

LMS as Collection of Collaboration Tools

Jay R. Fude

Missouri Western University

Abstract

Learning management systems (LMS) are used in many primary and secondary schools, but are they truly a collaborative tool, and do they create a social space for effective collaboration? This paper will trace the history and lineage of the LMS, and show that LMS are proper collaborative tools, created from a collection of tools. These tools may be helpful in the scope that tools similar to these are being used to create social spaces for collaboration in the corporate sphere.

Keywords: Learning Management Systems, Collaboration, Missouri Western University, Canvas, Moodle, Virtual Classroom, History of computer aided collaborative space

The Learning Management System:
Creating Collaborative Social Space in the Classroom

Learning Management systems are nearly ubiquitous in our modern classroom environments. Blackboard alone services 16,000 clients in 90 countries, reaching 100,000,000 users, (Blackboard 2018) and it is just one of many such systems. Here at Missouri Western University, we utilize Canvas, which is a recent switch from another software suite, Moodle. Many such suites exist, serving all sectors of education, from K-12, Community Colleges, Universities, both major and minor, and enabling distance learning via schools that function completely online. How did these tools come to pass, and how do they create a social space for collaboration? Why are they poised to be game-changers in the educational arena? What are potential pitfalls and benefits of these spaces.

Taxonomy:

As this is a discourse on and within the relatively new and rapidly evolving cyberspace learning universe, I will first provide a taxonomy, to ensure that any natural changes in terminology or native drifting of the fluid environment of cyberspace can be ameliorated by knowing what the terms are as I intend to use them in this discourse. For the purposes of this discourse, I intend that Learning Management System (LMS) be understood to exist as a platform for classrooms to have a specified, organized virtual space to hold discourse outside of the physical confines of a classroom. This space may include features common to many other virtual spaces, but are tailored specifically for educational needs. It will by nature include areas for interaction between students and instructors, but may also include space for student to student interaction in many forms, one to many, one to one, many to one etc. LMS will also have

separation between classes, and will also needs must offer tools to the instructor to moderate these spaces, both for content, and to maintain some semblance of order and structure to the virtual environments so created.

A similar structured environment exists outside of the educational sphere, and this is the Content Management System (CMS). Many users of LMS will recognize features within the CMS. CMS may have areas that are siloed much like a classroom within the LMS, with similar structures and granularity. Both systems are limited by current technologies and methods of creating virtual environments. Both LMS and CMS exist as Content Management Framework (CMF). The CMF defines how the systems work, and how they allow for collaborative space within the structure of the CMF. Many of these tools can be loosely grouped in the larger category of Computer-Mediated Communication(CMC). According to Amado Cordova et al., “Computer-Mediated communication consists of a variety of technologies and techniques that do not involve real-time audio or visual communication; data conferencing is another term sometimes used for this category. Online discussion boards, chat rooms, and email are all considered forms of computer-mediated communication.” (Cordova et al. 2013). A LMS may include a variety of tools, including tools that are evolving currently. Thus, when researching LMS tools for efficacy, we can include many tools that fall under the CMC umbrella as relevant, as they include the same toolset and functions, again, from Cordova “through these technologies, distant team members can now work together more closely than ever before. All these technologies could be considered for future developments.” (Cordova et al. 2013). As technologies advance, adapt, and evolve, many that are found to be useful have been integrated within the LMS.

History of communication spaces:

Our most primitive communication abilities remained unchanged for most of human history. Oral traditions were our only form of collaboration for millenia. Writing expanded our ability to time-shift, that is we were able to create discourse that was not subject to all parties being in the same space at the same time. This was the only opening in the social space until very recently.

With the advent of the computer, the first new collaborative spaces were created. Early bulletin board systems (BBS) had the ability to create shared narratives with any other person that had access to that BBS and its particular toolchains. These narratives were often used to create vast works of fiction, but occasionally were used to spread information, ideas, and expand upon the abilities of the space itself. People that had their formative years within these systems became known as digital natives. These natives began using the tools of the nascent internet, namely text based tools such as Internet Relay Chat (IRC). Modern use of IRC continues to this day. “Chat is routinely used to exchange information in real time between intelligence personnel located at different sites around the world” (Cordova et al. 2013). Real time text based chat is a tool in LMS, but more often is a discussion board style text based conversation reminiscent of the first BBS messaging boards. Inside the LMS environment, chat’s major benefit is that it allows for real time communication, rapid response to either query or comment. As Cordova explains, “Chat allows for real-time communication and almost-immediate feedback.” (Cordova et. al. 2013). However, chat does have disadvantages as well. Again, Cordova points out that “according to media-richness theory, a text-based communication tool, such as chat, is considered a less-rich medium of communication, given that it lacks the visual and auditory cues

found in face-to-face interactions.” (Cordova et. al. 2013). The other problem with chat was that it was real-time, and therefore scheduling needs must occur, even for communication that did not have immediate needs, and personnel had to be monitoring the chat interface for any messages that would potentially come in, or they would not be seen, nor responded to. Using the IRC functions, these new systems could allow for two way, real-time conversations with a large “room” of people that were physically separated. New conventions, new norms of communication rapidly evolved. A separate system for messages of a less immediate nature was created in the form of eMail.

Electronic Mail (eMail) systems allowed for time-shifted messages. Persistent messaging that did not require immediate response, but did allow for speedy transfer of messages, had almost no cost to send and receive, and could route around potential network issues, both physical and virtual. The drawbacks of non face-to-face communication still held true, and the messaging would not happen in real time. Furthermore in the default form, eMail is sent over the internet unencrypted, requiring extra steps to encrypt/decrypt messages of a sensitive nature.

Early internet eMail, which unlike the BBS mail systems, had a global reach, and were not limited to the more local send and receive of the BBS. Also rising from the creation of the internet was the creation of one-to-many tools, such as corporate and education web pages, personal web pages and special interest websites. These early systems did not allow for discourse or communities that went beyond the wall of us/them systems, much like other mass media of the day. There were tools for personal spaces to be created, such as Geocities pages or ~name sites on smaller Internet Service Provider (ISP) web servers. It was not until the rise of the Platform that there was hope for more democratization of the internet. Indeed, Andrew Shapiro,

in 1999 reported his worries that the internet of the time was not inherently democratizing, saying “these features are shaped by malleable computer code and subject to alteration, often in ways that may not be obvious to nontechnies [sic].” (Shapiro 1999). He also though points out “...its nonproprietary nature--no one owns the technical protocols that make the Net work-- suggests a degree of openness and public purpose.” (Shapiro 1999). His words were printed near the time that the first CMS and LMS were being created. The first CMS were created in the early 2000’s Drupal in 2000, Wordpress in 2003 and Joomla in 2005. Using many of the same design features, but tailored for education, Blackboard first launched in 1997, followed by Moodle in 2002, and more recently, Google Classroom launched in 2014. Embedded in these tools, the early BBS style of discussion boards, early chat functions from IRC, and eMail functions all were containerized and siloed to create the CMS/LMS.

In the LMS environment, often virtual spaces are created to mimic the physical space. Users are separated into instructors and students, with the instructor having administrative control over their virtual classroom. Discussions and assignments can be one-way affairs, with the instructor creating an assignment, and students uploading the requested assignment, or creating the assignment completely within the LMS environment. Discussion groups can be created over the class as a whole, broken into separate assignments or topics, or other topologies as allowed by the LMS toolset. These toolsets are created from the older tools available, different configurations of the BBS style discussion boards, eMail clients, chat and others. However, new tools are available that allow for document creation. With all of these tools, the same issues still exist that may limit the quality of the created virtual environments, and these environments’ output. Namely

Perhaps the most significant impact computer-mediated communication has on team functioning is its effect on the clarity of communication. Because of the absence of verbal and auditory cues, team members are less able to detect if someone agrees or disagrees with a statement or misunderstands a statement. Similarly, the lack of collocation of teammates and the absence of direct, frequent interactions between them can result in a lack of common understanding or mutual knowledge. (Cordova et. al. 2013)

This would seem to indicate that the need for face-to-face interaction to facilitate mutual knowledge and foster better interaction within a group or class would require that the LMS not be a stand-alone classroom environment, but a toolset used to foster and enhance the classroom's environment.

Another danger inherent in the LMS environment, derived from the lack of face-to-face communication, is that there can be a rise in errors in a group's decisions. A finding by Lynne Walnfan and Paul k. Davis, in their 2004 book "Challenges in Virtual Collaboration" reported that "Several experimental studies have shown that CMC has a tendency to make group decisions riskier, or more extreme than FTF does." and furthermore that "CMC participants most likely do not perceive their decisions to be riskier, making this effect invisible." (Walnfan, L., & Davis, P. 2004). This may be caused by a phenomenon coined as groupthink. Groupthink occurs when excessive concurrence-seeking overrides group members' motivation to realistically appraise alternative courses of action." (Walnfan, L., & Davis, P. 2004). They provide a table, showing the potential effect a CMC, such as an LMS may have on factors contributing to

Groupthink, which is included as figure 1. These factors must be taken into account, and the effects mitigated by the instructor, mainly because a “perceived need for strong leadership could be exacerbated by CMC’s less central and stable leadership structure” (Walnfan, L., & Davis, P. 2004).

All is not dire, there are obvious benefits to using a LMS environment, if it is an extension of regular FTF encounters. Justin W. Timbie et al, while exploring the National Patient-Centered Clinical Research Network (PCORnet) did examine this tool closely, and its use in developing a culture of collaboration. In some of their early phase of research, they discovered “Although it was not clear from respondent’s descriptions whether or not this work was making use of PCORnet infrastructure, it seems that newly formed relationships and recognition of the potential value in collaborating were spurring ideas for ongoing research partnerships.” (Timbie et. al. 2015). Furthermore “These types of collaborations allowed networks to learn from peers, and through discussion of common goals, work through ideas about goals, vision, and road maps for their individual networks.” (Timbie et. al. 2015).

One of the dangers of a CMS/CMC/LMS is that the toolset is created, implemented, and then not used. Timbie et. al. found that there could be obstacles to early peer learning and informal collaboration if the spaces were set up, then assumed that the collaborations would happen naturally. Guidance and care must be taken, or the toolset will remain unused, and its potential to foster collaboration will remain unutilized. Therefore instructors must be facilitators of this collaboration.

Sharing and editing peer documents are prime tools within the LMS environment. Honest feedback, without rancor should be fostered by the instructor/facilitator. Group discussions can

help to reinforce ideas taught in the classroom environment. When studying collaboration and cognition, Suparna Rajaram found that collaboration can help memory, as “group members are re-exposed to information others recall during collaboration that they had themselves forgotten.” (Rajaram 2011). Also the collaborative effort can aid in pruning errors in memory and recall. These types of efforts are where the use of the LMS environment can aid in extending the classroom environment.

It is clear that these environments, all created upon the backbone of now decades old tools are reconfigured and marketed for specific purposes, but at their core, the CMS used in the workplace is related to the LMS used in the classroom. Both of these are CMC tools, and there is a clear trend to increased worldwide usage of CMC tools in both of these environments. Leveraging their benefits to collaboration is the challenge of the modern Technical Communicator. The tasks and challenges inherent in the non FTF, virtual environments are hurdles that if overcame, will allow the widespread collaboration on projects, documents, software, distributed networks of all manor to be made possible. The basic tools underpinning the creation of the early internet, are still the tools that are embedded within the LMS environments that schools around the country are using. The addition of actual document creation tools, such as Google Docs, shows the versatility and longevity of these tools. Overcoming their deficits, leveraging their potentialities will be necessary skills for the foreseeable future.

Appendix:

Figure 1:

Table 3.1
Factors Contributing to Groupthink and Our Speculation on CMC Effects

Factor Contributing to Groupthink ^a	Potential CMC Effect
External pressures/threats to groups, notably conflict with other groups	Possibly exacerbated; biases against out-groups seen in CMC, along with fundamental attribution error and sinister-attribution bias
In-group's effectiveness in countering threats from out-groups	Possibly exacerbated; since CMC group cohesiveness is lower and out-groups are attributed less generously, this could be problematic
Increased group cohesiveness	Mitigated by CMC
Threats to self-esteem of decisionmakers; insecurity	Exacerbated by leader's relative discomfort with CMC and reduced influence
Perceived need for strong leadership	Possibly exacerbated by CMC's suppression of leadership emergence and less-stable leadership structure
Deindividuation tendencies	Exacerbated; CMC now used to manipulate deindividuation experimentally
Small group as decision unit	Not affected
Lack of established decisionmaking procedures	Exacerbated by CMC's more-frequent first-proposal offers, less-stable leadership structure, and intransigent, uninhibited behavior; group support software (GSS) may help.
Tendencies toward anticipatory compliance with leader's or high-status members' opinions/suggestions	Mitigated by CMC
Strong tendency for concurrence-seeking	Mitigated; concurrence-seeking not as high in CMC
Premature closure	Exacerbated; consensus takes longer; more angry, sanctioning statements and early proposals, and premature closure seen with group support software
Increased tendency to adopt high-risk alternatives	Exacerbated; choice shift toward extreme or risky options seen in CMC

NOTE: Shading of cells from light to dark indicates increasing likelihood of being exacerbated by CMC; unshaded cells indicate no effect.

^aIdentified in 't Hart, 1994.

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