



Introduction

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Research on Course Management Systems in Higher Education

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Perspectives in Instructional Technology and Distance Education

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Research on Course Management Systems in Higher Education

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PREFACE

Angela D. Benson and Andrew Whitworth

This book has been a long time in the preparation. Its genesis lay in a conversation held between the two editors, Angela Benson and Drew (Andrew) Whitworth. This took place over a dinner in the late fall of 2004, at the Sloan-C Asynchronous Learning Networks conference: more precisely, the Worldwide Universities Network (WUN) e-learning group meeting held beforehand. The WUN is a network of research-oriented universities spread across the UK, U.S., and other countries. It provides funding and other opportunities to bring together researchers in several fields, including e-learning. Without it, this book, like others, would not have been written (see also the acknowledgements in Andrews & Haythornthwaite, 2007, for example).

At the WUN dinner we found ourselves sitting together and began talking about our work. It was Angela who had the most prior form, having completed a PhD that applied the theories of Cervero and Wilson (1994, 2005) to the study of how online higher education was shaped by the negotiations taking place between multiple stakeholders and held around metaphorical “planning tables” (see Benson, 2002, 2003). As Cervero and Wilson say (2005), “The planning table metaphor draws attention to the fundamental idea that people *make judgments* with others in social and organizational

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contexts that determine the specific features of an educational program, such as its purpose, content, audience and format” (p. 73). Through the negotiations that form these collective judgments, the program and the resources to support it are socially shaped.

Whereas Cervero and Wilson (1994) “posited that an ethical planning process is one in which the interests of all affected stakeholders are substantively represented, regardless of their place in the power hierarchy” (as cited in Benson, 2002, p. 450), Angela saw that the “NetEd” program she studied did not display these egalitarian characteristics. Instead, influence over the program varied depending on the stakeholder’s position relative to certain “seats of power” in the host university. One of these seats of power was the oversight committee that accredited the NetEd program; power over NetEd was here secured through the kind of institutional oversight that had also been commonly seen in other case studies reported on by Cervero and Wilson (2005). However, the other seat of power was “Net-Man,” a subdivision of the university that provided the web portal for this institution’s online degrees (Benson, 2002). This was something different. Provision of the technology that supported NetEd was therefore a source of power that distorted the planning process. Technology in this sense was an active participant at the NetEd planning table. This was interesting because though Angela had set out to investigate the negotiations taking place in an online program, she had not specifically been interested in technology *per se*.

Meanwhile, Drew had been exploring social and political theories in an attempt to explain the impact information and communication technology (ICT) has on working practices, whether in educational organizations or elsewhere (see Reffell & Whitworth, 2002; Whitworth 2005). He therefore had a particular interest in the questions raised by the role of NetMan in Angela’s case study and, by extension, similar technology providers in other educational settings. How does the form of the technology, shaped by design decisions that are not necessarily made with reference to the specific contexts of its various users, shape or structure the subsequent judgments that stakeholders not only make around their planning tables, but are permitted to make? What changes are wrought to professional development (that is, the ways staff and faculty learn about how to do their jobs better) in a technology-rich environment? How, in other words, can stakeholders learn about this significant new technological seat of power in the higher education institution and work together to transform it so that it continues to support their professional activity in a sustainable way? What difference does the form of the technology make, considering that software can itself be developed in many ways along a continuum running from democratic, participatory, user-centered development through to autocratic, closed techniques?

We sought to answer these questions through a project we subsequently undertook, known as Technology at the Planning Table (TPT). Fieldwork was conducted in five locations: two program teams at the same university in the U.S., for which we used the alias “The University of Arcadia,” and three in different institutions in the UK: “Middleton” and “Northborough,” large, internationally- and research-oriented institutions, and “Churchampton,” a smaller university with more of a focus on teaching. Our conclusions, based on these five case studies, have been reported in several publications (Benson, Lawler, & Whitworth, 2008; Benson & Whitworth, 2007, in press; Whitworth & Benson, 2010), and we also contribute a chapter to the present collection.

However, we felt that in order to more fully address our research questions, further study was needed, to broaden the sample. Unfortunately, practical difficulties of various kinds prevented us from repeating our own analysis beyond our original five case studies. At the same time, we were aware of many other research projects, at various scales, from the action research of individual academics and/or administrators, up to major studies funded by research councils. This book contains work that has been conducted in many countries, including the UK, the U.S., Turkey, Portugal, Greece, and Australia. Drawing on these other insights, and presenting them in a single collection, wrapped up in a meta-analysis, was, we determined, a way to bring our work on TPT to a conclusion that was more satisfying for us, more interesting for readers, and more significant when it comes to judging the contribution to the literature. Hence, this edited collection.

ACKNOWLEDGEMENTS

As noted earlier, we must first acknowledge the contribution of the Worldwide Universities Network to the writing of this book, and also the direct and indirect assistance of the four institutions for which each of us have worked at some point since 2004: the Universities of Manchester, Leeds, Alabama, and Illinois.

At a more personal level Drew would like to thank Caroline Haythornthwaite, Scott Johnson, Roger Boyle, Jim Petch, Gary Motteram, Richard Andrews, Gráinne Conole, Melody Thompson, and all the other people who were part of the WUN e-learning group and who inspired us and encouraged us to undertake this project. Also Cormac Lawler, Helen Gunter, Julian Williams, Alan Jervis, and other colleagues and students at the University of Manchester who helped our work on TPT, and this book, get finished off.

Angela joins Drew in thanking the members of the WUN e-learning group. She adds a special thanks to Scott Johnson, University of Illinois emeritus faculty, for inviting her to that initial WUN meeting, and Zhetao

Guo, Tasha Brown, and Michelle Hale, students at The University of Alabama, for their help in conducting background research for this book.

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Author Queries

- 1—Please add “emphasis in original” or “emphasis added” to the Cervero and Wilson (2005) quote beginning “The planning table metaphor draws attention to the fundamental idea that people *make judgments...*”

INTRODUCTION

Andrew Whitworth and Angela D. Benson

The e-learning research literature continues to grow. Research projects that have investigated how to teach online, administer blended learning courses, or design technologies to exploit the ongoing revolutions in communication have become legion. This book's area of interest does not lie with e-learning or educational technology as a whole, however. Instead, it focuses on research into course management systems (CMSs), with a specific interest in how these technologies shape working practices of various kinds, and are, in turn, shaped by these practices.

CMSs are a family of tools, with the most well-known members being Blackboard, Moodle, Sakai, and Desire2Learn; WebCT was another example, but from around 2007 it began to be absorbed into Blackboard and has now lost its separate identity. Some institutions, or individual project teams, have created locally developed examples of the genre. CMSs share general features, while differing from each other in their specifics. Generally, all have:

- facilities for the organization and management of learning content, including web pages, and PDF, video, audio, and other file formats;
- fora for interaction between students and faculty, including discussion boards and, increasingly, wikis and other Web 2.0 tools;

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- assessment and grading tools;
- access control: that is, ways of requiring users to enter IDs and passwords in order to access the CMS (though their use may not be obligatory);
- usually, some connection with a campus management system (e.g., Banner, Campus Solutions) through which data can pass both ways; and
- varying levels of operation, from campus-wide spaces down through those for particular departments, programs, and courses: then, within courses, they may be further subdivided into areas devoted to particular weeks of the course, particular topics, subject areas, or so on.

CMSs are sometimes known as “virtual learning environments” (VLEs), a term with more currency in certain regions, particularly the UK. The term “learning management systems” is also sometimes used, or references are simply made to brand names (see also Wane’s chapter in this book). However, more so than VLE, the term CMS invokes the observation made by several of our contributors that the motivations for introducing these systems into higher education are often more administrative than pedagogical. These authors (e.g., Wane; Corbeil & Corbeil; Baldauf, Jiang, Marshall, & Dennen) describe how in many cases, the CMS is employed with an emphasis on the management of courses and programs, viewed as administrative processes, rather than the construction and maintenance of learning environments *per se*.

This tension between the administrative and pedagogical functions of a CMS is one reason why the proliferation of CMSs throughout higher education is frequently criticized within the e-learning literature. In 2009 vigorous debate arose at, first, the UK ALT (Association of Learning Technologists) conference, then at a subsequent symposium three months later, regarding whether the VLE was a “dead” technology—or, more precisely, an “undead” one, sucking resources out of an institution like a vampire, and giving little back (see, for example, <http://steve-wheeler.blogspot.co.uk/2009/11/vle-sucks.html>). The CMS may be criticized for its construction around assumptions that learning is an individual rather than social pursuit (Corbeil & Corbeil), or that it is an inflexible approach to e-learning design (Kultur & Yazıcı). This book acknowledges these critiques and does not take the applicability of the CMS as a given.

However, we also take the position that the CMS is, at least potentially, a dynamic tool, and that it can evolve in response to such criticisms. This transformation is one that does not just result in changes in software or interfaces, but the working practices that exist around the CMS. This is the second focal point for this book and the research reported within it. Between them, the contributors have provided a range of research studies

into the impact of the CMS on working practices in higher education institutions. These practices include teaching and learning; hence, the book includes chapters on pedagogy, but they are not limited to that sphere. The book also covers research into the administration of the CMS, governance procedures, and how all these are reflected in professional development.

Working practices around any CMS are not givens: that is, wholly dependent on the technological features of the system. Instead, they are constructed through a combination of factors, which include system design, but are also influenced by:

- the diverse (and sometimes conflicting) interests of multiple stakeholders: faculty, students, administrators, IT services groups, managers, employers, and governments;
- the collection and analysis of data from users, including student satisfaction scores, patterns of use, grades, staff feedback, and so on;
- insights in the academic research literature; and
- available funding and other structures of support.

Whatever practices emerge from this nexus will shape the evolution of the CMS. This book investigates this social shaping of CMSs (Williams & Edge, 1996) and views the use of the CMS as a sociotechnical practice—an interaction among technology, pedagogy, professional development, and research. It is possible to reshape the CMS to use it in ways that keep it living, dynamic, and responsive to the various forms of learning that take place within the various campus communities where it is being used.

We conclude this book with a chapter that presents a meta-analysis of the research presented within, proposing ways that faculty, developers, and administrators can keep their CMSs responsive to change. In these suggestions reside the principal—and significant—contribution of this book, considered as a whole collection, to the research literature. Our intent is to present a research-based guide to planning in higher education institutions that specifically accounts for the impact of course management systems on the planning process. We seek not to prescribe particular ways of working, but describe research that has taken place across a range of higher education locations, and thereby provide intellectual resources around which practitioners may construct theories of their own (Schön, 1983; Carr & Kemmis, 1986), relevant in their own context. This process of theory construction involves all stakeholders in a given setting being helped to “analyze their contexts and then make judgements about what to do given the constraints and opportunities in those contexts” (Cervero & Wilson, 2005, p. 241). Its result, put simply, is an understanding of “how to get to the [planning] table or what to say and do once there” (Cervero & Wilson, 2005, p. 249). We consider this approach the best way to counter criticisms that the CMS is an innately “undead” technology.

In the present time, when higher education institutions are increasingly integrating a range of information and communication technologies (ICTs) into their core activities, such judgments require both an understanding of how technology generally affects planning, negotiation, and decision making, and an appreciation, which can only be developed in context, of how this process is then played out through specific technologies (in this case CMSs) in specific settings (particular higher education institutions and/or departmental locations or teams within these institutions). This book should therefore be useful in two ways: first as an update of, and commentary on, Cervero and Wilson's work for a new era in which technology is increasingly integrated in higher education institutions, and as a more specific resource for those planning, using, or studying with a CMS and seeking research-based solutions to problems in their own work context.

Because each CMS is a unique configuration, specific to its own context, its planning, use, and development are processes that must ultimately stem from the grass roots. Therefore, we do not seek to develop generalized theories or models that are intended to prescribe action (the "best practice" approach). Rather, our aim is to produce a research-based resource that practitioners can draw on to better understand their own work and, through self-inquiry and practice, learn for themselves what "best practice" entails in their own context.

Though strategies like business process analysis and instructional design are often recommended to those making decisions about educational technology (see Benson, 2002, p. 444 for a summary), when observed in real, practical work situations, educational stakeholders (managers, faculty, software developers, and so on) tend to use other forms of analysis and decision making, including self-reflection, pragmatics, bargaining, or coercion. Other key educational stakeholders, particularly students, have little, if any, formal role to play in educational planning and decision making, yet they are clearly significant, both in the abstract and informally. Beliefs that some abstract "best practice" exists and/or that a closely followed strategic plan will always override insights developed through these other forms of decision making lead to naïve management, precisely because these beliefs perpetuate the theory-practice gap (Carr & Kemmis, 1986). Theories become embedded into systems without accommodating the existing needs of practitioners. The result is a dislocation between design and use—a dislocation that, if it goes unchecked, may lead to a schism between the form and features of the CMS and the actual working needs of faculty, staff, and students.

De Castell, Bryson, and Jenson (2002) agree that learning-based studies of technology are essential; in their words, we lack an "educational theory of technology (which is not the same thing as a theory of educational technology, of which we have of course a number)" (p.). They declare that this

approach is essential in order to defend “educational values” against commodification. For them, e-learning is not necessarily a desirable trend, but in actuality represents attempts to de-skill the teacher and industrialize the student learning experience (see also Robins & Webster, 2002). Research that is conducted externally, without the active participation of teachers, may contribute to this de-skilling (cf. Carr & Kemmis, 1986). However, if teachers, individually and within work communities, learn about the effects ICT has on their working lives, they may become more able to defend themselves against de-skilling, from whatever source the pressure emerges. They can find ways to integrate these new possibilities into working practice in ways that do not threaten their professional identity. In contrast to the provide-then-train model of e-learning adoption, this would represent an educational theory of technology, in de Castell et al.’s terms: a bottom-up, participatory, learning-based and context-sensitive approach to change, but one that is still based on insights generated and validated by research.

In the ten years since de Castell et al. (2002) made their call, some useful developments have been made in the field of technologically-based pedagogical design, with the work of Clark and Mayer (2011), Laurillard (2012), and Conole (2013) being notable recent examples; but we suggest that there has not been a book that considers, in any broad way, research into the impact of CMSs on working practices. Ultimately, any study of higher education institutions—whether conducted by external researchers, or by practitioners themselves, trying to understand how to adapt to the changes ICT wreaks on their practice—cannot avoid certain questions: who is permitted to generate educational environments, to what end, how, and who will benefit from their doing so? Thus, learning about technology within a higher education institution involves asking questions that are at least potentially political (Whitworth, 2005, 2007). The planning and design of any educational environment produces a complex interplay of people, technology, and knowledge, and questions must be asked about it such as (Oliver et al., 2007):

how is knowledge constructed, legitimated and circulated? How do these activities reflect local values and cultures of enquiry (e.g., professional and disciplinary)?... How is knowledge valued? To whom is it (designed to be) useful and how?... Who has the authority to determine what counts as knowledge? (p. 22)

The answers to these questions will vary from context to context. Therefore, research into technological change must involve micro-level study. What is needed is not a generalized theory of CMS design, even one based around the negotiation model of Cervero and Wilson. Such a thing would be of little more use in real educational contexts than would be other (structural/functional) approaches to planning based on generalized ideas

of “best practice.” Berg and Östergren (1979, pp. 261–262; via Downs & Mohr, 1976) observed three decades ago that “best practice” models often declare certain factors as important, or even structurally necessary, for innovation, whereas the same factors are irrelevant or even inversely important in other locations.

What would be better is research that “organizes attention to possibilities of action” (Cervero & Wilson, 2005, p. 24) within specific contexts. Our aim in this book is to create a resource for planners, but one that acknowledges that planning expertise and planning practice are distributed throughout the organization. The planner role is as likely to be adopted by employees in ad hoc ways, as it is to be formalized and structural. Organizational learning and innovation cannot be delegated only to specific roles, or restricted to particular contexts, but should emerge at the macro level through accumulated, dynamic interactions at the micro level (cf. de Wolf & Holvoet, 2005; Whitworth & Benson, 2010). These interactions are largely unpredictable, but nevertheless, conditions can exist (or be created) that make learning and, ultimately, changed practice more likely to emerge from them. The diversity of options here is not just an abstraction, but represents the micro-scale result of continuous planning decisions.

A CMS is therefore a configurational technology rather than a discrete and well-delimited one (Williams & Edge, 1996), and:

no single supplier has the knowledge needed to design and install such complex configurational technologies. Instead, this knowledge is distributed amongst a range of suppliers (of different technological components) and a range of groups within the firm. Configurations are highly specific to the individual firms in which they are adopted—and local knowledge of the firm, its markets, its production and administration processes, its information practices and so on, are at a premium. (Fleck, 1993, p. x)

The notion, then, that the design and evolution of a CMS should be the responsibility only of researchers, or its developers, or an IT or other administrative department within the higher education institution, is a category mistake. There are a great many stakeholders whose interests may or may not be reflected in the technology. Therefore, institutions must come to see the CMS as the result, not only of technical, engineering decisions, but also of human activity—working practices that are more complex and intersect with other organizational structures that facilitate decision making, communication, planning, and learning. It is our intention that this book present research into a broad range of these activities as they play out in higher education institutions. The chapters in this book are all, ultimately, concerned with CMSs’ application and appreciation in “on-the-ground” settings, including the spaces for teacher/student interaction but also spaces for negotiation between stakeholders, governance, and profes-

sional development. We start with chapters that look at the adoption and selection of the CMS.

CHAPTER SUMMARIES

Following this introduction, the book proceeds first with a chapter from Wane, who undertakes the task of reviewing certain key definitions and concepts that lie behind the idea of a course management system, and then focuses on key trends affecting higher education at the present time: funding, mobile learning, Web 2.0, and openness. His chapter therefore describes the wider context in which more specific CMS-related activities are now playing out.

Kültür and Yazici investigate how a CMS can be adopted, then diffused through the institution, with a faculty focus. They note that in order to understand these processes one must consider the micro-level, individual issues that affect adoption, as well as the macro-level, institution-wide ones. The authors consider different models of technology adoption: the diffusion of innovations model, the technology acceptance model, the concerns-based adoption model, and facilitative conditions. They then examine these as they relate to the faculty, administration, and issues such as the availability of resources and the freedom to experiment with new approaches, support, and professional development. A case study from Bilkent University in Turkey is then presented.

Argondizza and Carr-Chellman's chapter discusses selection procedures. They investigate the use of available proprietary tools and other methods such as faculty videos. Four case studies are presented, three from the U.S. and one from Greece. They note that evaluation and selection are not one-off situations; whatever procedures are in place need to recognize the dynamic nature of the field. For example, one of their case study sites (the University of Maryland) has a commitment to re-evaluate the CMS every five years.

After the chapters on adoption and selection, the book continues with chapters on teaching with the CMS. These chapters largely focus on implementing an interactive and learner-centered pedagogy from the ground up. First, Corbeil and Corbeil discuss "Hacking the CMS": that is, integrating social media into the technological framework at the University of Texas. They describe the increasing use of social media and recognize certain pedagogical benefits, including the generally positive impact of social learning and the collaborative construction of the learning environment. At the same time, Corbeil and Corbeil note the pitfalls of social media use, including privacy implications. Either way, they note that CMS technology has not responded to the potential uses of social media in higher education. While nods are made to a more interactive pedagogy (for example, by including discussion boards in CMSs), these are technically and pedagogi-

cally unsatisfactory, often inhibiting rather than promoting interaction. Corbeil and Corbeil eventually “subverted” Blackboard by linking from its home pages to a blog and Twitter feed. Baldauf et al. express similar concerns and needs: that is, to move toward a learning community approach to teaching. Their solution was to adopt BuddyPress alongside the institutional CMS at Florida State. They note that features such as user profiles and notifications of contributions become important in implementing a more interactive pedagogy, as well as just the introduction of different communications media. Baldauf et al. recognize the “demanding” nature of this kind of interaction alongside its pedagogical benefits. These two chapters work together as case studies of how the benefits of social media can be integrated into the CMS, even if the latter systems are not innately able to accommodate this sort of pedagogy.

Martinho, Almeida, and Teixeira-Dias discuss how they tried to foster student questioning at the University of Aveiro, Portugal, in undergraduate chemistry courses. They discuss both in-class methods and the use of Moodle forums. Their chapter is effectively a “null results” study, with the authors acknowledging that their methods were relatively unsuccessful. However, they raise useful points regarding the blockages that may be present in a CMS and that may inhibit participation and student questioning behavior. These include having too much “visibility” to other students, and students having no reason to continually visit the CMS to check discussions and thereby participate in them. Despite their null results, these suggestions make the chapter worth including in the book.

Moore, Dickson-Deane, and Liu’s chapter discusses the notion of “pedagogical usability.” They seek to avoid the situation where students spend more time learning how to interact with or find the tools and content on the CMS rather than using these tools and materials for learning the subject matter of a course and constructing knowledge. Ultimately, usability considerations are partly contextual and dependent on the pedagogical aims of the course. Moore et al. want to avoid information overload and try to move away from a hierarchical content organization within the CMS toward a more faceted one.

The final few chapters in the book build on this notion of shaping the CMS and consider this with more reference to the learning that takes place through professional development and other processes that exist within higher education beyond the purely pedagogical, teacher/student relationship.

Morse, Green, and Lee discuss their experiences of training faculty in online instruction and using the CMS to do so. They state that it is not possible to simply transfer pedagogical techniques developed for face-to-face instruction straight into the online realm, so they ask faculty to take further training in online instructional development that is itself delivered through

the CMS. Their review of their experience notes several interesting points, including the fact that “students will be students,” with their faculty in the training environment engaging in behaviors such as missing assignments and not following instructions. They also note that because modeling best practice in an online course is demanding on instructors, the experience of being an online student was a beneficial one for faculty preparing to teach online.

Whitworth and Benson’s chapter presents research on how faculty members and other members of course teams in five case study universities (two in the U.S., three in the UK) were or were not able to keep their CMSs responsive to the learning that happened within their communities of practice. They counterpose responsiveness with directiveness, a situation where the CMS shapes practice rather than the other way around; though one conclusion we reach is that where directiveness does occur, rather than changing their practice faculty may be inclined to “subvert” the CMS by finding ways to bypass it, the study is very similar to how Baldauf et al. have proceeded (Chapter 5). The authors suggest ways of keeping CMSs responsive that are then developed in more detail in our concluding discussion.

The last two chapters take a more governance-based view of the CMS but still root this governance in pedagogical concerns and the views of faculty and other stakeholders, researched from the ground up. Bower, McNeill, and Hedberg discuss how Moodle extensions were evaluated at Macquarie University in Australia. This institution adopted Moodle due to an interest in its social constructivist pedagogy but also for the synergies that were possible with a large user community, and the resources that could be drawn on to evaluate and implement further enhancements. However, there was no desire, nor capacity, to adopt every extension that was subsequently produced by this community, due to resource and support implications. Their chapter describes how different extensions were evaluated for appropriateness in the specific context of Macquarie, with a pedagogical focus.

Petherbridge and Dulberg’s chapter describes the overall governance procedures at North Carolina State. They state that it is essential to have governance at all stages, from purchase (or upgrade) of the CMS through to implementation and use. Governance needs to bring together various different stakeholders, but again they stress that the focus is on the pedagogical needs and the need to “understand who is making decisions and at what level in the organization, and also to help ensure that everyone involved understands and follows a transparent process in adopting and implementing AT [academic technology].”

Finally, the book closes with our own review and meta-analysis of the research presented and our conclusions regarding the structures that need to be created to keep the CMS dynamic and relevant, whether to the fac-

ulty, students, administration, or other involved stakeholders in any given institution.

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Author Queries:

- 1—Please add a page number to the De Castell, Bryson, and Jenson (2002) quote beginning “educational theory of technology...” in your text.
- 2—In the sentence beginning “Berg and Östergren (1979, pp. 261-2, via Downs and Mohr 1976) observed three decades ago...” it is unclear which source you are using here. If you used only Downs and Mohr, 1976, please just cite as “as cited in Downs....,” or if you used Berg & Östergren, please just use that citation and drop everything after it. Also, eliminate whichever one wasn’t used from your references. If you did use both, and the second one also contributes to the paragraph, please change citation to include both as (1979; Downs & Mohr, 1976).
- 3—In your text, please add a page number at the end of the excerpt from Fleck, 1993 beginning “no single supplier has the knowledge...”
- 4—Please add page numbers to the De Castell, Bryson, & Jenson (2002) article in your references.
- 5—Please verify the spelling of the word judgments in the Cervero & Wilson, 2005 quote beginning “...analyze their contexts and then make judgements about what to do...” Was it spelled this way in the original?
- 6—Please verify that the sentence beginning “Therefore, institutions must come to see the CMS as the result...” still says what you meant it to say. I changed the verbs to agree with what I thought was the subject, but I wasn’t positive that I wasn’t changing what you meant to say.

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