

Preface

The remarkable Amazon™ online retail store remembers what we like and all our purchases, eBay™ lets us bid on anything and keeps us posted on our progress, Google™ finds what we were looking for, Mapquest™ gets us wherever we wish to go, and our banks now pay our bills. Why then do course management systems (CMS), the fastest growing enterprise systems in higher education, remain unresponsive and somewhat amnesic when it comes to what we know, need, prefer, or have accomplished? Where are the functional elements and best practices that could support learning across disciplines and the diverse needs of learners? Throughout this book, authors have explored the pieces and parts of the jigsaw puzzle of CMS now before us, presenting a picture of what is and what could be. Previously, much of the focus on future developments for CMS had been on the organizational, managerial (see Gallagher, 2003), or technical (IMS Global Learning Consortium, Inc. standards and corporate white papers). What's missing from the conversation is *teaching* and *learning*. The strategic heart of the question is most directly concerned with how these systems can support learning that is substantial, meaningful, and relevant for the vast continuum of learners.

Although faculty can implement online and hybrid courses from “cookie-cutter” implementation models in CMS with a newfound ease, the structurally rigid CMS container across the curriculum creates an “accidental pedagogy” (Morgan, 2003) comprised of predefined content units, consistency of instruction, and an imposed organization on previously independent pedagogical choices. The implications for higher education are significant, transformational, and largely unaddressed in the research and literature. Based on what we now know about meaningful, engaged learning, CMS must improve support for diverse ways of teaching and learning. This next-generation CMS

must work with, look like, and interact with other systems very differently than current systems do. This book provides a vision of the next-generation CMS through the voices of international experts, designers, instructors, and visionary thinkers who share their knowledge about how CMS can best support learning, teaching, instructional and library services, and the institution.

Conceptual Framework

Course management systems are used in a variety of ways, in a variety of settings, for a variety of purposes. In order to produce useful descriptions for future development, it is critical to provide a common conceptual framework for learning. Although some readers may disagree with various epistemological and pedagogical approaches to teaching and learning, the framework provided here serves as the foundation for conceiving how CMS functions could work to support specific principles.

For years, the EDUCAUSE Learning Initiative (ELI), formerly NLII, has been exploring meaningful practices for teaching and learning in higher education. The NLII 2002 research fellows, Colleen Carmean and Jeremy Haefner, reviewed theory and research on developments in learning theory and identified NLII's five learner-centered principles for deeper learning. According to the principles they identified¹, deeper learning occurs when the learning experience is social, active, contextual, engaging, and student-owned. It is the deeper learning principles that guide the ideas articulated in this book. In 2003, NLII fellow Patricia McGee followed up on this work by applying deep learning principles to the evaluation of learning objects and CMS. NLII hosted a focus session on next-generation CMS in 2003, focused on consensus-building on new tools, practices, and understandings. A number of the chapter authors of this book contributed to the body of knowledge that came from that work.

How were deeper learning principles applied to what we know of CMS? *Active* learning involves real-world problems through which learners practice and receive reinforcement for their efforts by peers and experts. Images, language, and scenarios should look and feel real and utilize processes in which learners interact. Learning that is *contextual* requires a learner-centric design as opposed to a content-centric one in which the learner proceeds in a lock-step fashion through content with little or no adaptation or deviation from a content-driven script. Deeper learning requires that the learning design take into consideration the learner's context of practice, ways of learning, and experience in the world. What is learned or understood in one context may not be readily transferable to another, which holds implications on how the CMS

interface, tools, and content look, act, and operate. Learning that is *social* requires feedback and interaction between learners and instructor and, in the case of learning objects, feedback may be situated in the technology as well. For learning to be *engaging*, it must be individualized to consider the learner's preferences and styles in order to motivate and challenge. Individualized learning provides the learner with multiple paths, multiple representations of content, multiple strategies, and multiple options for engagement and motivation to meet one objective. For students to have *ownership* over learning, they must have some independence or a degree of self-control that permits them to explore and evaluate new knowledge, and this necessitates higher-order thinking. Learning that gives learners ownership allows them to make decisions and provides opportunities for independent thinking and reflection. The deeper learning principles indicate a higher degree of learner control, decision-making, and organization than exists in current CMS.

The relationship between technology and organizational culture is interdependent and iterative; policy decisions may result in changes in how technology operates or is represented (Thomas, 1994). If this is the case, then the end users (instructors and students) must be deeply involved not just in the design of CMS, but in the manipulation of its functions as they create their own cultural understanding of the technology in which their shared learning and teaching experience takes place.

Teaching and learning in today's learning environment requires consideration of the roles, perspectives, and needs of many people. Instructors must utilize pedagogy that addresses the needs of a changing population with diverse learning needs in an environment with multiple means of connecting learners and instructors. Instructors are required to manage resources in new ways.

Instructional designers must consider how tools within a system can be supported, provide opportunities for collaboration, and give access to resources within and across systems, while making sure that users are not burdened by unreasonable demands on their time. Instructional support models and templates must reflect best practices and standards. Information technology systems wrestle with issues of security, changing systems and standards, structures of centralized support, and demands of providing quickly accessible tools and resources. Libraries are evolving into virtual centralized systems that support anytime/anywhere access.

Administration must find ways to balance economic realities with institutional assessment and the requisites for ensuring desired learning outcomes. Nontraditional students are now the norm and need access to peers, instructors, and course materials while being provided feedback and opportunities to develop.

Vendors look carefully at the tug between effort and outcome while attempting to design sustainable innovations and make a profit.

The conceptual framework illustrated in Carmean's (2002) learner-centered principles (www.educause.edu/nlii/lcp) ties all of these perspectives together through deeper learning and a common vocabulary. It is critical that we set priorities with *an authority of consensus* based on the input of all stakeholders who are fully informed on the issues and consequences. If key stakeholders such as faculty members, instructional designers, and learners do not get creatively involved in solving the deep structural problems in online learning, structural changes in higher education will be imposed on them without being informed by their values and professional wisdom.

Next-generation tools must reflect what is valuable across the curriculum and be accessible to all learners and through a variety of systems. New ways of operating require new instructional strategies and designs that include support and guidance for faculty. The research that stipulates there is no significant difference between online and brick-and-mortar learning suggests that either we're doing it wrong, we're measuring it wrong, or we could be doing it better (Twigg, 2001).

Deeper learning means learning how to learn; we must let go of the "coverage anxiety" that was so prevalent at the turn of the 21st century. It is critical that we develop a shared vocabulary across systems and disciplines. NLII has developed a CMS glossary that provides a common ground for discussion and has been included in this book as a starting place for all stakeholders to adopt a language that describes CMS form and function in terms of teaching and learning.

Book Organization

This book is organized in three sections, summarized in the following text. Section one describes standards, foundations, and developments in CMS use and current best practices. Section two focuses on the application of theory to CMS environments and how current developments are bridging the gap between current functionality and theory-based design. Section three envisions future CMS designs.

Chapter authors represent the breadth of roles that contribute to and interact with CMS in higher education: instructional designers, faculty members, academic technology staff and administrators, information technology staff and administrators, teaching and learning center staff, students, and vendors. The

style of each chapter reflects the point of view of the authors and their roles within higher education in order to best portray the voice of each unique and indispensable point of view. NLII and the editors feel that representing the voices of next-generation CMS is critical as theorists and systems designers build responsive and effective functionalities.

Section I: History, Practices, and Design of Current CMS

As caretakers within the landscape of teaching and learning, educators can look no further than their classrooms and note the rapid embrace of technology that has changed the learning environment seemingly overnight. Distance learning, hybrid courses, computer-infused curricula, the virtual library, learning objects, copy-and-paste plagiarism, and to “Google™ it” are familiar landmarks of the current landscape. Of the many ways computers and the Internet have directly influenced the field before us, none has been more rapid or transformational than course management systems, or CMS.

What began as a sleepy electronic road traveled by a few on small departmental servers soon grew, morphed, and exploded into the enterprise freeways we use today. But where do these freeways go? Why did travelers choose this interface over so many other options, and why do the prevailing systems we know as “course management” look so similar? Could better pedagogical choices have been made along the way?

By exploring the history of the CMS, its inception, design choices, successes, and failures, we better understand where CMS began and where it is now. Knowing history can help us better understand the technology, avoid repeating efforts, and plan for the future. The chapters in this first section of the book cover the following topics:

Chapter I: Carmean and Brown examine CMS as an enterprise and the questions that should be asked by each of its stakeholders.

Chapter II: Long and Tansey offer the reader a specifications and standards primer, explaining meaning and importance in layman’s terms (OKI, IMS, Dublin Core, etc.) as well as why these standards are so important to the development of CMS.

Chapter III: Lippincott explores libraries and the changing role of digital content delivery via the CMS.

Chapter IV: Apedoe examines teaching conceptions and their influence on adoption and innovation in CMS.

Chapter V: Britto offers a framework of pedagogical models that can be used to evaluate CMS and understand course design.

Chapter VI: Lomas and Rauch provide case studies of course design based on the WebCT™ implementation at the University of British Columbia.

Chapter VII: Bender explores his own choices in years of teaching with CMS.

Chapter VIII: O'Brien, Campbell, and Earp document how the thoughtful implementation of Blackboard™ at Duke University led to meaningful curricular change.

Chapter IX: Liu provides best practices in teaching and instructional support within the use of CMS and technology-enhanced learning.

Section II: Research Implications and Creative Innovations for Future Design of CMS

In the late 20th century, interface design developments struggled to keep pace with the voluminous CMS-delivered courses often conceived and implemented by institutional initiatives that forced faculty members into new media and new roles for which they were generally unprepared. Often rationalized as a cost-saving measure, the adoption of campus-wide CMS fails to produce learning cost benefits. Although there is substantial anecdotal and research literature providing guidelines for course design and delivery, this is often contextually situated and difficult to generalize across disciplines, systems, programs, or institutions. Most CMS courses are designed through “accidental pedagogy” (Morgan, 2003) as traditional courses are transferred to the online environments. However, as course offerings and student populations increase and the CMS becomes a fixture in the landscape, it is critical that instructional designers and faculty members reference not only best practices, but also make informed decisions about CMS functions that can best support learning outcomes.

This section draws research literature and innovative practices that have been informed by learning theory and intentional pedagogical design in the following chapters:

Chapter X: McGee, Suter, and Gurrie envision a next-generation system in which functionality is inspired by learning. They describe how stakehold-

ers enter into and interact within a CMS to support deeper learning.

Chapter XI: Dabbagh explains a pedagogically oriented classification of the features and components of CMS and describes a framework that explicitly demonstrates how to design authentic learning tasks using the features and components of CMS to create course designs and distributed learning interactions that engage students in meaningful learning.

Chapter XII: Weigel presents four student-focused core capabilities that should be prominent in our instructional designs: the development of skill sets related to critical thinking, self-confidence, peer learning, and knowledge management capabilities. Using this foundation, Weigel describes a next-generation CMS by exploring four basic curricular capabilities (or services) that learning systems of the future will require.

Chapter XIII: Shaw and Venkatesh describe the limitations of CMS and the advantages of moving toward Learning Content Management Systems (LCMS) that can support emergent notions of content re-use and generation in an open knowledge community that nurtures a next-generation CMS that gives autonomy to the learner and instructor.

Chapter XIV: Kaltenbaek explains the process of CMS adoption through which functionality comes to support deeper learning across disciplines.

Chapter XV: Caladine examines how database-driven Web tools support a variety of learning activities in which learners engage and contribute to course content.

Chapter XVI: Lanestedt and Stokke explain how ePortfolios can become integrated to both formative and summative assessment within the CMS.

Chapter XVII: The future CMS may be something we have not yet conceptualized, as Robson proposes in this analysis of what a CMS does and how it should be designed with learning in mind.

Section III: Next-Generation CMS

In the late 1990s, the founding architects of the CMS designed their environment to meet the requirements of the early adopters, those faculty members and university visionaries who saw that a tool such as the CMS could complement classroom instruction with limited use. Today, CMS is playing a more active role in our day-to-day teaching and learning needs. As CMS have become increasingly sophisticated, it has become more apparent that the current CMS software framework and navigational scheme do not meet the func-

tional and user interface requirements of some current and the near-future CMS users. It is necessary, therefore, that the architects of CMS technology go back to the drawing table to design a new conceptual framework that meets the evolving requirements of the next generations of CMS users.

The focus of this section is defining and designing the next generations of CMS software environment. It includes the following chapters written by visionaries and architects of the CMS software environment, both from leading software industry and educational institutions:

Chapter XVIII: Ross envisions a future CMS that inspires as well as supports individual learning through enterprise-level strategies and a commitment to learning outcomes.

Chapter XIX: Mills analyzes the needs of CMS stakeholders and offers solutions.

Chapter XX: Kumar and Merriman provide an overview and rationale for the Open Knowledge Initiative and how it serves a purpose in the development of next-generation systems.

Chapter XXI: Jafari paints a clear picture of the characteristics, requirements, and framework of next-generation CMS and how they support the needs of the users, the courses, and the software.

Chapter XXII: Alexander takes us through the historical reasons for current CMS and examines social, knowledge, and governmental challenges and trends that he believes can shape and drive innovation towards a new system that supports communities of learners.

The editors are deeply grateful to the EDUCAUSE Learning Initiative (ELI) for its support and encouragement, and to the thoughtful, talented visionaries that contributed so willingly to this fascinating, maddening, complex endeavor. The NLII has brought together a community of curious and visionary minds that have inspired and brought to fruition such lasting and far-reaching initiatives as MERLOT, IMS, and now, this book.

References

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Endnotes

- ¹ Mapping the Learning Space: <http://www.educause.edu/nlii/MappingtheLearningSpace/2954>