Chapter IV

Learning Management Systems: An Overview and Roadmap of the Systemic Application of Computers to Education

William R. Watson, Indiana University - Purdue University Indianapolis, USA
Sunnie Lee, Indiana University, USA
Charles M. Reigeluth, Indiana University, USA

Abstract

This chapter discusses learning management systems (LMS) as a technology necessary for supporting the educational needs of the information age. It defines LMS and argues that the move from the mechanistic, sorting-oriented paradigm of the industrial age to the customized, learning-oriented paradigm of the information age requires the application of LMSs to succeed. The history of LMS is presented and the definition further clarified by comparing and contrasting LMS with course management systems (CMS), learning content management systems (LCMS) and learning objects. Several major K-12 LMSs are presented, evaluated, and their
features compared. Finally, the current trends of LMS are discussed, and goals for further development are offered. A better understanding of LMS, its role in the new paradigm, and the areas where it needs to improve and continue to grow are essential to improving the effectiveness of education in the information age.

**Introduction**

The potential impact of computers on learning has been recognized since well before the widespread adoption of the technology itself. With a history dating back to the 1950s, computers have been used to assist with or even directly provide instruction to learners (Reiser, 1987). Learning management system (LMS) is a relatively recently coined term that refers to computer systems that incorporate providing instruction, tracking achievement, and managing resources for individual students and an organization as a whole. This chapter defines LMS, discusses the pressing need for LMS technology in the emerging knowledge-based paradigm of education, and examines the history of LMS and how it has developed from, and differs from, past computer learning technologies. LMS is then compared to other computer learning technologies and related concepts, after which four popular K-12 LMS products are described and evaluated. The chapter concludes with a discussion of the current state of LMS, what trends exist in the further development of LMS, and what needs LMS must meet in order to satisfy the requirements of the information-age paradigm of education.

**Definition of LMS**

Learning management system (LMS) is a generic term often used to describe a number of different types of computerized training and instructional systems. Essentially, an LMS is an infrastructure that supports the delivery and management of instructional content, the identification and assessment of individual and organizational learning goals, and the management of the progression toward meeting those goals, while providing data for the supervision of the organization as a whole (Szabo & Flesher, 2002). To differentiate LMS from the sea of acronym-driven computer learning technologies in the literature, it is important to understand the systemic scope of LMS. An LMS, as Gilhooly (2001) states, “goes beyond basic content delivery to offer course administration, registration, tracking, reporting and skills gap analysis” (p. 52). General characteristics include the following:
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