

**THREE PILLARS OF  
EDUCATIONAL TECHNOLOGY:  
LEARNING MANAGEMENT  
SYSTEMS, SOCIAL MEDIA,  
AND PERSONAL LEARNING  
ENVIRONMENTS**

**Part 1: Getting the Most from  
Learning Management Systems**

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## THREE PILLARS OF EDUCATIONAL TECHNOLOGY

All post-secondary teachers and students use educational technology– whether for classroom-based, blended or fully online learning and teaching.

This three-part series, *Three Pillars of Educational Technology: Learning Management Systems, Social Media, and Personal Learning Environments*, explores the Learning Management System (LMS), social media, and personal learning environments – and how they might best be used for enhanced teaching and learning.

- This first instalment, *Getting the Most from Learning Management Systems*, looks at the ubiquitous learning management system to uncover the many ways this multi-functional tool is used to support teaching and learning, as well as some of the challenges.
- In the second instalment, *How Social Media Support and Expand Teaching and Learning*, a variety of social media and networking applications are explored to highlight their strengths and limitations.
- The final instalment, *How Personal Learning Environments Contribute to Success in Teaching and Learning*, looks at the expanding uses of personal learning environments by students and faculty.

### Using the Learning Management System (LMS)

Early learning management systems were designed and used for fully online delivery of programs and courses. But now, they migrated to become near ubiquitous tools used in colleges and universities across Canada and around the world. A large 2014 study in the United States revealed that 99% of educational institutions support at least one LMS<sup>1</sup>, with the majority of faculty (74%) making use of it and 71% finding it useful for teaching. This LMS usage is limited to mostly content sharing, announcements, coursework submission and grade management, rather than many of the more advanced features.

Any LMS must support four core activities:

- **Content delivery:** Media distribution for lectures, readings, examples, case studies, etc. The LMS provides a central place for each course where students can retrieve essential documents associated with both learning and administration. Many of these resources are cached and made available for each section or for subsequent versions of the course.
- **Assessment:** Easy quiz generation to measure student learning and ensure students do the offline work. Many LMS testing systems allow for sharing of questions amongst multiple course teachers and the import and export of questions from textbook suppliers and other third parties. Quiz questions can be randomly selected from a test bank and allow for random number generation for quantitatively-based questions, so it is possible for each student to receive and be assessed on different questions. Assessments may also include self-assessment and formative usage so students can practice skills to reach mastery and receive constructive feedback throughout a course.

- **Interaction and Communication:** Synchronous and asynchronous communications tools for teacher-student and student-student group work. The most common interaction tool is the threaded text discussion that increases the communications possibilities for shy and introverted students and those lacking verbal language skills. Real time interaction can be either text/chat or voice-based and used for private or group discussions. Many systems also support breakout rooms for both synchronous and asynchronous interaction, thus allowing students to communicate while completing group projects.
- **Analytics:** A suite of analytics tools that allow faculty to monitor learning activities and to track their interventions in support of effective student learning. LMS systems are rapidly increasing the functionality of the analytics packages they supply with their product. Many systems also aggregate participation data across classes providing department or institutional glimpses into student and teacher activities.

The application of each of these capacities must, of course, be easily accomplished and without undue demands on limited faculty time and without requiring high levels of training and support. Teachers and designers need to experiment and monitor LMS use to ensure each tool and LMS-based activity contributes to effective learning.

Most LMS systems offer these basic tools, though some include advanced tools such as videoconferencing and analytics, and may come with additional user fees or through linking to external programs. The functionalities of the various commercial and open source LMS systems are very similar to each other, with competitors matching each other's advances.

## LMS Developments

Given this competitive environment, new tools are regularly introduced to commercial and open-source LMS products. Most promising are:

- Extensive learning analytics systems that teachers can use to actively monitor individual and group progress through the series of learning activities they orchestrate.
- Easy to use wikis or integration with external group creation tools such as Google Docs. These tools allow students to collaboratively create and edit documents either at the same time or asynchronously.
- Project management tools that allow teachers and students to create and assign students to groups, set time lines and cooperatively complete projects.
- Peer marking tools that control the exchange of documents so students both learn from and offer advice to their peers.
- Individual and group blogging and reflection tools. Having students monitor and comment on their own learning increases their capacity to become self-directed learners.
- The capability to search out from the LMS and import multi-media content from both open learning object repositories and restricted text book publishing sites.

LMS are nearly always owned and operated by a college or university, although there is growing interest in contracting the administration of these systems to cloud-based providers. The branding of the LMS as an official and supported institution-wide tool provides a sense of continuity between classes as students become familiar with the design and content. As well, use of the official LMS provides faculty and students with reasonable expectation of privacy, security and lack of exploitation by external users or companies. As these systems have matured, it is easier to both promote and enforce usability and accessibility guidelines – often based on [universal design principles](#) or the more extensive and newer [Authoring Tool Accessibility Guidelines](#).

The extent of the system capacities and their centrality to course delivery, assessment, communication, and administration explain the importance and predominance of their usage in colleges and universities.

## LMS Challenges

Effective adoption and support of these widely and often critically important learning management systems do present ongoing challenges. As with other sophisticated software tools, as the number of features increases, so does the complexity and challenges of easy adoption and effective use. Thus, most institutions employ both technical and instructional design staff to train, inspire and support faculty. However, studies continue to show many LMS tools are used minimally or not at all and teachers are often unaware of the pedagogical or time saving features available within the LMS.

The use of learning analytic tools for monitoring of student behaviour presents privacy concerns for students but can also be used by administrators to monitor teacher activity. In addition, information technology staffs are experiencing ever increasing costs to maintain and support systems as they grow in size and complexity.

An ongoing challenge is determining and supporting what faculty members using an LMS need to know. At a basic level, what is found to be essential is that faculty take the time to learn (individually or in scheduled sessions) to be a competent LMS user. This does not imply the capacity to use every possible tool nor be an expert in any, but like with a word processor, what is needed is the capacity and competence to use the tool effectively. The goal is to learn enough to use the LMS efficiently to meet essential needs, a sense of ability and comfort in at least the first stage of troubleshooting and knowing who and how to ask for help when needed.

Many teachers find it helpful to attend training sessions sponsored by their campus teaching and learning units or from external providers. Valuable as these can be, the professional development research is showing us what is more effective is learning networks of teachers that meet regularly (on and offline) to share, support and inspire each other as they struggle to enhance their students' learning - without drastically increasing their own workload. Such networks rely on bottom up effort of individual teachers, but, equally as important, need to be supported by a vision, a plan and active support from administrators and faculty leaders.

But perhaps the greatest challenge is the inherent “school focus” of the LMS. The LMS is designed as a tool to both replicate and simplify the type of teaching and learning that has evolved in closed classrooms. It handles document dissemination, quizzes and grade books with ease, but many of the networking, social capital building, open content dissemination and crowd effects are eliminated by the closed institutional firewalls behind which the LMS operates. This institutional focus is apparent in the organizational structure based on term length courses and the lack of creative power of students to own, share or even comment on many aspects of the course content or design.

These enhanced network effects are the domain of social media which, when used in formal learning contexts, open up whole new levels and intensity of learning opportunity.

We turn to the use of these social media and networking tools in the next instalment in this series.



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In addition to his extensive research publications, he served as the Director of the Canadian Institute for Distance Education Research and Editor Emeritus with the International Review of Research on Open and Online Learning.

For more than a decade, Terry held the Canada Research Chair in Distance Education.

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**NOTE:**

<sup>1</sup> Dahlstrom, E., Brooks, D. C., & Bichsel, J. (2014). The Current Ecosystem of Learning Management Systems in Higher Education: Student, Faculty, and IT Perspectives: Research report. Louisville, CO: ECAR, September 2014. Available from <https://net.educause.edu/ir/library/pdf/ers1414.pdf>.

<sup>2</sup> Carvalho, L., & Goodyear, P. (2014). *The architecture of productive learning networks*: Routledge.