



# Evaluating Learning Management Systems: Leveraging Learned Experiences from Interactive Multimedia

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## ABSTRACT

*This paper maintains that the use of multimedia content in Web-based instruction — facilitated by the proliferation and standardization of learning management systems (LMS) — calls for the extension of traditional multimedia design and evaluation guidelines to the Web. The compliance with these guidelines needs to be thoroughly evaluated by any institution using (or planning to use) Web-based learning management systems. In addition to providing criteria and examples for the evaluation of these systems, the paper includes a survey instrument that can be used for university-wide assessments of the design effectiveness of technologies that support learning. As an example, the proposed evaluation instrument is applied to a learning management system developed at a large university in the United States. While the assessment refers to one system, the model, the instructional and design evaluation criteria, and the questionnaire are built for use in any organization conducting a formative and summative evaluation or a selection of learning technologies.*

*Keywords:* assessment; formative and summative evaluation; instructional design; learning management systems; multimedia design; Web-based instruction

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## INTRODUCTION: LEARNING MANAGEMENT SYSTEMS

Learning Management Systems (LMS) are Web-based applications that support online teaching or supplement face-to-face instruction. Typical functionalities of LMS include Web course design,

Web course collaboration tools, and Web course management (Hall & Hall, 2004; Hills, 2003c).

The **course design** features provide templates for course organization. Instructors control the content and have some impact on the screen layout (changing

features such as color and screen placement). Students can post information on personal Web pages or can create areas to post assignments and discussion topics. Search tools are available for quick access to materials.

The **collaboration tools** include synchronous (chat) and asynchronous components (discussions areas similar to listservs). Faculty can use bulletin boards to post course-related announcements. Electronic messaging within the LMS provides a repository for course-related messages. Whiteboards are used especially with mathematical and visual information. File sharing and workgroups are particularly useful for team-based activities enabling simultaneous file editing by several users.

The **course management** features enable student grading, performance tracking throughout the course, and the calculation of time spent using the software applications. They also enable instructors to design online quizzes, randomize questions from a database, and assess response time.

In addition to the above, a number of administrative features provide security and technical support for faculty and students. Table 1 lists typical LMS areas contained in many commercial and open-source applications such as WebCT, Blackboard, and Lotus LMS.

## EVALUATING LEARNING MANAGEMENT SYSTEMS

Stoner (1996) defines a learning technology as any application of technology for the enhancement of teaching, learning and assessment. This definition includes the use of network communication systems and embraces a large number of multimedia and Web applications. Learning management systems that enable classroom instruction on the Web and/or support face-to-face instruction with access to online learning repositories of course materials fall within this definition of "learning technology." When integrating a learning technology into a traditional curriculum, a thorough evaluation of its key design and instructional

*Table 1. LMS features*

<b>Course Design Features</b>	<b>Collaboration Tools</b>
Instructor-centered sample course	Discussion options
Course templates	Asynchronous/threaded
Search tools	Synchronous (chat)
Student home pages	Chat sessions logs
	Bulletin board
<b>Course Mgt. Features</b>	E-mail
Student grading	File sharing
Student tracking	Whiteboard
Assessment tools	Workgroups
Timed quizzes	
	<b>Administrative features</b>
	Security
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