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Learning Management Systems and Principles of Good Teaching: Instructor and Student Perspectives

Systèmes de gestion de l'apprentissage et principes d'un bon enseignement: Perspectives de l'enseignant et de l'étudiant

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Abstract

The blended learning environment in university courses integrates teaching technologies in traditional (i.e. non-technological) learning contexts, most evidently through the adoption of a Learning Management System (LMS). Past studies on the use of LMSs have focused on the economic and technical challenges in LMS adoption (West et al., 2006; Morgan, 2003). Drawing from students' perceived value of an LMS, Kruger (2012) used a quantitative method to examine the link between an LMS and its impact on learning processes and performances. Yet, a minority of studies view LMSs from a theoretical lens, that is, to specifically explore how LMSs function as pedagogical tool to support teaching and learning. By referencing Chickering and Gamson's (1987) *Seven Principles of Good Practice in Undergraduate Education*, this study will highlight areas in which LMS supports and/or hinders "good" teaching and learning. Instructors' and students' perceptions of LMS around these seven principles were examined through in-depth interviews and focus groups, consisting of fieldwork conducted with seven leading instructors and three groups of undergraduate students. They broadly represent all faculties at McMaster University. Preliminary findings suggest that LMSs are particularly useful administratively but are perceived by students and instructors as a poor substitute to classroom teaching. Results further suggest students were most engaged in the learning process when instructors communicated their interests and passion in teaching through classroom environments that were then reflected in the on-line components of a university course.

Résumé

L'enseignement hybride dans les cours universitaires intègre des technologies d'enseignement en contextes d'apprentissage traditionnels (c'est-à-dire sans technologie), essentiellement par l'adoption d'un système de gestion de l'apprentissage (SGA). Des études antérieures sur

l'utilisation des SGA ont examiné les défis économiques et techniques liés à l'adoption de SGA (West et al, 2006; Morgan, 2003). S'appuyant sur la valeur subjective que les étudiants accordent au SGA, Kruger (2012) a utilisé une méthode quantitative pour examiner le lien entre un SGA et son impact sur les processus et les performances d'apprentissage. Seule une minorité d'études examinent les SGA dans une perspective théorique, c'est-à-dire explorent spécifiquement comment les SGA fonctionnent en tant qu'outil pédagogique facilitant l'enseignement et l'apprentissage. En se fondant sur les sept principes d'une bonne pratique en enseignement de premier cycle de Chickering et de Gamson (1987), cette étude met en évidence les domaines dans lesquels un SGA favorise ou entrave le «bon» enseignement et l'apprentissage. Les impressions suscitées chez les instructeurs et les étudiants par le SGA quant à ces sept principes ont été étudiées lors d'entretiens approfondis et de discussions de groupes témoins. Cette recherche de terrain a inclus des entretiens avec sept instructeurs éminents et trois groupes d'étudiants de premier cycle, représentatifs de l'ensemble des facultés de l'Université McMaster. Les résultats préliminaires suggèrent que les SGA sont particulièrement utiles d'un point de vue administratif, mais sont perçus, tant par les étudiants que par les enseignants, comme un piètre substitut à l'enseignement en classe. Les résultats suggèrent en outre que les étudiants étaient plus engagés dans le processus d'apprentissage lorsque les instructeurs communiquaient leurs intérêts et leur passion pour l'enseignement lors des séances en classe, puis les reflétaient dans les composantes du cours en ligne.

Introduction

Education is often viewed as the cornerstone of society – and often branded as such within major policy documents. Governments in Canada and elsewhere struggling with limited public funds are often quick to consider deploying technology to deliver more education services to larger numbers of students. The Government of Ontario in June 2012, through its Ministry of Training, Colleges and Universities (MTCU), released a major policy discussion paper entitled *Strengthening Ontario's Centres of Creativity, Innovation and Knowledge* placing on-line learning at a post-secondary level as one of its central considerations:

> More widespread use of technology-enabled learning has the potential to increase access for all learners…Innovative applications of emerging technologies not only offer flexibility in time and place of delivery, but also could support improvements to the teaching and learning process. (p.19)

Despite that, there is an underlying concern about how successfully technologies could be integrated into the learning and teaching process (Ministry of Training, Colleges & Universities, 2012, p. 19). As universities straddle traditional in-class and emerging online modes of delivering material, instructors and students are prompted to rethink ways of teaching and learning. As educators we must ask: how much has technology altered the notion of knowledge and the relationship between learners and teachers? What are the pressures and challenges that instructors and students encounter in adapting to hybrid ways of learning? What aspects of various in-class/on-line mixes create a better learning environment? What technologies and techniques are actually good value in furthering the goals of post-secondary education?

This study looks at the perceived values of a Learning Management System (LMS) and its perceived impact on the quality of teaching and learning in a comprehensive mid-sized Canadian

postsecondary education (PSE) institution, McMaster University in Hamilton, Ontario. To understand an LMS' value within blended university teaching, a qualitative approach was deployed, through in-depth interviews and focus groups. Instructor and student perceptions of LMS relative to the larger educational experience was explored from both teacher and learner perspectives. As learning and teaching are to a large extent, a personal experience, we wanted to capture the themes that were important to instructors and students, based on their actual experiences of using LMSs. Hence, this qualitative approach aligns well with our research goals, which seek to bring meaning to their educational experiences rather than produce generalizable and quantifiable results across different institutions.

The paper will first draw on the guiding principles of good teaching, Chickering and Gamson's (1987) *Seven Principles of Good Practices in Undergraduate Education*, in addition to the literature on learning technologies as they were deployed over the past 15-20 years. Next, we will examine perspectives of learning and teaching of McMaster University students and instructors in hybrid/blended learning environments. Their perceptions are organized to areas showing positive, negative, and mixed reactions to the application of an LMS in current second to fourth year undergraduate level courses across a range of disciplines.

Literature Review

Good teaching: Guiding principles

It must first be acknowledged that within the literature there is no single view of "good teaching"; this is of little surprise given the wide range of disciplines, cultures, and contexts in which teaching is studied. University teaching is also complex, encompassing wide-ranging modes of instructions (lectures, tutorials, labs, seminars, etc.) with varying teaching styles and educational objectives. Nonetheless, there are a small number of seminal studies on good teaching that are worth examining as useful frameworks for this study. One of these is Chickering and Gamson's (1987) *Seven Principles for Good Practices in Undergraduate Education.* These seven principles can be summarized as follows:

> *1) Good teaching encourages contact between students and faculty:* Frequent faculty-student contact in and out of classroom environments is necessary to motivate students to remain engaged in the learning process. These interactions function as support systems for students to enhance intellectual commitment and encourage course participation.
>
> *2) Good teaching develops reciprocity and cooperation among students:* Student learning is greatly enhanced through collaboration. As good learning is cooperative rather than competitive, it is necessary for students to share ideas and work together to deepen their own understanding of the subject matter. Communication and collaboration between students is as important as student interaction with faculty.
>
> *3) Good teaching encourages active learning:* Learning is not a passive experience. Students must discuss, reflect on what is being taught, and apply them to their own observations. Active learning is engagement rather than mere spectatorship.

> *4) Good teaching gives prompt feedback:* Timely and adequate feedback on individual performance allows students to gauge and assess their academic performance at various points throughout the course of the term, with opportunities to incorporate suggestions for improvement.
>
> *5) Good teaching emphasizes time on task:* Time spent on course-related tasks should also be used *efficiently*. Teaching includes realistic amounts of time on meaningful tasks to encourage learning and faculty-student interaction.
>
> *6) Good teaching communicates high expectations:* As a self-fulfilling prophecy, instructors' high expectations motivate students to perform well. By communicating such expectations explicitly, students are compelled to make effort in learning.
>
> *7) Good teaching respects diverse talents and ways of learning:* With different learning styles, there should be a variety of opportunities for students to showcase their talents, while being introduced to other modes of learning (Chickering & Gamson, 1987, p. 3-5).

When combined, the *Seven Principles* can create rich and rewarding learning environments for students and institutions with diverse backgrounds. The *Seven Principles* are less about what is taught; rather they are about *how* content is presented, delivered and then received by students (Chickering & Gamson, 1987). They highlight the importance of activity, interaction, cooperation, diversity, expectations, and responsibility in enhancing undergraduate education (Chickering & Gamson, 1987).

The way in which knowledge is shared, usually from the teacher to the student, is central to the overall quality of education, particularly with online-mediated communication. While Chickering and Gamson (1987) point out the essential practices for good teaching to take place, they did not discuss how technology would facilitate that process. For Erhmann (2002), technological investments contribute little to improved educational outcomes if institutions focus on the novelty of the technology itself, rather than thinking of long-term educational goals and strategies. Thus, if good teaching and learning largely depends on the method of delivering information, it is necessary to probe how LMSs – as used by students and instructors – influences the pedagogical goals of teaching and learning.

LMS: A systemic management of learning

The adoption and growth in LMSs at universities in recent years has been nothing less than explosive, particularly in the United States with extreme financial pressures on public and private funding sources. A recent study by Smith and Caruso (2010), surveying 100 four-year U.S. institutions and 27 U.S. and Canadian two-year institutions, reported more than 90% of the responding institutions confirmed using at least one commercial, homegrown, or open-source LMS (p. 9).

An LMS is a means to design, deliver and build online learning environments for a course. Though features of each LMS vary slightly depending on the vendor (Blackboard, Desire2Learn, Moodle, etc.), they typically offer tools for course administration and pedagogical functions. Coates et al. (2005) outline several key features of LMSs:

- Communication between faculty-student and/or student-student either asynchronously or synchronously (emails, live chat, discussion forums);
- Content development and delivery (lecture notes, supplementary readings);
- Formative and summative assessment (submissions, online quizzes, feedback on grades);
- Class and user management (registration, enrolling, displaying timetable) (p. 20-21)

The benefits and limitations of LMS, including its implications on teaching and learning must be scrutinized in their actual deployment in real teaching and learning situations. Chickering and Erhmann (1996) assert that IT investments *alone* do not improve learning outcomes since education evolves slowly while technology changes quickly. Drawing on the earlier work on the *Seven Principles* and applying it to early LMS approaches, they counter that it is misleading to assume that *just any* technology could support *any* instructional strategy (Chickering & Erhmann, 1996).

If technology is not a panacea for incompetent teaching or low student engagement, how does an LMS fare as an educational tool? Lane (2009) argues that there are "inherent pedagogies" of LMSs that could not be determined simply by mere application of technology (p. 2). While an LMS may be originally created to improve academic performance, such as the case of Canadian-origin WebCT, its implementation in learning environments may counter the initial goal of enhancing teaching and learning. The built-in pedagogy of many LMSs tends to focus on "traditional" modes of instruction dating from the 19th century and in particular, presentation and assessment (Lane, 2009). The default options for a LMS (announcements, course content, discussions), is guided by the need for information delivery rather than educational reasons, which may discourage instructor from creative pedagogy and may in fact be counterintuitive to dynamic ways of teaching and learning (Lane, 2009). Instead of helping instructors translate their own teaching styles into online environments, LMSs could end up *dictating* how instructors teach.

Coates, James, & Baldwin (2005) raise a similar concern, pointing out that earlier LMS studies tended to focus on the economic and technical issues of LMS usage and implementation. As a result, there is a "shallow understanding" of how LMS usage affects the relationship between instructors, knowledge and students (p. 26). They are also critical of the "textual nature" of the Internet, including LMSs; it reduces the act of teaching into transmission of discrete information online (p. 27). They see it as a continued limitation of all Internet applications as it reduces the act of teaching into transmission of discrete information portions online (p. 27). The general use of an LMS as an information-transfer system, rather than a learning tool, mirrors Siemens' (2006) criticism of many universities' misplaced value on management and control tools in selecting LMS vendors (e.g. ease of use, functionality, range of tools available, and cost). Siemens cites the case of the California State University's 2005 LMS selection review, pointing out a noticeable absence in learner/faculty concerns when deciding which LMS to adopt. Instead, the verdict depended upon the ease of migration of course content, training and support needed, and the vendors' past performance (Siemens, 2006).

To understand how LMSs can be utilized to create and enhance learning environments, Carmean and Haefner (2002) developed a set of criteria necessary for "deeper learning" – engaged

learning will result in a stronger understanding of material and content. They argue that an LMS has to be:

- *Social:* Providing a rich set of tools that would enable social learning, allowing asynchronous and synchronous communication amongst its users;
- *Active:* Allowing for interactive assessment modules that would result in quick and meaningful feedback;
- *Contextual:* Having the capacity to cultivate contextual learning, where instructors could incorporate links to external resources, use multimedia in LMS and allows students to share information online;
- *Engaging:* Accommodating diverse learning styles to increase student engagement;
- *Student-owned:* Accessible anywhere and anytime to focus on content, discussion, reading, reflecting and learning. (p. 29)

Thus, the principles for good teaching in a LMS environment, identified by Carmean and Haefner (2002), closely reflect those identified by Chickering and Gamson fifteen years earlier (1987). Both studies highlighted the importance of interaction and collaboration in the learning experience. However, when it comes to *implementing* these practices (or attempts to do so), teaching and learning become more complex due to the relationship between the users, the technology and knowledge itself. (Morgan, 2003, p. 88; Coates et al., 2005, p. 27)

To date, most studies exploring instructors' perceptions and experiences of LMSs shed light on the perceived challenges in adopting and integrating LMS into courses. In particular, instructors are frustrated by the sheer amount of time needed to ensure that the LMS is reliable and efficient (Morgan, 2003 p. 47-48; West, Waddoups, & Graham, 2006, p. 15). Much time is devoted to setting up the course on the LMS, organizing material, and uploading material online. Yet, instructors also acknowledge how LMS could potentially save them time *after* the initial investment to set up the course (West et al., 2006). Bair and Bair (2011) concur that technology could reduce time spent on certain types of work (e.g. collecting and returning assignments electronically) but also demands more effort in order to provide feedback to students' written submissions, e.g. having to download, insert comments, track changes and then, upload papers online (p. 10). Such menial yet consequential tasks could impede and detract instructors from imparting knowledge and doing actual teaching in the course.

A study by Morgan (2003) is relatively rare in actually identifying four pedagogical reasons for using LMS: supplementing course material, increasing faculty-student and student-student communication, providing feedback to students and increasing the course's transparency (p. 63). However, Morgan also points out some contradictions behind these reasons. For example, although instructors believe that posting course material online and in advance of lecture would increase student learning, they also remain skeptical about how well LMS respects diverse ways of learning, as it restricts learning to a specific set of technologically oriented "standards" (p. 64-65). This speaks to a fundamental misconception built into much of LMS (and a range of course delivery approaches), that learning will simply happen if students are exposed to content (Siemens, 2004).

Of the many integration challenges identified, effective use of discussion/collaboration features to maximize student learning – without having to invest a large amount of time – are perhaps

both the greatest possibility for LMSs but also the area in which difficulties are commonly cited by instructors (West et al., 2006, p. 17). Instructors are uncertain and apprehensive about facilitating interaction online, as many are more familiar with face-to-face teaching. They become unsure whether their way of using LMSs are effective or not (West et al., 2006, p. 18).

The challenge of integrating LMS into teaching and learning highlights the complexities involved in blended-learning environments. Incorporating blended learning requires a more holistic understanding of how diverse modes of teaching coexist – whether on-line or in class – to guide, enhance and support student learning. Hence, the challenge lies not within the technology itself, but in rethinking course design and developing a sense of fluidity in teaching and learning *with* technology (Bair & Bair, 2011, p. 12). By building on principles of good teaching and drawing on users' (students and instructors) experiences in hybrid ways of learning, one can rethink how LMSs fit within the learning environment.

Studies of students' LMS experiences have reported mixed findings on the benefits, satisfaction and the learning outcomes from the use of LMS. In a study comparing online with face-to-face learning, Paechter and Maier (2010) found that online access to learning material and course information allows for self-regulated learning – the opportunity to learn and absorb material independently. Similarly, Caruso (2006) reported that increased flexibility and accessibility of LMSs would permit students to study with course materials available according to their schedule, what students perceived to be a plus for having an LMS (p. 4). However, without any interactive material in an LMS that would allow for application of knowledge, students prefer face-to-face learning to acquire conceptual and methodological knowledge (Paechter & Maier, 2010). Hence, despite its ease of accessing information, the value of an LMS is, at most, demonstrated in its ability to meet administrative demands of universities and for increasing access to grades. This translates to limited and conflicting information on the learning benefits of using LMS.

A self-reported web-based quantitative survey to track student use of LMS features revealed that students used the syllabus more than any other LMS feature, followed by access to readings/lecture material and keeping track of grades (Kvavik & Caruso, 2005, p. 3). While the findings shed light on the most frequently accessed LMS features, they did not demonstrate whether they translated to enhanced learning. In fact, student use of online discussion boards emerged as one of the lowest in ranking among other LMS features. In a longitudinal study that explores student perceptions of LMS features, Alexander and Golja (2007) found that students view access to course material, announcements, and grades as highly valuable compared to other features less relevant to the course (external links and resources, accessible discussion boards). Since the interactive features of LMS are generally less popular and used by students, it further suggests that the potential of LMSs as wholly integrated learning platform are yet to be fully explored (Caruso, 2006).

Research Questions and Methodology

This study attempts to explore the connection between students' and instructors' perception of an LMS and its ability to meet the guiding principles of good teaching. While there are a limited number of studies that sought to determine how students utilize and perceive LMSs (Alexander & Golja, 2007; Gabriel, Campbell, Weibe, MacDonald & McAuley, 2012; Kvavik & Caruso, 2005) and LMS adoption amongst instructors (West et al., 2006), few have revisited the very principles of good teaching and relate them to LMS usage. How relevant are those guiding

principles, identified well before LMSs gained a strong hold within universities in today's hybrid and online learning environment that combines co-present (face-to-face) interactions and technologically, mediated interactions among students, instructors and learning resources? How much do LMSs transform the very experience of university education among students and faculty?

We therefore pose three research questions:

1) In what way are LMSs used pedagogically to enhance teaching and subsequently, student learning?
2) What are the values and expectations of having LMSs in university courses, as perceived by students and instructors?
3) How do students and teachers perceive the coexistence of traditional teaching approaches and the use of LMSs to facilitate good teaching?

To answer these questions, in-depth interviews with instructors and focus groups with students were chosen as methodological instruments. The nature of qualitative research, underpinned as it is by an interpretivist epistemology, is appropriate to this study insofar as it seeks to understand the teaching and learning experience around LMS from the vantage point of the experiences and perspectives of the instructors and students involved (Bryman & Teevan, 2005, p.153). As a result, the focus of this study is not on generalizations, but rather as a case study to capture the rich experiences of research participants. Acknowledging that the question of effective teaching is complex, the understanding of the use of LMSs, in relation to teaching and learning, will be enriched through qualitative analysis. The nuances of each participant's reactions and responses will translate meaningfully through face-to-face research interaction.

In Summer 2011, seven in-depth interviews with instructors were conducted, with a follow-up set of three student focus groups (60-75 minutes each with 4-6 students per group). Through McMaster University's Centre for Leadership in Learning, instructors were selected on the basis of their identification as "leading teachers" who utilized varying levels of LMSs in their instruction and are recognized for their teaching excellence and/or commitment towards pedagogical research. Instructors were selected across different academic backgrounds (Sciences, Social Sciences, and Humanities).

Students were selected based on convenience sampling, which allowed for greater accessibility to the population. Drawing from a popular student-run online forum, initial contact was made among students taking a smaller offering of Summer semester courses. Student participants were recruited from various disciplines (Sciences, Social Sciences, Humanities and Commerce) and representing different levels in their undergraduate program (second, third and fourth year – first year students can not take the Summer course offerings). This mix of students would result in more dynamic discussions of an LMS usage, consequently reflecting the diverse experiences that students had and without narrowing the LMSs role in specific courses or disciplines. The courses discussed were hybrid courses, with a mix of online and offline instruction. All students and instructors interviewed had utilized some form of LMS in their university experience (including Desire2Learn, Blackboard, WebCT or Moodle).

Both the interviews and focus groups were exploratory in nature. The interviews were considered to be personal and reflective, as the questions posed to instructors required them to refer to their

past and present teaching experiences to identify areas in their teaching that they found to be challenging or enjoyable. As the interviews progressed, instructors were asked to characterize what they believed to be "effective teaching" and draw on several strategies they used to engage students. Following from that, instructors were asked to describe their use of LMSs, including its perceived benefits, challenges and shortcomings.

For the focus groups with students, each discussion began with participants describing some of their most and least favourite courses. Participants were then asked to draw on their experiences of using LMSs, what they liked most/least about LMSs, and other general thoughts about the prevalence of LMSs within the university. To gain insight on students' perceptions of in-class learning and cooperative learning, students were asked to explain what they enjoyed most and/or liked the least about those two forms of learning. Students were also asked to identify their favourite instructors and discuss any traits that make them "good teachers." Full questionnaires and discussion guides are available in Appendix A.

Findings and Discussion

The following discusses the results in terms of Chickering and Gamson's (1987) *Seven Principles* to determine the degree to which those principles allow us to organize these instructors' and students' experience of learning in this hybrid learning environment.

Areas in which LMSs do not support teaching and learning

Following Chickering and Gamson's (1987) principles, there are four areas where both instructors and students tend to perceive significant shortcomings in their use and experience of LMS in university-level courses:

1) LMSs did not encourage greater student faculty contact (Principle 1)
2) LMSs did not further develop reciprocity and cooperation among students (Principle 2)
3) LMSs did not encourage active learning (Principle 3)
4) LMSs did not help in the instructors' communication of high expectations (Principle 6).

Principle #1: Good teaching encourages contact between students and faculty

Findings show that LMSs did not achieve this principle because to the students, instructors' enthusiasm and passion for the course material was felt almost entirely *in-person* rather than online. When relating to his experience of viewing his instructor online through lecture podcasts as opposed to the classroom, Student A critically pointed out how "that passion disintegrate[d] when transmitted online." Face-to-face interaction was still largely preferred, as expressed by Instructor A, who observed that "those times [interaction with students] often occur one-on-one during office hours."

In addition, face-to-face interaction with students was cited by all seven instructors interviewed as one of the most enjoyable and rewarding aspects of teaching. Many of the instructors cited the use of humour as an effective way to stimulate and maintain student interest in course material. Students also believed that the personal qualities of their instructors created a sense of closeness that helped personalize their relationship, despite the constraints of large classes. For example, Instructor G occasionally dressed up as popular cultural icons for his class of 600 students,

presenting himself as "just a regular person," as someone who appreciates casualness and is therefore, "no different from anyone else." He believed that students' experience of his courses was largely shaped by the way he presented himself in his lectures. By injecting a personal touch in his teaching, he believed that he was able to build trust and a connection with his students.

Similarly, Instructor F, who also stressed informality in his classes, believed that this personal touch to teaching made him less of a distant authority. Through stories about himself and his own personal interests, he believed he presented himself as more "human" and "down-to-earth." Indeed, many of the instructors stated that they relied on personal narratives when they teach in classrooms to engage students. Personal anecdotes were often used to illustrate concepts discussed in class and to enhance student understanding of the course material.

Students responded by saying that they felt their instructors' passion toward the subject they teach when they actively sought to communicate their enthusiasm to them. Many students described incidences where their instructors managed to incite laughter in class. Student J recalled how her instructor would bring in musical instruments and play them in class, wishing that class would go on longer than the two-hour time frame because it was so enjoyable "it didn't feel like a university course." These perceptions reinforce Chickering and Gamson's (1987) assertion on the positive effects of contact between faculty student, but in this case it specifically referred to *in-person* contact rather than online-mediated contact (p. 3).

A sizeable number of students recalled topics and incidences in their classes that pointed towards the personal qualities of their instructors. When instructors sought to relate and transfer their passion in the topic to the class through a variety of techniques, students felt a strong connection with their instructors and describe lectures as being more engaging and interactive. As Student K pointed out, "If *you* [the instructor] care about what you are talking about, then the people listening to you will care." This sense of care and genuine interest in teaching establishes a personal connection between students and instructors and as a result, strengthens the interaction and relationship between the two parties.

Principle #2: Good teaching develops reciprocity and cooperation among students

The broad out-of-class discussion functions of most LMSs *should* provide further opportunities for cooperation and discussion, but the actual experience suggests that it does not occur spontaneously or without considerable in-class support (Kruger, 2012, p. 192; Morgan, 2003, p. 38-42).

Instructors were aware that they needed to engage students by implementing cooperative learning tasks in their lectures. Some instructors said that they posed questions in a classroom context, asking students to informally discuss them with their classmates during lectures, believing that classroom excitement is made possible largely through their own ability to stimulate discussions amongst students through the open-ended questions. As Instructor C explained, "I ask a lot more questions related to attitudes and judgments and also get a stronger idea as to the depth of comprehension that the class is able to achieve. And in doing so, fosters some really rich discussions." Others introduced video clips of case studies during lectures and used them as frameworks for discussion. However, they rarely referenced LMSs when explaining their teaching strategies to encourage cooperative learning.

Students also reported that they valued the discussions that take place in class as they challenged their views, prompting them to probe deeper into subject matter. Most of the positive comments regarding collaboration and cooperation were based on aspects of the course outside of LMS processes (e.g. in-class discussion, ice-breaking games, etc.). While online discussion boards on LMSs offered opportunities for interaction and conversation between students, there were mixed reactions about how useful they were in encouraging collaboration. Most students in the focus groups shrugged and mentioned that the online discussion boards in their courses were "dead" with little conversation happening online. Although they provided a centralized place for discussions and coordination of group projects, many students said they shy away from them due to the lack of privacy and transparency in those forums.

Some students cited social networking sites (e.g. Facebook) and text messaging as more convenient ways to coordinate group work in their hybrid courses. For students who found online discussions in their hybrid courses to be useful, they used them as a way to find solutions to questions that were less open-ended. A similar perspective emerged when students talked about their preferences for online quizzes in hybrid courses. They enjoyed doing those quizzes since they could discuss them with peers and exchange ideas instead of doing them alone.

Principle #3: Good teaching encourages active learning

Active learning positions students at the core of learning rather than passive observers and it moves away from teacher-centred learning, with the sole focus on lectures and note-taking (Machemer & Crawford, 2007, p.10) Several instructors also provided examples of experiential learning, such as fieldtrips, where they said students were able to collect specimens and see them firsthand. Through student feedback, Instructor D believed that students had positive experiences with fieldtrips because they made them (the specimens) seemed “more real.” Some instructors also included labs and problem-based tasks in their courses, such as open-ended or prescribed experiments and video case studies. Instructor A provided opportunities for students to generate exam questions and would then choose some of those questions to be used in the final exam. In addition to that, Instructor C had students create weekly websites related to the week’s topic, asking students to draw from online or course content.

Students from the focus groups reported that they were more likely to feel motivated to participate if there were marks allocated for participation. However, one student also commented that he would not consider forum participation as active learning if a student does not put thought into his/her comments. Another student agreed, stating that students need to reflect on their own thinking before offering their comments because quality of comments shape the overall discussion taking place.

The responses gathered suggest two important characteristics of the active learning activities that were employed and implemented. First, it appears that active learning happens *primarily* through face-to-face interactions. Second, the lack of LMSs references in relation to active learning indicated that both instructors and students did not view LMSs as a necessary tool for active learning to take place. As Student L explained, "I have always [associated] active learning with hands-on activities." This view was supported by Instructor G, who commented, “I see the classroom experience as being the most important part of my courses… [the student’s] experience is greatly enhanced by virtue of being there.”

Principle #6: Good teaching communicates high expectations

Some instructors communicated their course expectations through clear rubrics. Instructor B remarked that he considered it his job to help students refocus and redirect their attention to proper learning and application of knowledge, not just memorizing and reiterating formulas from the textbook (Interview, 2011, June 28).

As a whole, instructors felt that it was important that students reflect on their own learning style and study habits because a large component of university is about "learning how you learn, and how you want to learn." It is a challenge to help students understand this approach. As Instructor G pointed out, it requires a great deal of courage and honesty for students to accept the grade as it is *and* discuss ways to improve their future work. By saying how they expect students to make effort to perform well, instructors saw this push as a growth process for students to become better in their work. As Chickering and Gamson (1987) assert, an instructor's high expectations of students becomes a "self-fulfilling prophecy" where students are willing and motivated to exercise effort to do well in their courses (p. 5).

Students felt that instructors need to maintain some form of control in the class, and make expectations of their students clear. There was little student respect for instructors who failed to do this. A few students cited instructors who were confident and effective in controlling their classes, and how this forced students to pay attention and attend their classes frequently. Students referred to some instructors who were known to patrol the aisles during lectures and deterring them from ever skipping a class even when all course material were posted online.

Students felt that an instructor's expectations of students could be clearly articulated and understood *without necessarily* using LMS. As Student O referenced in one of his in-class lectures, "She was in control. She was confident in the way she was speaking…I think it was amazing how much more people paid attention." Instructors' high expectations were not only reinforced through their teaching style, but also through questioning. Instructor B admitted that “I outright challenge students to ask questions or answer questions,” demonstrating the importance of setting learning challenges to sharpen thinking skills. When instructors expected students to take learning seriously, it became a spillover effect whereby students themselves begin to develop responsibility and make an effort to remain committed in the course.

From the responses gathered, we can identify several themes. Personal connections and contact were most often felt in-person, not through online-mediated communication. Even with both online and offline modes of communication, students and instructors favourably discussed the connection felt in classroom contexts. Instructors reported that student exchange and collaboration are seen more evidently through in-class instructional approaches, either by posing questions or drawing upon case studies and examples. As the students observed, instructors' high expectations were expressed through in-class instructional approaches. Overall, student responses suggested that the personal qualities of teaching and learning transpired more evidently through the classroom context, rather than through an LMS.

Areas In Which LMS Supports Teaching and Learning

Despite the shortcomings of LMSs in upholding some of Chickering and Gamson's (1987) *Seven Principles*, the findings suggest that LMSs appear to be contributing to the support (sometimes in a "mixed" fashion) of three principles:

1) LMSs gave prompt feedback (Principle 4)
2) LMSs emphasized time on task (Principle 5)
3) LMSs respected diverse ways of learning (Principle 7).

Principle #4: Good teaching gives prompt feedback

Timely feedback is not only important but it helps students to focus on their learning, and identify key areas where they need to improve. While feedback is not possible without assessment of students' course performances, Chickering and Gamson (1987) argue that assessment without prompt feedback contributes little to learning.

Due to the sheer volume and size of their classes, the instructors interviewed were aware that it was not possible to provide one-on-one feedback to each student during class time. Instead, most instructors relied on LMS to "push" (i.e. provide access to) course information to their students at large. Instructor A described how she spent time creating a test bank with series of questions that would be released as online quizzes throughout the academic term. She noted the clear advantages to that approach as those online quizzes provided instant feedback, which she customized according to questions. If a student inserted the wrong answer to a question, there would be a customized feedback message explaining specifically the rationale behind the corrected answers. Similarly, Instructor B mentioned that it was "easier" to release grades for group assignments, as they were posted online for students to access them at their own convenience.

Other instructors recalled how time-consuming it was if they were to post assignment grades or conduct the same quizzes in paper format, rather than doing them electronically. Assignments that were submitted electronically also saved time for instructors as they could then provide their feedback online. Thus, LMSs were particularly useful from an organizational standpoint and for providing timely feedback on assignments.

Students viewed prompt grading feedback as an important way to assess their performance in the course. Aside from accessing lecture notes, the majority of students said they checked LMSs frequently to see if grades for assignments and midterms were posted online. Some students explained that it was more convenient to have the answer keys for midterm exams posted online instead of having to wait in line to meet the instructor personally for the answers. Students also responded that it was useful to have a Dropbox-like feature in the LMS to quickly submit assignments online without having to do so in person.

A significant number of students mentioned how much they value having most aspects of the course centralized in one system. Student B remarked that she liked how useful LMS is as a "point of reference" where it was accessible virtually everywhere. Such positive reactions appear to contradict what instructors and students said they *felt* about the system. Instructor C stated blankly, "Well, I needed something, right? I needed something that works. So, Avenue [name of

LMS] is stable. So, that's great." But she then further explained how limited her ability to connect with her students in a timely manner. Similarly, students lamented of the LMS overloading and "crashing" for long periods of time.

While the technical limitations of an LMS may hinder the ability to give and receive prompt feedback, it was also evident that having an LMS component in the course was necessary to maintain some form of connection with the course outside of the university environment. When one group of students was questioned if they would be missing anything out of their educational experience if there were *no online component* in their courses, all of them discussed how troublesome it would be to access course content and submit assignments in person. Therefore, the use of LMS in university has become somewhat "ingrained" within universities, as Instructor D put it, since he was unaware of any course that does not use it. However, Instructor G cautioned against instructor reliance on LMS as it might impede learning. Regardless of its efficiencies in record-keeping and disseminating information, he argued that LMS is "peripheral to teaching." Though he did not discount the value of LMS in managing the administrative side of teaching, he ultimately believed that his central focus should be on imparting knowledge and engaging students in his classroom.

Principle #5:Good teaching emphasizes time on task

Chickering and Gamson (1987) believe that time invested on learning should be time well spent; time expectations should be clearly defined for students for them to perform well (p. 4). In relation to classroom management, LMSs, as easily accessible and ubiquitous electronic storage systems, are very useful because instructors said that they allow them to devote their time to working with students to clarify course concepts, rather than constantly working with course logistics. As Instructor A explained, "If you can get rid of all those organizational details, you can have more time to work on the actual learning of the course" (Interview, 2011, June 10). Some instructors also said that LMSs grade submission features assisted them in dealing with the administrative aspect of their courses, as they could be directly transferred from the LMS to the registrar. Thus, LMSs improve time on task as instructors can save hours from performing administrative tasks.

As students began discussing the online components of their courses, they often mentioned how they liked having lecture notes in advance provided on LMS. They found that they could better prepare for their classes using these notes, and could avoid trying to copy the lecture slides verbatim in class. Several instructors also noticed that students were able to concentrate better on the material if they had the lecture notes in advance. Instead of becoming "scribes," students could then focus on learning and understanding the material. With lecture slides posted in advance, Instructor C found that she was able to foster more rich and valuable discussions without the anxiety of having to get through all the slides allocated for the day's lecture. Instructor D also explained that students *expect* to gain access to course information at any time, calling it a form of "on-demand learning." Thus, he felt responsible to make information in his course "mobile" and provide students with the tools to help them succeed.

While instructors did understand how students could benefit from having lecture notes in advance, some of them also voiced their concerns on low attendance rates at lecture, since lecture notes and/or audio recordings of their classes were posted online. There were conflicting views as to whether this was positively or negatively affecting their courses. Instructor G was

adamant that students learn the most by physically being in class, as it was the best way for him to engage his students. Conversely, Instructor F perceived the lack of attendance his classes as an "inevitable consequence" of posting all of his lecture material online. Ultimately, as long as his students were getting the course content regardless of its form, he was confident that students were able to reconstruct and learn the material by themselves – and as a result, enabling students to make decisions on how they could make use of their time.

Principle #7: Good teaching respects diverse talents and ways of learning

The responses gathered from interviews and focus groups support a notion in the literature that much of the teaching in university remains unchanged and different ways of learning unexplored. Traditional in-person lectures are still the most significant component of university education, as several instructors, including younger faculty members, pointed out.

Students mentioned repeatedly how much they appreciate having online lectures and podcasts offered in LMS, with some feeling they could learn without having to physically attend classes. But would students miss anything if they relied only on the online component of the course? Several students did not seem to believe so, with Student O commenting, "If it [the course] is that complete, I don't see why you need a physical course [laughs]." When prompted to explain further what he meant by a "complete" course, he provided an example of a course he took, which had all material online, including lectures that in podcast format. While there was a positive reaction towards another (i.e. virtual) way of learning, the same set of students also contradicted themselves by maintaining that the human connection experienced during traditional lectures was a significant factor in connecting with course material.

While students' responses were ambivalent on LMSs role in education, their feedback suggested that learning happens in multiple ways. Instructor F observed that most of learning takes place *outside* of the classroom, where students immerse themselves in the material and learn at their own pace. Despite seeing declining attendances in his classes and fewer visits during his office hours, he believed that his students were not physically present because they already had all the necessary material needed, in electronic form, to do well in his course. Since course material could be made available online prior to lectures, some instructors were also motivated to rethink their teaching style and worked harder to make lectures meaningful and worthwhile. Instructor D explained how he tried to put minimal information in his slides during lectures, focusing more on asking questions and generating discussions from them. Referring to them as "education-entertainment" time, Instructor B introduced fun and lesser-known facts regarding the different biological species discussed in each class, shifting towards a more light-hearted lecture style.

When asked whether LMSs help students to learn effectively, Instructor E mentioned that it depends on each student's style of learning because students learn by visualizing the material (reading course content, lecture notes), listening (through lecture podcasts), and/or kinetically (by doing practice questions). Admittedly, it was difficult for her to offer advice to students on how to learn better because of their uniquely different learning styles. As McMaster University relies on a blended-learning approach, a malfunctioning LMS could be "catastrophic," said Instructor A, because it is akin to students "not having access to the university library." With this ability to present material in multiple formats and provide access online, this indicated that LMS does support various learning styles to a certain extent.

LMSs ability to improve time on task, speed up feedback process and offer different ways of learning reiterate a common theme regarding the perceived impact that an LMS has on learning: its usefulness lies in course administration and support. An LMS is perceived as a supplement to existing in-class instructional approaches, whereby it could enhance the flow of a course and accommodates a variety of learning modes.

Discussion: Applying the Seven Principles to LMSs

Through qualitative research methods, we gained insight to not only student and instructor perceptions on the impact that LMSs have on teaching and learning, but also thoughts on "good" teaching practices in blended learning environments. As students who have taken hybrid courses expressed, the key aspects to university learning rest with their instructor's ability to evoke and translate their passion of the subject matter to students.

Discussion around teaching strategies aside, several instructors have pointed out that the *mechanisms* used to deploy teaching have changed drastically. There is now a need for an "entourage" of teaching technologies, as Instructor E put it, to aid with teaching in universities. This is because teaching has expanded beyond the classroom, whereby instructors will need to navigate online and offline environments to communicate information and engage students effectively.

If so, what role does an LMS have within the university from the points of view of current teachers and learners? In effect, both groups agree that the role of an LMS is supplementary and complementary to broader teaching and learning principles and methods, utilizing active learning techniques, problem-based learning and case studies. Ultimately, the findings suggest that LMSs role within the university is peripheral:

> …it's not the main focus. The main focus for me, would be the ideas, the thoughts, the questions, everything else that makes up what I consider to be the course. And by the way, we just *have* to keep records here so that we can submit marks.

But LMS adoption is *not* decreasing (Smith & Caruso, 2010). Hence, there is a need for more research on the pedagogical uses of LMSs and how participants experience their integration within blended university course delivery, not just the frequency of LMS usage. As demonstrated in students' responses, some are more comfortable with traditional ways of learning (lectures and in-person presentations) while some reacted more positively to online forms of learning (podcasts, online quizzes). It is also clear that the use of interactive features in LMS (discussion forums, wikis, blogs, etc.) seem to work well in certain courses, but do poorly in others. For example, some courses that are geared towards problem-based learning (PBL) approaches at McMaster University (e.g. Engineering, Statistics, Mathematics, Accounting) seem to have more success in using discussion forums compared to other more open-ended and self-directed learning courses (Humanities and Social Sciences).

Drawing from the results above, it is clear that instructors and students see the need for LMSs in university courses. But they maintain that its role is supplementary to teaching and learning; the prime focus should still be in classroom engagement and in establishing a personal rapport between instructors and students. By analyzing students' and instructors' perceptions through the

lens of Chickering and Gamson's (1987) *Seven Principles*, we can begin to discern what type of pedagogical role LMSs play in hybrid learning environments.

Our research indicates that one cannot look at LMSs only in connection with in-class pedagogy. As Christie (2006) suggests, more research is needed to understand how students acquire knowledge outside the formal learning environment, and this is particularly important for a digital generation, as social media and other digital networking means are part and parcel of how this generation navigates their modern world (as cited in Christie & Jurado, 2009). Future research that individually teases out specific teaching approaches that work online and/or offline would be useful. This step would help us understand how LMSs could be adapted to accommodate diverse ways of learning within the university courses.

Conclusion

As university education continues to evolve, educators should remain conscious of the dynamic nature of teaching and learning, and to ensure that any techniques or indeed, any on-line technology continue to support the fundamental and researched principles of effective university instruction and their various application according to changing circumstances. Perhaps the final summing up comes with a more modest outlook from one of the instructors we interviewed:

> It strikes me that we are kind of looking for almost the magic formula. Do A, B and C and you'll be an effective teacher. I don't think it works that way. This is a human thing, and that makes it unpredictable. It introduces an element of uncertainty in it all.

Recognizing the hybrid nature of learning, educators need to start thinking more broadly and innovatively about ways to use LMSs, and as Gabriel et al. (2012) argue, rethink ways to best conduct and facilitate learning experiences meaningfully within the classroom space (p. 11). A critical conversation at a higher administrative level, discussing the way knowledge is constructed, transmitted, received and shared amongst students, is necessary to move beyond using digital technologies as mere information transmission tools.

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Appendix A: Interview and Focus Group Questionnaires

In-depth interviews: Questions for instructors

1. Information about you: In general, how long have you been teaching? How long have you been teaching in a university setting?
2. Please tell me about your early years as a professor.
3. Do you think teaching has changed since you first started out? Please tell me more about why you think that.
4. What are your teaching goals?
5. What kinds of strategies do you use to fulfill your teaching goals?
6. Do you use Avenue in any of your courses? If yes, how do you incorporate Avenue in your courses? If no, could you explain why?
7. What features of Avenue do you find useful or helpful? Please describe how you use them.
8. What are the limitations of Avenue? Please tell me more about why you think that.
9. What are some non-ICT (Information Communication Technologies) teaching practices that you use frequently? In your opinion, how effective or ineffective they are your courses?
10. Is there anything else you would like to add? Who else do you think I should talk to?

Focus groups: Question for students

1. Tell us your name and some of your favourite and/or least favourite courses. Please jot down what you like most and/or least about those courses.
2. What do you typically use Learning Management Systems for?
3. Using the pen and paper provided, please list down you like most and/or least about those systems
4. Does anyone have any other experience with online learning?
5. Tell us about some of the teachers you like. What do you like about them?
6. Describe your experience working as a group in your courses. What do you like most about them?
7. When you think of "active learning," what comes to mind?
8. Supposed you were to offer one piece of advice to professors on the topic of effective teaching – what would you say?

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