Research on the Effectiveness of Learning Management Systems (LMS) Use in Higher Education

Overview

Learning Management Systems (LMS) such as Blackboard, Moodle, SAKAI, and ANGEL, are now nearly ubiquitous in Higher Education, and they represent a suite of technologies, tools, and processes that, when implemented and utilized skillfully, can have a positive effect on teaching and learning.

A note about terminology: For the purposes of this analysis, blended and hybrid learning environments can be thought of as synonymous—both indicating courses that use a combination of traditional classroom and online learning activities. Similarly, although technical folks might argue the differences, for our purposes here, Learning Management Systems (LMS), Virtual Learning Environments (VLE), and Asynchronous Learning Networks (ALN) can all be thought of as synonymous.

How People Learn


This book presents results of recent research about the mind, brain, and learning processes. It examines new findings in learning theory and their implications for what is taught, how it is taught, and how learners are assessed...It examines research on human learning, including new developments from neuroscience; learning research that has implications for designing formal instructional environments; and research that helps explore the possibility of helping individuals achieve their fullest potential.

The conclusion to Chapter 6, The Design of Learning Environments, is particularly relevant:

"Four perspectives on the design of learning environments—the degree to which they are student centered, knowledge centered, assessment centered, and community centered—are important in designing these environments."

Learning Management Systems, when used properly can help increase the above positive aspects of learning environments.

Short video about the current student context

by Michael Wesch,
Assistant Professor of Cultural Anthropology
Kansas State University

2008 U.S. Professor of the Year,
Outstanding Doctoral and Research Universities Professor,
Council for Advancement and Support of Education &
The Carnegie Foundation.

Selected research

Webinar:
Sloan-C Online Seminar Series: Blended Learning: What the Research Says...

Produced in conjunction with release of their book:
Blended Learning: Research Perspectives

Integrating face-to-face and online learning, blending can enhance learning and optimize seat time. How can blending transform today’s learning environments? In response to this question, 24 practitioners at 16 colleges and organizations examine research, stakeholder perspectives and best practices in 13 chapters designed for multiple educational contexts such as: designing and delivering hybrid courses, student interaction and student satisfaction, strategies for training and preparing faculty and other related topics.

Print Publications:
Blended Learning in Higher Education: Framework, Principles, and Guidelines
By D. Randy Garrison, Norman D. Vaughan
Published by Wiley_DEFAULT, 2008

Well-grounded in research, Blended Learning in Higher Education clearly demonstrates how the blended learning approach embraces the traditional values of face-to-face teaching and integrates the best practices of online learning. This approach has proven to both enhance and expand the effectiveness and efficiency of teaching and learning in higher education across disciplines.
Deep Learning for a Digital Age: Technology's Untapped Potential to Enrich Higher Education
By Van B. Weigel
Published by Jossey-Bass, 2001

Weigel suggests that technology can be used to increase learning by facilitating student collaboration. He sets out a specific model that structures student interaction around particular types of collaborative explorations such as research or skill building (using an LMS system in combination with face-to-face classroom interactions).

Using web-based instruction to improve large undergraduate biology courses: An evaluation of a hybrid course format
Samuel Riffell and Duncan Sibley, Department of Zoology, Michigan State University,

Student test scores are improved in a virtual learning environment.
Goldberg HR, McKhann GM.
Department of Biology, Johns Hopkins University

Note: The 6 articles listed as citing this one, and linked on the cover page of this article are also excellent resources relevant to the same topic.

Virtual Learning Environments: Using, Choosing and Developing your VLE

Considers how VLEs can be successfully deployed and used for effective teaching in universities and colleges. It sets out a model for effective use and seeks to provide a bridge between pedagogical approaches and the tools educators have at their disposal.


In a comparative study of students enrolled in an MBA class (n=127, one-third in the control group condition), those who used technology enhanced decision making strategies perceived they had enhanced skills, higher collaborative learning effectiveness, and more interest in the class than those in the traditional, face to face condition (Alavi, 1994).

Measuring the Importance of Collaborative Learning for the Effectiveness of ALN: A Multi-Measure, Multi-Method Approach
Benbunan-Fich & Hiltz, 1999 in Online Education: Proceedings of the 1999 Sloan Summer Workshop on Asynchronous Learning Networks
By John R. Bourne, Sloan Center for OnLine Education, SCOLE
Published by Olin College - Sloan-C, 2000

Comparative study of technology enhanced instruction (in what's called asynchronous learning networks, ALN), students in ALN groups were found to cover a greater number of issues, produce longer reports, and perceive higher discussion quality than their face to face peers.

Inside online learning: Comparing conceptual and technique learning performance in place-based and ALN Formats
Parker and Gemino (2001)
JALN, Volume 5, Issue 2, 2000

Parker and Gemino compared undergraduate students enrolled in a gateway course (n = 235, approximately half in each condition) and found the ALN format of the course facilitated more opportunities for student participation and communication.

Perceptions of Instructional Technology: Factors of Influence and Anticipated Consequences.
Educational Technology & Society, 11 (2), 274-293.

“There is a strong case in the literature for increased student engagement and satisfaction in technology-enhanced contexts...The real contribution of technology may be its ability to facilitate collegial relationships rather than deliver superior content. It may also facilitate new approaches to teaching. For example, ALN are better suited to problem based learning than lecture. These changes have both direct and indirect implications for learning. Technology, when reflexively applied, may enhance pedagogy, and affect learning outcomes.”

UIT Encyclopedia for Teaching and Learning articles:
- Course Management Systems
- Active Learning in Large Enrollment Courses