

## **A Framework for Implementation of a Web-Based Learning Management System**

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### **ABSTRACT**

This study focuses on the process of implementing and supporting a web-based e-learning system which uses Learning Management System (LMS) methods. The outcome of this study will be a comprehensive framework detailing the procedure and methods involved in implementing the web-based Learning Management System effectively. This framework will be based upon current internationally accepted specifications and practices. Ultimately, it is hoped that we can have more quality Learning Management System developed for the learners so we will be able to achieve better education levels.

### **KEYWORDS**

Framework, Web-Based Learning Management System (LMS), E-Learning

### **1. INTRODUCTION**

In recent times, a growing number of organizations and institutions have embraced the concept of e-learning. They find an improvement in using e-learning systems to fulfill their educational needs over traditional means. However, as the system grew more complex, involving numerous users, content, design, and knowledge, some sort of management was required. Subsequently, any system which provides administration over a web-based learning system is more often referred to as a Learning Management System.<sup>1</sup>

There are several definitions used to describe Learning Management Systems (LMS). According to IDC, it is "a software application that automates the administration, tracking, and reporting of training events." Another source, *e-learning Age*, describes LMSs as "software systems used to collect and analyze data relating to existing and developing skills of a workforce." While both definitions are acceptable, it's perhaps more accurate to combine them: "An LMS is a software application that automates the administration, tracking, and reporting of classroom and online training events, enabling detailed analysis of the effectiveness of your training investment." Ultimately, that's why an organization buys an LMS; to provide information that influences decision making and optimizes training dollars.<sup>2</sup>

Basically, an LMS is a high-level, strategic solution for planning, delivering, and managing all learning events within an organization, including online, virtual classroom, and distance learning courses. This can be accomplished by web-based e-learning, CD-ROM and video content or stand-alone systems with downloadable information among others. But for an organization, the primary reason to implement an LMS is to replace these isolated learning programs with an efficient system that can provide a platform to combine the efficacy of each remote system and facilitate the means of assessing and raising competency and performance levels throughout the organization.

The focus of an LMS is to manage the organizations learners, be it employees, stakeholders or customers, in keeping track of their progress and performance across all types of training activities. It performs heavy-duty administrative tasks, such as reporting to HR and other ERP systems but isn't generally used to create course content.<sup>3</sup>

The LMS should integrate with the organizations e-business applications. To automate learning services and resources and support self-service learning and administration, many departments must get involved. For example, in-house sales-force training data is often related to information such as competency models held in human resources and perhaps even legal departments (on compliance issues or mandatory testing).

Information regarding courses taken by customers may feed directly into a CRM system. The scheduling and use of physical space (classrooms and auditoriums) and other hard assets (A/V equipment, a videoconferencing system) should be linked to a resource management application. Furthermore, it is not unusual for companies to charge customers, partners and other outside parties for courses. In those instances, the LMS should act as a fulfillment engine to manage online orders, which requires integration with the company's financial and e-commerce systems. As online learning enables the use of education in many stages of the customer and employee relationship cycle, these integration requirements will continue to grow. The key is to avoid creating "islands" of data, or worse, duplicate data, across the organization.<sup>4</sup>

In such cases, the successful implementation of the LMS is the key element. Therefore, establishing a framework for implementing a web-based LMS is a necessary step.

## 2. METHODOLOGY

Many developers believe that designing and implementing a web-based LMS is a team process and that software component and the instructional design are separate tasks to be completed by different people each with their own expertise. Software developers believe that understanding the motivations behind the request for software and the knowledge of how to successfully address the requirements to satisfy these motivations would require an understanding of learning processes and their outcomes.<sup>5</sup>

However, rather than emphasize on new emerging technologies and their interaction with e-learning, the focus will be on the Learning Management System itself. Emphasis will be on the existing Learning Management Systems and its current approaches in implementing their system. This subject matter is chosen because the existing system is feasible and valid; the tools used for the design and development of the system compliant with the latest industry specifications, including Aviation Industry CBT Committee (AICC) and Sharable Content Object Reference Model (SCORM).

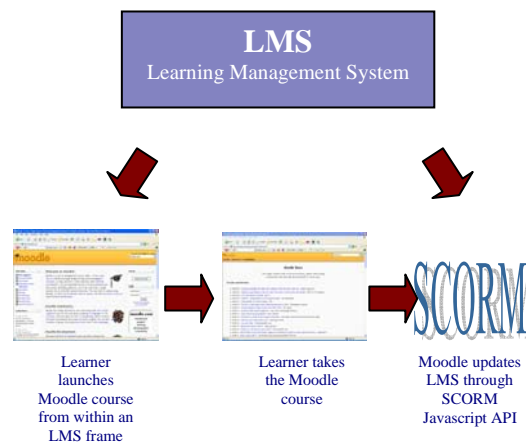
The Sharable Content Object Reference Model (SCORM) has become the standard for the

tracking of records in learning management systems. It is based on previously developed standards by the AICC (Aviation Industry CBT Committee). It gives companies the ability to acquire content from multiple providers and still have a single, real-time interface for recordkeeping and administration purposes. The top LMS companies in the world adhere to this standard.

The benefit of SCORM is that SCORM content can communicate learner information with any LMS using a standardized method based on Javascript.<sup>6</sup>

Some of examples of LMS systems can be found at [www.wbtsystems.com](http://www.wbtsystems.com) , [www.karta.com](http://www.karta.com) and [www.moodle.org](http://www.moodle.org). Both these systems are examples of commercialized large scale systems that are fully operational.

The diagram below shows the interaction between Learning Management System (LMS) and SCORM involving the learner.



Nonetheless, LMS implementation is successful in certain organizations and institutions and fails to fulfill its possibilities in others. This problem will be studied within at least 2 different web-based LMS in order to create a proper framework. There will also be a standard approach towards the system itself using a structured analysis and design. This is done in order to minimize the variance in the end result.

### 3. DISCUSSION

In order to create a comprehensive framework that lists the proper approach towards implementing a web-based Learning Management System, different aspects of the LMS itself will be studied. These aspects that need to be looked at are such as organizational, personnel and technological aspects. Each contains a diverse characteristic that needs to be explored in order to create the implementation framework.

### 4. CONCLUSION

Learning Management System is a subject matter that is becoming increasingly prominent in organizations and institutions as a whole. The growing number of systems created and substantial number of enrolments qualify this. However, there are also a great number of those who quietly drop-out; one of the reasons being that the implementation process of the system is not an aspect of a Learning Management System that is generally focused on. Emphasis in this direction should generate a consistent and valid framework for the successful implementation of any LMS system.

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