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Rethinking Course Management Systems, Learning Management Systems, and Their Role in Quality Education: A Narrative Review

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Abstract

This paper is a narrative review of the literature on Course Management Systems and Learning Management Systems, with respect to quality education with two major subthemes: online distance education, faculty readiness. A narrative review with expert opinion combines a thematic or selective literature review with the author's interpretation, argument, or theoretical proposition. It does not follow a strict systematic protocol, allowing space for critical insight and subjective interpretation (Baumeister & Leary, 1997; Greenhalgh & Peacock, 2005; Grant & Booth, 2009.) As this paper focuses on the vagueness of the definitions of both Course Management Systems and Learning Management Systems on conceptual level, similarities and distinctions of both systems are discussed. First, the section on online distance education concentrates on its definition, learning theories and frameworks, CMS and LMS. Second, the paper reviews key contributions and definitions of both concepts. While providing reconceptualization based on educational theory the paper additionally proposes suggestions regarding the concepts and discuss implications with further research.

Keywords: Course Management Systems; Learning Management Systemws; Quality Education; Narrative Review

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1. Introduction

1.1. Ensuring Quality Learning

Providing quality learning has been one of the main focal points of education community. As online learning became increasingly adopted by many education institutions, high quality online learning befalls a prerequisite when designing online education. Ever increasing number of researchers direct their focus on aspects of quality online learning. The responsibility of ensuring quality online learning is placed on instructors emphasizing on interaction, collaboration and engagement by various researchers (Jonassen. Hernandez-Serrano, & Choi, 2000; Rovai 2002; Swan, 2004) as well as learning effectiveness (Swan, 2004). On the other hand, a leading role is placed to the institutional administrators in order to achieve success in quality online learning. There are also reports and research suggesting that both instructors and administrators should be involved in the whole process for quality assurance (Novak,2002, IHEP benchmarks, 2000).

As the ultimate goal of education is to attain learning and satisfaction of the "student", unlike the traditional view, student replaced instructor as the main focal point of learning environments in the last two decades. Without a shadow of doubt, same argument can be made for online learning environments. The result is that the instructor took the role of provider and facilitator of learning activities and resources. This change of role is also predicted and corroborated by Kim and Bonk (2006) and Swan (2003).

Several publications signified learning effectiveness as an important element of quality online learning environments. North American Council for Online Learning (NACOL) issued *National Standards for Quality Online Teaching* listing a set of quality guidelines for online teaching and instructional design. Although the guidelines mainly address K12 settings, they are also applicable to online learning in Higher Education in micro level.

The Institute for Higher Education Policy (IHEP), a nonprofit, nonpartisan organization published one of the most comprehensive statements regarding the quality in distance education. The publication called *Quality on the Line: Benchmarks for success in Internet-based Distance Education* identifies a revised version of twenty-four benchmarks, organized in seven categories: 1) Institutional Support, 2) Student Support, 3) Faculty Support, 4) Course Development, 5) Teaching and Learning Benchmarks, 6) Course Structure Benchmarks, and 7) Evaluation and Assessment. While each category focuses on different phases and aspects of education from different levels, two main foci of the last category, *Evaluation and Assessment*, are on the *learning effectiveness*, which relates to the micro level education, and *cost effectiveness*, which relates to the macro level education.

Sloan Consortium (Sloan-C) provided a quality framework that focuses on *five pillars* to support quality online learning environments (Moore, 2005). These five pillars are 1) learning effectiveness, 2) cost effectiveness and institutional commitment, 3) access, 4) faculty satisfaction and 5) student satisfaction. According to Moore (2005) principles of this framework are applicable to both academic and corporate training environments. Partly parallel to five pillars, Kim and Bonk (2006) addressed student achievement and satisfaction as two means to as quality of online education. This view corresponds with the fifth pillar of Sloan-C, student satisfaction.

There are many kinds of online settings to which these pillars can be applied. Different settings and different systems have been adopted and are still in use for online course delivery in many different institutions. To name a few, virtual systems, course websites, Course Management Systems (CMS), and Learning Management Systems (LMS) have been some of the commonly used learning environments especially over the last two decades for online course delivery and communication for many distance education courses. Course Management Systems emerged as one of the main software systems designed to manage course content and course activies (loannou, & Hannafin, 2008). These tools such as Blackboard, WebCT, ANGEL, Educator, FirstClass, Sakai, Desire 2Learn, Virtual-U, Learnwise, the Learning Manager and etc. allowed instructors to design, deliver and manage online courses. The main advantage of these tools integrating technological and pedagogical features into web-based settings are that they enable even the instructors who are unfamiliar with the web-based technologies to teach online. However, in order for the learning to be effective, some intrinsic training is essential whether it be internal or external. CMS has been probably the most rapidly growing and widespread innovation in Higher Education (Harrington, Gordon, & Schibik, 2004). The merger of Blackboard and WebCT, Inc and the acquisition of ANGEL Learning made Blackboard the world's leading CMS serving more than 5,800 K-12 schools, colleges and universities, government organizations and corporations worldwide (Blackboard.com, 2009). As of 2023, Blackboard serves over 20 million users across more than 80 countries, including K-12 schools, higher education institutions, and corporate organizations (Blackboard.com, 2023). It offers a suite of learning management, collaboration, and analytics tools to over 1,000 higher education institutions globally (Blackboard, 2023). Blackboard continues to expand its services with a focus on digital learning platforms and hybrid education solutions (Blackboard, 2023).

As the main goal is to provide quality while designing online education at least as well as any other type of education, it is impossible to disregard the importance of learning effectiveness. For this reason, planning ahead and designing the instruction meticulously becomes even more important in online environments. Thorough understanding of the online learning environment and how faculty can be supported to facilitate learning in a virtual setting is required to implement and sustain successful online programs (Siemens, 2007). Therefore, it is not intended to undervalue face-to-face learning;

however, extra emphasis, value and effort should be given to instructional design processes when courses are thought through CMS environments rather than face- to-face because of these tools' nature and use.

Instructional design principles for effective teaching and learning have been a point of interest for many researchers (Dick, Carey, & Carey, 2005; Ely, 2008; Gagné, Briggs, & Wager, 1992; Reiser & Dempsey, 2002). There is also a substantial amount of literature on how to effectively design, manage, and incorporate online learning systems into appropriate learning situations (Carr-Chellman, 2005; Clark & Mayer, 2003; Heinich, Molenda, & Russell, 1989; Khare & Lam, 2008; Koszalka & Ganesan, 2004; Murphy, 2003; Sherer & Shea, 2002; Tomei, 2006; Wallace, 2003; Webb, Jones, Barker, & Schaik, 2004). It is no surprise that the instructional design of online learning should point out and include student interaction within the process. Berge (1999) argued that interaction occurs only if it is "intentionally designed into the instruction program." He also suggested that the instruction should be designed to rely less on the instructors' expertise but more on the individual online learners' expectations and needs to take more responsibility on their learning and professional literature development. This suggestion coincides with other research discussing that the online learning is more effective when the learner is involved in the process (Bates & Poole, 2003). Kim and Bonk (2006) indicates the importance of providing learners with some choice over their learning. For these aspects to be incorporated into an online system, faculty members are expected to be aware of and knowledgeable regarding online instructional design and the online system in use.

Faculty readiness is a primary concern for many researchers who focus on improving faculty development efforts. One issue of interest in online learning and teaching with course management environments is faculty readiness for teaching CMS. As only some institutions provide instructional designers or course facilitators to support the main instructors of the online courses, the weight to ensure the dimensions of effective practices lies on the instructors' shoulders. The instructor s not only should apply instructional design principles and teach the content applying pedagogy, they should also use the specific technological interface competently enough to ensure student engagement and therefore student achievement and satisfaction.

Faculty readiness can be partly achieved by offering the faculty different types of faculty development and training opportunities via either the administration or technology support for the learning system in use. These training processes might range from an as-needed basis, to continual workshops, to one-time introductory sessions or even to ongoing technology support. With a potential to provide space and amenities for an as-needed and/or on-the-job training modules, it can be advised that the Course Management Systems and/or Learning Management Systems can provide an alternative to promote faculty readiness, therefore quality education.

1.2. Statement of the Problem

Over the last two decades, with the advances in technology and the increasing demand of anytime, anywhere learning, Course Management Systems (CMS) have become increasingly common as a way to have both synchronous and asynchronous interaction in online learning environments. According to the 2008 National Survey of Information Technology in U.S. Higher Education as a part of The Campus Computing Project, Blackboard remains the dominant online system employed by institutions by 56.8 of all responded (campuscomputing.net, 2008).

Learning Management Systems (LMS) is another online system that provides environment for online course activities. While Learning Management Systems has become a popular concept in educational discourse, its conceptual and definitive underpinnings remain vague fragmented. In addition, the fact that the education discourse was affected by the shutdowns during the COVID pandemic and the recent advances made in artificial intelligence and in technology overall, a clarification, revision and conceptualization of these terms is highly deserved in literature. This narrative paper reviews key contributions and definitions of both concepts. While providing reconceptualization based on educational theory the paper additionally proposes suggestions regarding the concepts and implications.

The fact that faculty readiness has a potential impact on the level of student learning and the vagueness in the definitions of both CMS and LMS, poses these questions:

1. How is CMS defined in the literature?
2. How is LMS defined in the literature?
3. What are the similarities between CMS and LMS as defined in the literature?
4. What are the differences between CMS and LMS as defined in the literature?
5. Is CMS, LMS or both conceptually appropriate for supporting faculty readiness?

2. Method

A narrative review with expert opinion combines a thematic or selective literature review with the author's interpretation, argument, or theoretical proposition. It does not follow a strict systematic protocol, allowing space for critical insight and subjective interpretation (Baumeister & Leary, 1997; Greenhalgh & Peacock, 2005; Grant & Booth, 2009.) According to Baumeister, R. F., & Leary, M. R. (1997), narrative reviews with interpretation can advance theory. Greenhalgh & Peacock (2005) justifies less rigid review methods for complex, emerging topics. Moreover Grant, M. J., & Booth, A. (2009) identifies "critical review" and "narrative review" as valid methods for blending literature and opinion.

A narrative literature review with expert opinion was conducted using Scopus, Web of Science, Google Scholar to identify key contributions to the conceptualization of Course Management Systems, Learning Management Systems, and Their Role Quality Education. Sources were chosen based on their relevance to the theoretical debates and practical implications. The search terms include "CMS", "LMS", "Course Management Systems", "Learning Management Systems", "*Online Distance Education", "CMS in Online Education", and "Faculty Readiness".* Inclusion criteria included relevance and theoretical importance; however, time frame was not limited to recent years due to the fact that these concepts' definitions and clarification on similarities and distinguishing factors was ranging within the last two decades.

3. Review of literature

Accelerating developments in educational technologies made learning at a distance even more convenient than a few decades before. With the help of the Internet and different modes to deliver course materials to learners, new systems in online education emerged. One of these systems is commonly named as Course Management Systems (CMS). As more and more higher education institutions adopted these technologies for their online education, faculty was faced with different issues while teaching these courses.

3.1. Online Distance Education

Over the last decade, educational tools and technologies have continued to improve exponentially in order to achieve an effective and engaging online learning environment. Many features have been added to existing online course management systems to enhance both synchronous and asynchronous learning processes. Moreover artificial intelligence and automation systems take on an important role in technology

advancements. Because of these improvements and the growing body of evidence regarding the effectiveness of these various systems for online learning, an increasing number of institutions have been adopting these systems for their educational programs for over 15 years. As a way to provide just-in-time learning anywhere and anytime, CMS have been utilized by many institutions that offer online and/or distance education courses. If designed, utilized and facilitated effectively, CMS has a potential to be very practical and valuable educational tools that uphold active and independent learning.

In order to achieve a meaningful and effective online learning environment, thorough design processes for CMS courses should be pursued, followed by attentive facilitation of the use of these systems (Bulger, Almeroth, Mayer, Chun, & Knight, 2007; Carliner, 2005; Dewiyanti, Brand-Gruwel, & Jochems, 2005; Harrington, Gordon, & Schibik, Winter 2004; Johnson, Spring 2004; Koszalka & Ganesan, 2004; McGee, Carmean, & Jafari, 2005). Unlike many institutions were forced to design their online instructions and *-their online systems for that matter-* hastily due to the abruptness of COVID pandemic, a meticulous instructional design process expanded to appropriate/needed time frames should be conducted. During this instructional design process, faculty support is crucial (IHEP, 2000).

3.2. CMS vs. LMS

Course Management Systems (CMS) have been the focus of broad research in higher education, with several studies concentrating on their role in content delivery and course administration. West, Waddoups, and Graham (2006) explored the faculty experience with CMS, emphasizing their practice for organizing materials, allocating assignments, and communicating with students, rather than directly augmenting/enhancing pedagogy. Harrington, Staffo, and Wright (2006) correspondingly highlight CMS's role in course management but also remind that while they restructure administrative tasks, they don't significantly improve teaching or learning outcomes. Britain's and Liber's (1999) framework for evaluating virtual learning environments makes a distinction that CMS are systems primarily for managing course content and communication, lacking the deeper pedagogical engagement seen in Learning Management Systems (LMS). Browne, Jenkins, and Walker (2006) provided a longitudinal perspective on how CMS, originally focused on course delivery, have evolved in higher education, often giving way to more complex LMS that support learner tracking and interaction. Graham (2006) contrastingly state CMS's role in **content delivery** and course logistics with the broader scope of LMS, which facilitate more interactive and personalized learning experiences. Pappano (2012) explored how CMS are used in the context of MOOCs, noting their focus on **content delivery** without significant learner engagement or adaptive learning features. Lastly, Bates (2015) discussed the importance of CMS in managing online courses while arguing that such systems need to be complemented by different various tools to enhance

overall teaching and learning experiences. These studies express CMS as critical for managing crucial administrative aspects of online courses, but they fall short in promoting deep learning or interaction compared to LMS.

The two terms, Learning Management Systems (LMS) and Course Management Systems (CMS) have been mistakenly used interchangeably. While CMS provide the environment for course delivery, interaction, assessment and grading, LMS are more of management system providing student registry and data for the institution. Schlosser & Simonson (2006, P.58) define CMS as "An Internet space software application that can be used for managing and distributing online resources and web-based courses." CMS features include but are not limited to: "enrollment management, student tracking, threaded discussion, chat, internal email, file distribution, students' webpage creation" (Schlosser & Simonson, 2006, p. 58). On the other hand, again according to (Schlosser & Simonson, 2006, p. 98), LMS is defined as "an application/interface that provides authenticated logins, online resources, communications, tests, shared files, and database services to facilitate an online class." Desired features of both LMS and CMS are summarized by (Jafari, McGee, & Carmean, 2006) as the areas of smart systems, environment, archives and storage, multimodal/multimedia communication channels, collaboration tools, and mobile computing. This argument assumes these terms can be used interchangeably.

Although the two terms, CMS and LMS, still are being mistakenly used interchangeably for over 15 years, there is a significant distinction between CMS and LMS. While the former is used for both synchronous and asynchronous online learning, and acts as a system to "create, store, assemble and deliver personalized e-learning contents in the form of learning objects" (Oakes, 2002), the latter gives more management opportunities for the organization, such as student registry and data; and provides an embedded environment for content delivery and interaction. In other words, "LMS provides the rules" (Connely, 2001) and the environment whereas CMS provides the learning environment, activities, and content which differentiates one type of system from the other.

Moreover, there is further literature conceptualizing Learning Management Systems (LMS), distinguishing them from Course Management Systems (CMS) (Watson & Watson, 2007; Ally, 2004; Garrison & Vaughan, 2008; Pappano, 2012; Ellis, 2009.) Watson & Watson (2007) clarifies the distinctions between Learning Management Systems (LMS) and Course Management Systems (CMS), arguing that LMS focus on facilitating the overall learning experience while CMS tend to be more focused on course delivery and content management. In line with Watson & Watson (2007), Ally (2004) explores the broader educational context of online learning environments, offering a foundational view of how LMS are designed to support the overall learning process, including tracking, communication, and resource management. On the other hand,

Garrison & Vaughan (2008) conceptualizes LMS as integral tools in blended learning environments, which combine online and face-to-face learning, emphasizing their role in fostering interaction, feedback, and self-paced learning. Pappano (2012) discusses the role of LMS in the evolution of Massive Open Online Courses (MOOCs), highlighting how these systems extend learning beyond traditional course structures and enhance accessibility for learners worldwide. In *Field Guide to Learning Management Systems,* Ellis, R. K. (2009) explores into the concept of LMS in the corporate and educational sectors, concentrating on their role in providing e-learning solutions, managing content, and tracking learner progress across several contexts. These references offer a broader conceptualization of LMS beyond course-centric views, emphasizing their role in online and blended learning environments, learner engagement, and highlighting educational management.

4. Discussion and Final Remarks

In conclusion, it should be argued that key conceptual distinctions based on the discussed literature suggests that the CMS focuses on *course logistics* i.e. syllabus, readings, quizzes, email, and grade book, whereas LMS encompasses *learner tracking*, *pedagogical analytics*, adaptive learning, and broader institutional integration. Finally, it is advised for institutions to adapt a comprehensive version of LMS, meticulously conduct instructional design processes while incorporating faculty training modules for/into LMS and provide ongoing support for both technical and instructional aspects of the system. Promoting and supporting faculty readiness in this systematic and dedicated manner on an institutional level will have a potential to immensely contribute students to become actively and cognitively more engaged, academic more successful and thus support quality education. More review and empirical research is needed in light of the recent developments regarding technological advances in education especially the use of adaptive technologies and artificial intelligence in LMS course modules.

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