or a combination of systems which will best provide effective and efficient instruction for the desired group of learners.
Reference


Appendix A

Link to Timeline

Copy and paste this link in your address bar to access the timeline.