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Course Management Systems and Campus-Based Learning

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Introduction

Course management systems (CMSs) have become a symbol of innovation at institutions of higher education and in less than a decade they have been rapidly adopted by a large number of colleges and universities in many countries around the world (Coates, 2005; Dutton, Cheong, & Park, 2004; Malikowski, Thompson, & Theis, 2007; Wise & Quealy, 2006). This rapid adoption of CMSs has occurred in a vacuum of research into their effectiveness for learning or even indications of best practices for their integration into the campus based environment (Coates, 2006; Malikowski et al., 2007; Wise & Quealy, 2006). Ten years after the first commercial systems were made available to colleges and universities, many institutions of higher education are still struggling to determine the best way to support their educational missions with CMSs and other web technologies. Kirup and Kirkwood (2005) judiciously state that the widespread adoption of information and communication technologies in higher education since the mid 1990's has failed to produce the radical changes in teaching and learning that many had predicted and anticipated.

Camp and DeBlois (2007) propose that even though more than 90% of campuses support at least one CMS, with nearly 70% standardized on a single commercial course management system (CMS), and an increasing number of faculty are using the CMS, information about the characteristics of the use of the CMS that enhance as well as those that create barriers to learning is fragmented and disparate (Hanson & Robson, 2003; Morgan, 2003; West et al., 2006; Wise & Quealy, 2006). While CMSs were initially developed to support distance education and online courses, they are now used predominately to complement campus based classroom courses (Morgan, 2003; Harrington, et al., 2004; West et al., 2006). Coates, James and Baldwin (2005) speculate that there appears to be something so alluring about them that despite their complexities and risks, almost every university seems compelled to have one. There appears to be a growing acceptance and use of CMSs, by faculty, and fewer concerns about their reliability, yet, little is known about the efficacy of these systems to impact learning. Research reports of

significant changes in teaching and learning as a result of the use of these systems are scarce (Coates, 2004; 2005, 2006; Collis & van der Wende, 2002; Katz 2003; Harrington et al., 2004; Wise & Quealy, 2006).

Many of the systems are vendor provided products such as Blackboard, WebCT, Desire2Learn and Angel, but there are also a number of open source and institutional home grown products such as Sakai and Moodle. While the definition of a CMS varies, Carriere, Challborn, and Moore's (2005) comparison study of a number of CMSs revealed that the only real difference among systems lies in their marketing approaches. Malikowski et al. (2007) characterize a CMS as a comprehensive set of web based tools, some static and some interactive, that supports some or all aspects of course preparation, delivery, communication, participation and interaction. In the view of Carmen and Haefner, (2002), it is as a technology tool that supports and enhances the learning process, while Collis and Boer (2004) describe it as simply a way to help teachers who lack Web design skills to easily create a Web accompaniment to their courses. The CMS infrastructure can also handle course registration and administration (EDUCAUSE Evolving Technologies Committee, 2003, p. 1).

Coates' (2006) conclusion from his research is salient. He postulates that even though the impact of technology has fallen short of the rhetoric that it would produce radical change, widespread changes are penetrating campus-based undergraduate education, challenging practices and longstanding assumptions. Undoubtedly, changes in teaching and learning, facilitated by the new technologies have been considerably slower and less revolutionary than expected, but increasingly, large numbers of students are encountering interned based activities as part of their campus-based rather than distance learning experience. A theoretically driven understanding of the educational rationale and consequences of the use of the CMS is critical to understanding of the efficacy of these systems in learning.

Philosophy of Learning

The implicit assumption about the phenomenon of learning, guiding this study, is that it is a "complex, ubiquitous and powerful phenomenon influenced by a broad range of often mutually contradictory practices, paradigms and theories" (Coates, 2006, p.25). This study is rooted in a "learning-centered" philosophy. The foundation of learning-centered education is the provision of meaningful learning experiences to facilitate, stimulate and enhance learning experiences for a diverse range of learners. In order to structure the educational experience so that it adds value to learning careful attention must be paid to "the knowledge, skills, attitudes and beliefs that learners bring to the educational setting" (Bransford, Brown, & Cocking, 2000, p. 133).

Perceptions of Learning

There are a number of reasons why this study explored the perceptions of students and faculty to determine the efficacy of a CMS in learning. Entwistle and Ramdsen's (1993) research showed that the way that students perceive the teaching and learning contexts impacts their approaches to learning and the quality of the learning outcomes. The students' perceptions of their learning environments (which may differ from the reality) have a profound impact on the ways they approach their studies (Trigwell & Prosser, 1991). The work of Lowerison et al. (2002) indicates that there is value in exploring aspects of technology integration and the impact of these aspects on student perceptions of learning. Marton and Saljo (1976) postulated that there is a connection between the students' approaches to learning and the content of learning. He stressed that the approach to learning should not just be seen as a characteristic of the student, as it is a response to a situation. Entwistle and Ramdsen's (1984) research supported this and illustrated the strong influences of the situation in which learning takes place. One of the key variables in learning is the students' perceptions of what they are required to do. If students perceive that the learning environment that they encounter is effective, then they are more likely to be engaged and be successful (Entwistle & Ramsden, 1984). Mazarano and Pickering (1997) posit that the processes of acquiring and integrating, extending and refining and using knowledge meaningfully all occur against the backdrop of the students' attitudes and perceptions.

One of the driving forces behind this study was the insistence of the Student Federation Council, at the College where the study took place, that they wanted more professors to use the CMS in their campus based courses, and those faculty who were using it to use it more. Despite this prompting and a strong push by the administrators for faculty to use the CMS, there was much skepticism on campus about the extent to which this would facilitate learning. The question: "Is the use of the CMS worth the time and effort it takes to do so?" dominated the discussions at workshops and faculty meetings.

Research Questions

Utilizing a mixed methods case study approach, the study explored the perceptions of the students and faculty, in the business programs, at a large, urban, multiculturally diverse college in Ontario which has a history of CMS use. The reasons for using a CMS in the college's business programs, the characteristics of the use of the CMS that enhanced learning and those that created barriers to learning and their perceptions about what constitutes the effective use of the CMS were explored. The main focus of this study was the examination of the students' perspective, as the aim of the study was to understand the effect of the CMS on their learning. Teaching and learning are inextricably connected; therefore obtaining the faculty's perspective was an important, but secondary, part of the study. The research questions were:

1. What do students and faculty identify as the purpose of using a CMS within the college's business program?
2. What are the characteristics of the use of a CMS that enhance learning as perceived by students and faculty?
3. What are the characteristics of the use of a CMS that create barriers to learning as perceived by students and faculty?
4. What comprises effective use of a CMS as perceived by students and faculty?

Review of the Literature

A review of the literature revealed that much of what little, theoretically grounded, research there was, was aimed at demonstrating and testing whether or not the use of a CMS had an impact on learning, or on the technical, financial and administrative aspects of its use. As Coates, 2006, observed "many books and papers have been written about the higher education market, different models for higher education and the transformative influence of technologies" (p.60). At the same time his suggestion that the studies "are limited in their capacity to advance a broad understanding of how the systems influence student learning" (p. 62), supports my conclusion from the review of the literature. As Wise and Quealy (2006) point out there is no clarity of purpose regarding the role of the CMS in the teaching and learning framework of the university or college. Coates (2006), West et al. (2006), and Wise and Quealy (2006), conducted extensive reviews of the literature on CMSs and found that most of the studies were descriptive reports or quick evaluations about individual projects or how a CMS impacted a particular course They surmised that even though some research projects claimed to be grounded in a theoretical framework or pedagogic approach there was nothing compelling in the literature that demonstrated enriched student learning attributed specifically to a CMS or CMS-based resources. Danaher et al. (2005) noted that much study on CMSs is directed at technical and managerial issues related to the use of the online technology tools, and has focused on the evaluation of the technology and not on learning.

An extensive search of the literature using the keywords "faculty or teacher or professor* or student*) and (online or "cms" or "lms" or "course management system*" or "learning management system*" or "virtual learning environment" or courseware did not reveal any published reports of research that explored the perceptions of students and faculty in the same study, about the effect of the use of a CMS specifically on learning. Most of the research about the use of technology in education is aimed at "demonstrating" and "testing" whether or not technology integration into teaching and learning "adds value", and if so what that is. The studies on the effect of CMS on learning have focused mostly on its use in fully online courses. Only a few recent small scale studies have investigated the impact of its use in campus based courses. In the quest to use these systems the focus has been on implementation and adoption and not on establishing a theoretically grounded framework for its use.

The approach for this study was based on the conceptual framework of seeking to understand how, why, when and for what purpose the use of a CMS, in campus-based courses, impacts the learning experience. As many institutions continue to make substantial investments in technology, it becomes increasingly important

to be able to discern the impact of technology on the educational effectiveness of colleges and universities. The importance of placing students at the centre of conversations of learning cannot be overemphasized, yet, there is a paucity of research in this area (Cross, 1999; Daley et al., 2005; Coates, 2004, 2006).

Research Design

The purpose of this research was not to compare the impact of the use of the CMS in fully online courses with courses that are fully face-to-face, nor to evaluate the use of the CMS; as so many other studies have attempted to do. This was instead, an exploration aimed at understanding the impact of the use of a CMS on learning. Given the dynamic interconnected nature of learning, this cannot be studied in isolation from teaching or the context in which the learning takes place. Yin (2003) advocates that case study research is particularly effective when a "how" or "why" question is being asked about a contemporary set of events over which the investigator has little or no control. This description clearly fits this study where the aim was to develop an in-depth understanding of the efficacy of a CMS in learning; "how" and "why" the use of a CMS affects learning as perceived by students and faculty. Yin (2003) goes on to note that the case study design is suited to situations in which it is impossible to separate the phenomenon's variables from their context, such as is the nature of learning.

Data Analysis

Qualitative and quantitative research techniques were combined, with the data from one source used to enhance, corroborate and elaborate the data from other sources. A sample of students in the first year of the three year business diploma programs was surveyed twice and interviewed; a sample of faculty teaching those students were also interviewed as well as some of the members of committees formed to guide the selection, adoption and integration of the CMS at the college. In addition, pertinent college documents were analysed.

Using a constant comparative method of data analysis the information gathered from the surveys and interviews was coded into emergent themes. After initial analysis of the first student survey, the data were constantly revised, as the faculty were interviewed and the students were surveyed a second time and then interviewed, until it was clear that no new themes emerged. The findings of the interviews with the CMS advisers and the document analysis were used to set the context for the analysis. A chain of evidence was maintained in order to increase the reliability of the information gathered during the case study.

Site and Participant Selection

This research was carried out at a large, urban and multiculturally diverse college in southern Ontario. This college was selected because it has been using some form of a CMS since 1997 and the current CMS has been implemented at the college since 2000. This means that at least two cohorts and as many as four student cohorts have passed through the college's CMS. There is evidence in the literature that there are many variables that influence perceptions of any type of educational technology and from a user perspective the biggest of these is the stability and robustness of the technology infrastructure (Butler & Sellbom, 2002; West et al, 2006). This college has a very stable and robust infrastructure and a widely established technical support mechanism for students and faculty using the CMS. In the fall of 2007, almost 75% of the professors teaching in the full time programs at the college were using the course sites. Facilitating the use of the CMS is entrenched in the Strategic eLearning Plan of the college. The efficacy of the CMS can therefore be studied without the confounding effects of an unstable technology infrastructure.

The business programs were selected as the target population for this study for a number of reasons including the size and nature of the programs and the adoption of the CMS by faculty teaching in those programs. The school of business is the school with the largest number of students enrolled at the college and the subject matter of the courses offered to the students is a constant. The large number of enrollments in the three year business programs increased the chances of a greater number of students agreeing to participate than was likely in other, smaller programs. The types of courses offered reduced the possibility of a varied curriculum affecting the perception of learning. Even though there will be no attempt to generalize the findings of the study, in an attempt to also exclude the variable of academic preparation, as a variable affecting learning, it was important to the dissemination of the findings, for the students participating in the study to be typical college students. The academic data of the students who were offered admission to the various programs, which are collected by the college for demographic purposes, were reviewed and discussed with one of the academic administrators, and compared with data from previous years.

From these discussions and this analysis it was determined that academic preparation was not a variable, as these students were typical entrants at this college. Each course, offered at the college, automatically has a course site created on the CMS, but it is the choice of the professor to make that course site available to the students or not.

Data Collection

Multiple data collection methods and three different populations were used to collect data for this study. In Phase 1 of the main study all the students enrolled in the first semester of the three year business diploma programs, were surveyed to collect demographic information about the cohort under study and to find out about their previous experience with Internet based technology tools in their learning experience. Faculty likely to be teaching the students who were invited to participate in the study and CMS advisers who had played a role in either the adoption and or the implementation of the CMS at the college were interviewed during Phase 2 of the study. In Phase 3 which was done in conjunction with Phase 2, documents were collected and analysed. Phase 4, the largest and most significant part of the study, consisted of surveying the students who had completed first semester and were in the second semester of their studies at the college and interviewing a sample of the students who completed the survey.

Survey One

All 1,241 students enrolled in the first semester of the 2007 academic year in the three-year business diploma programs at the college were invited to participate in the study. One hundred and fifty nine (159) students of the 1,241 students for a response rate of 12.8% responded to the survey. The aim of the first survey was to paint a picture of the students in the first semester of the three year business diploma students at one large, urban, Ontario college. Its purpose was to answer questions such as: Who are these students? What are their patterns of usage of technology and the Internet? What, if any, technology tools were used in their previous education? What do they think about how technology can help them learn?

Survey Two

At the beginning of the second semester of the 2007 academic year, during the second week of classes in January, a second survey questionnaire was sent to all of the 927 students enrolled in the second semester of the three year business diploma programs. Three hundred and fifty seven students, for a response rate of 38%, completed the survey questionnaire. The purpose of this second survey was to gather information about the students' experience with the CMS course sites, during their first semester. The questions on the survey explored the tools available through the CMS which the professors teaching in the Faculty of Business may have used, the types of information that were posted on the sites, and the students' experience with the course sites during their first semester at the college. Their patterns of access of the course sites and their perception of the most valuable benefits of the course sites and the ways in which the use of the course sites helped them to learn or made it more difficult to learn were examined.

Interviews

Seventeen students were interviewed, four males and thirteen females. The students were broadly representative of the students in the three year programs with participation of students from each of the five Schools in the Faculty of Business, where three year diploma programs are offered: the schools of Accounting and Finance, Business Management, Human Resources, International Business and Fashion and Merchandising. There were six students from Accounting and Finance, five from International Business and two from Business Administration, Human Resources and Fashion Arts and Design. All of the students had experienced the use of the CMS course sites and had enrolled in at least three courses, over the two semesters, in which the CMS course sites were used.

Nineteen professors, teaching a diverse array of courses in the three year diploma students in the School of Business were interviewed; 16 of these professors were using the CMS and three of them were not, and had no intention of ever using the course sites. One of the professors was using the CMS for the first time and 15 had been using it for between one and seven years. Six of the people who were involved in the decision to purchase the CMS and its adoption and implementation at the college (the CMS advisers) were interviewed. While agreeing that the decision to adopt a CMS was a good one, and at the time the college made the right choice; the CMS advisers had mixed views about the ways in which decisions were made during the adoption and implementation process.

Context of CMS Adoption

In 2000, two decisions surrounding the use of a CMS were made by the College. The first decision was to adopt a single College-wide CMS and the second was to purchase Blackboard, which is the CMS currently being used at the College. The overriding reason for choosing the particular CMS was its capacity to be integrated with the Colleges' administrative systems. The adoption and implementation was spearheaded by the Department of Information and Telecommunications. Almost 10 years after it was purchased, despite the agreement of all of the advisers who were interviewed and the faculty who participated in the study that the decision to purchase the CMS was a "good" one at the time, the perception of the e-learning advisers from the academic areas and those of some of the academic administrators who were at the College when the CMS was adopted that the academics were not consulted and did not have much input, has been a barrier to its full integration. This is because within their jurisdiction lies the responsibility for advocating the use of the CMS and overseeing the support mechanisms for students and faculty using the CMS.

The overwhelming majority of students, who participated in this study, just over 98%, perceived that the CMS was an integral part of their college education, over 90% of them said that they preferred taking courses that used the CMS. A course site is created for every course offered at the College, and it is the individual professor's choice about whether or not to make those sites available for student use. The CMS has a substantial adoption rate; currently almost 75% of the professors at the College and in the school of business, use the CMS, to some degree. Based on the history and high adoption rate of the CMS, the college is viewed as a leader in the use of the CMS. Undoubtedly from a technical perspective, this is so. As one CMS adviser astutely stated, for the past 10 years the focus has been on technical and administrative aspects of its use. Along with a stable infrastructure, pedagogical institutional support for students and faculty so that the CMS is used wisely and well is critical to its seamless integration into the campus based experience.

The students in this study were all in the first year of their three year diploma programs, they ranged in age from 17 to over 41; about 60% of them were female. The mean age of the students who participated in the surveys was 22.7 and the median was 20. Regardless of age, computer and Internet usage is high and very similar among them. They are confident of their ability to use the Internet to help them learn and almost 90% of them have high speed Internet access at home and almost all of them (97.4%) reported that they had regular access to a computer. The findings of this study indicated that the perception of the use of the CMS in learning was remarkably and surprisingly similar across age and gender. This is consistent with the findings of the *ECAR Study of Undergraduate Students and Information Technology, 2007* which reported that for the first time in the three years of the study, "whether respondents were male or female, live on or off campus, are full or part time, are seniors or freshmen, are young or old, or are fine arts or engineering majors, they were consistent in their overall ratings of whether they experienced course management systems as positive or negative" (p. 69). This study revealed that it is not just the younger learners, almost all learners regardless of age have an expectation that Internet based technologies will be commonplace in their learning environment.

Through the interviews and in response to questions on the study the students indicated that they check the course sites frequently, even when they know that the sites are not regularly updated. This suggests that the CMS has become more a utility than an option. As one student said during the interviews:

> Everyday I check [the course sties] even though I know that there is nothing [new] there. We see it as part of our responsibility to keep up with it, but the teachers, they just do not use it enough (S19).

This further indicates that the students perceive a higher level of integration than faculty do.

The qualitative and quantitative findings from the surveys and interviews with the students verified and supported each other, this was particularly important for the purposes of this research which was to gain a deeper understanding of the effect of the use of a CMS on learning in campus based courses. Even though there were several similarities, there were also some fundamental differences between the perceptions of the students and the professors about the characteristics of the use of the CMS which are perceived to enhance learning and those which are perceived to create barriers to learning.

Findings based on the Research Questions

Question 1

What do faculty and students identify as

the main purpose of using a CMS within a college business program?

Students

The students generally agreed that the main reason for using the CMS was to access and download the documents that the professors had posted there. Access to grades was also highly valued, but as one student noted:

> We can get the grades later if we had to but we really need the materials on the course sites, if we don't have the materials we don't know what we have to learn (S1).

They noted that the CMS was particularly useful if they had to miss a class and having online access to grades motivated them to study harder to get better grades. The high value placed on having access to information on the course sites was also supported by the comments on the open ended question on Survey Two. Other reasons for using the information posted on the CMS, in no particular order, included to:

- see what they had "missed", if they did not attend class
- "know what's going on in class"
- access the assignments wherever and whenever they had access to the Internet
- prepare for class
- make lecture notes more meaningful
- "help them to understand" what was going on in class
- review and compare the notes (usually PowerPoint slides) posted online with their own notes
- have the choice of printing or not printing documents

The reasons discussed during the interviews verified those revealed by the survey findings. Over 85% of the respondents said that they used online materials to make lectures more meaningful, extra resources and links helped them to review concepts taught in class, and it was easy to catch up on missed classes when there was information posted on the course sites.

Almost 95% (n=349) of these students perceived that having access to grades on the CMS encouraged them to work harder to get better grades. During the interviews the students said that when the professors used the gradebook feature they "knew what was going on." They said that having access to their grades online motivated them. "The grades let you know if you should be putting more effort into your studies. If you should be doing more work. If you do not know how you are doing you do not know if you are lagging behind. If it is on the gradebook it helps you to keep track" (S7). One of them noted that if they had to take a quiz on the CMS, they could receive instant feedback if the gradebook was used, and that was the ideal situation.

A few students spoke about using the CMS as a way to send email to professors and to group members. They could easily locate the email addresses of their classmates and professors on the course sites. Two of the students briefly mentioned that it was a way for them to become familiar with "technology" and this was also referred to in the open ended questions on the surveys.

The survey results indicated that the students had used a wide variety of functions within the course sites however, during the interviews, even with probing, there was very little discussion about any of the tools or features other than lecture notes, assignments, due dates, grades and the discussion board. While the survey results revealed that over 75% of the respondents believed that announcements, gradebook, course outlines, weekly schedules, assignments, lecture notes, copies of PowerPoint slides and review notes helped them to learn *to a great extent* or *quite a bit;* Discussion boards, professor information, classroom policies, library reading lists, course blogs and journals and wikis, podcasts and the virtual classroom had less of an impact. More than half of the respondents reported that the use of these features had very little or no impact on their learning. None of the students who were interviewed, made any reference to a number of features that the survey findings revealed that the students had used, including the voice tools, blogs, wikis, podcasts, virtual classroom or the digital drop box. This comment from one student summed up what the students repeatedly stated during the interviews:

> They [the professors] post assignments, marks, announcements, grades. No one used any of the other tools. [They posted] course documents, course information, just a few notes (S12).

Based on the students' descriptions of the very

basic purposes for which the professors used CMS, it is not surprising that access to information was their main purpose for using the sites. These actual uses of the CMS that had been experienced by the students who were interviewed, was in contrast to the wide variety of reasons for its use, mentioned by the professors during their interviews.

Faculty

The purposes for which the sites were used varied widely among the professors who were interviewed. Individual professors who were using the CMS, identified a variety of reasons for using the sites, but the most consistent use was for posting course information, especially course outlines, assignments, due dates and some lecture notes mostly in the form of PowerPoint presentations, grades and announcements. One professor stated that the CMS was used "mainly for content, yeah mainly content. Mainly as a transport mechanism" (F17), and another noted, "first it is a place to deposit materials." All of the professors spoke in great length about the documents that they posted on the sites, many described their use of announcements and the gradebook and some discussed using email and the discussion boards, and just a few the digital drop box the audio functions, online testing and blogs.

In addition to the reasons for using the CMS that were viewed by the professors as being beneficial to the students, those respondents who were using the course sites also stated that one of their reasons for using the CMS was that having all the course information in one place, helped them, the professors, to manage their own information and to keep track of what they had "covered" as well as what they had not done in class, " [When I use the CMS] I see what we covered and what is next and it just keeps track for myself and for them (F03)." Some professors said that they used the CMS because "it seemed logical, it was central, very easy and practical to use." During the interviews a substantial amount of time was spent discussing the professors' challenges with organizing and keeping track all of the information that was available for each course.

While the seventeen professors who were using the sites were very positive about the use of the sites and referred to many possible purposes for using the CMS, the three who were not using the sites all agreed that the reason that they were not using the sites was because they felt that if they did so the students would not come to class. They said that they were very satisfied with the tools that they used to teach in the face-to-face classroom and saw no reasons for changing or adding to their practices.

The opinion of the CMS advisers that, despite all of the features available the CMS was being used very minimally, was confirmed by the purposes described by the students and faculty for using the course sites

Summary

The students and professors who participated in this study both affirmed that the main purpose for using the CMS was for the delivery of and access to information. The findings demonstrated that for all the features available through the CMS, and discussed during the interviews, there are only three features that are consistently used, course documents, the gradebook and announcements; and to a lesser extent - email and the discussion board. There was very little mention of the communication features (even though email usage at the college is high) and a number of the features were never mentioned at all in the discussions. Announcements were perceived by the students as a way for the professors to provide them with information; they were not viewed as a communication feature of the CMS.

The professors who participated in this study, even though aware of the other functionality available within the CMS, generally used only the basic features of the CMS to give students access to course documents, for the convenience and transparency of the online gradebook and to broadcast information to the class. As Malikowski et al. (2007) observed, the CMS features for transmitting information to students are used often and those for creating interactive learning activities are used much less. This observation was confirmed by the findings of this case study.

Question 2

What characteristics of the use of a CMS enhance learning as perceived by students and faculty?

Students

It was surprising to find that even though the students who participated in this study had only experienced very basic uses of the CMS in their courses, they had such a positive perception of the impact of the use of the CMS on learning. This was corroborated by the survey findings where there was a much stronger majority opinion of agreement, expressed in the responses to

statements that addressed the themes identified in the literature, about the characteristics of the use of the CMS that affect learning, than was expected.

The findings from the surveys revealed that almost all of the respondents, 98.5% (n=352), said that it was convenient to have all of the important information available on the CMS and over 70% of these respondents *strongly agreed* with this perception. Over 90% of the students felt that access to online course information made it easier for them to study, helped them to keep track of assignments and complete tests and assignments and be more engaged in their courses and keep track of what they needed to do to be successful. They also believed that having access to grades encouraged them to work harder to get better grades. When asked to indicate which of the choices from a list were beneficial to learning 78.9% of them chose access to course information, 76.6% chose convenience, 43.1% stated that it helped them to manage their time, and just 36.4% said that it helped them to communicate with professors and classmates. Over 50% of the student respondents believed that the use of the course sites "improved" their learning. The written comments on Surveys supported those findings, and another theme emerged. Over half of the comments about the characteristics of the use of the course sites that were beneficial to learning revealed that the students felt that the information posted on the course sites helped the students to be organised and stay on track. Very few students commented about the use of the course sites facilitating communication.

While some students could not decide which was the most important use of the sites access to grades or access to information they all agreed that it was the way in which the use of the course sites helped them to be organised and to keep track with what was going on in the course and what they needed to do to be successful, that was of utmost importance in facilitating learning. It was also the strongest theme that emerged from the written comments on the survey. None of the studies which were used to guide the questions on the surveys had identified "organisation" or "helping to keep track" as characteristics of the use of the CMS that were specifically beneficial to learning, so they were not included in the list of options, on the survey questionnaire, from which the students could choose. Repeatedly the students also said that having online access to their grades motivated them to do better. When the grade book feature of the course sites was used, it was a fast and easy way for the students to keep track of their grades. They said that seeing the grades online encouraged them to put more effort into their studies.

The discussions with the students revealed that the CMS acted as the "guide light" for their classes as it enabled them to know where they "were standing in each class in terms of the materials being taught." A number of them indicated that it was the "bridge" between the teachers and them the students, enabling the students to look at information outside of the face-to-face class. This comment from one of the students captured the sentiment that was strongly expressed during all of the interviews:

> Without [the CMS] it is the same as if you are driving blind (S14).

Faculty

Without hesitation, all the professors who used the course sites said that they felt that the course sites facilitated learning. The professors spoke about the course sites being convenient for the students to have their grades and information in one place, and indicated that this helped them to be organised and "keep track of the material." Two professors spoke about it "being a huge advantage to communication." They emphasised that having online access to information was of utmost importance, it was a place for students to find information. The professors felt that because the students "liked" the CMS, it had a positive impact on learning.

Summary

Increased access to information was the characteristic of the use of the CMS that the professors felt was most beneficial to learning. The comments from the professors indicated that the more information available to the students the "more" that they would learn. This perception was reflected in this comment, made by one professor about the information that was posted on the course sites: "Well you know, I think it's well, adding on learning" (F11). This was in contrast to the perception of the students who strongly affirmed that the characteristic of the use of the CMS that was the most beneficial to learning was more than just the "access" to information that the CMS afforded that they valued. The students did not find it helpful if in their words, "there was too much information." What was most valuable was if the information helped them to stay on track and be organised and know what was going on in class. The course notes helped them learn if they summarized what was done in class, not if what was posted was just read or repeated verbatim in

class. If they could use the information posted on the sites to guide them to be successful, it was that, that facilitated their learning and was the greatest benefit of the use of the course sites.

Question 3

What characteristics of the use of a CMS impede or provide a barrier to learning as perceived by students and faculty?

Students

The students began their responses to the question which asked about the drawbacks to using the sites, by saying that there were none. They were quick to say, as one of responses illustrates: "No, there is no negative impact to the use of My.Seneca, there is nothing that is not good." It was only after repeating this question that the interview discussions focused on the ways in which information was posted on the sites. They spoke at length about the frustrations that result when professors do not use the sites. I was surprised by how strongly the students felt that the use of the sites helped them to learn and therefore when the CMS was not used it was "more difficult" for them to learn.

Over 75% of the written comments on Survey Two that addressed ways in which the use of the CMS would be a barrier to learning referred to either the professors not using the sites or not using the sites in the ways in which the students perceived that they should be used. This was corroborated by the findings of the interviews with the students. Lack of use of the sites was, in the students' views, a barrier to learning. Every student who was interviewed felt that it should be "mandatory" for the students to use the sites and this was also demonstrated by the comments on Survey Two. The students believed that they did "better" in the courses which utilized the CMS. Over and over the comments on the surveys indicated that the students felt that: "TEACHERS SHOULD USE IT MORE!!!" [emphasis as written on the survey open ended question].

At the same time the students who were interviewed were resolute that if the use of the CMS resulted in less contact with the teacher, then that would be a barrier to their learning. A significant portion of the discussions during the interviews revolved around how important the time in the face-to-face classroom was to the students and how they wanted to go to class. One student said "We need the energy from the teacher" and another noted that "a drawback would be if they posted everything on the course site so that you did not have to go to class (S6)". This was a key theme that emerged, from the findings of the survey and interviews, as a characteristic of the use of the CMS that would be a barrier to learning and the implications of this will be discussed later. A few students mentioned that sometimes the information posted on the site was all in one section, and not organised properly resulting it in it being difficult to find documents that the professors said that they had posted on the sites. There was very little reference to technical issues as a barrier to learning. Less than 10% of the comments on Survey Two made reference to this and the only technical issue mentioned during the interviews was that sometimes the course sites took a long time to load.

Faculty

The professors who used the sites believed that "when properly used [the CMS] does not create barriers to learning…. [The CMS] is a tool, it can be used badly or well" (F02). They acknowledged that it would be a barrier if there was no integration between what was posted on the course sites and what went on in the classroom. Some were concerned that if the students did not attend class because they felt that they could get all of the information through the CMS, then that would be a barrier to learning. Similar to the students, they stressed the importance of the face-to-face classroom as the primary "place" for learning to happen. In the professors' views characteristics of the use of the CMS that could result in barriers to learning included if:

- the students do not know how to navigate the system
- the professor does not know how to use the CMS effectively
- the students did not attend class

Summary

The professors agreed with the students that if the use of the CMS replaced "teaching", which was equated with the students being able to get all the information without attending class, it would be a barrier to learning. They were quite concerned about the students not attending class if material was posted online. The feeling among the professors that the benefits that resulted from the use of the CMS far outweighed the barriers that may result from its use was verified and supported by the surveys of and interviews with the students. One theme that emerged from the study was that

many students found that "the poor use (under use or overuse or inappropriate use) of technology by faculty detracts from the learning experience.

Question 4

What are the perceptions of students and faculty about the effective use of a CMS?

Students

For effective use of the CMS, from the perception of the students, organisation is key. "First they should organise the material that they post on [the CMS], use folders, all assignments in the assignments folder, all lectures in the lectures folder. They need to organise the materials, don't put all the information in one folder so that I cannot find it" (S4). The students felt that the sites should be updated regularly; they should have summaries of the lectures and examples to guide them when they were completing assignments. In addition, they felt quite strongly that announcements should be used to keep them informed of due dates and deadlines and what they need to do to be prepared for class.

Almost all of the discussions with the students, about effective use referred to the ways in which the information was posted on the sites, the amount of information and whether or not the professors should post all of the information at once, or add it as the semester progressed. The students were in general agreement that:

> "I prefer them to add information slowly; if they put everything on all at once it is confusing. Some of them, they write week 13 and week 14, but you really don't know which week it is – they need to use real dates" (S13).

The students indicated that it was an ineffective use of the CMS, to post information and then not explain or discuss that information in the class. They discussed their frustration when they asked the professor a question and were sent to the site to find the answer. They spoke about the importance of having the information posted into the sites being integrated with what is done in the classroom. As one student so astutely noted as he referred to one course where the CMS was only used for the gradebook feature:

> Just grades is not enough, summaries of what was done in class, things we need to look back on and remember….there should not be too much information, it should be secondary not the main source of information, a backup (S8).

There was a very mixed reaction from the students about the effective use of the discussion board, with most of them agreeing that they did not find the online discussions very beneficial to learning. One of them spoke about it being easier for shy students or students for whom English is not the first language to discuss online. However, after self identifying as a student whose first language was not English, this student said she did not find that to be so. The other students in the focus group agreed. The students affirmed that because of their very limited experience with the use of the sites, based on the professors' use of the basic tools; they did not really have many suggestions concerning effective use. As they noted, they did not know what it is to use it effectively, because they did not know all the "things" the CMS can do. As one written comment on the survey stated:

Faculty

Quite a few of the professors seemed to be in general agreement that they did not have a strong understanding of principles for effectively integrating the CMS into their instruction, and this limited how effectively they used it to enhance learning. One professor noted that there should be "some consistency with the use of [the CMS] because I have heard from students that one teacher uses [the CMS], three don't, one uses grade book, one doesn't….. I just think that there should be more consistency, but other than that it is a great tool for students and for teachers (S15).

Not much was discovered about the effective use of the CMS, from the discussions with the faculty.

Summary

The mixed reaction to the effective use of the discussion board which the students discussed was shared by the professors. Only two of the professors spoke enthusiastically about their use of the discussion boards and discussed its value. A few of the professors spoke about putting all of the course information in one area of the course and described this as "being easy for the students", but this was not the opinion of the students who were emphatic that this made it very difficult to find information. The students really liked having different areas of the course sites with different

aspects of the course information. They found it very effective when the information was structured and valued the use of the CMS enabling them to have just one place to go to find the information for all of their courses.

Summary

The students who participated in this study had a very clear perspective of the characteristics of the use of the CMS that enhanced learning and those that created barriers to learning in the context of their learning experiences in the business programs at this case study college. On the other hand, the faculty seemed, for the most part, to be using the CMS because the tool was available and its use was encouraged by colleagues and administrators. While the students answered the questions with conviction, the answers provided by the faculty were tempered with speculation as their uses of the CMS in the classroom had never been evaluated by them or the school of business. Finally, they revealed different perceptions on the part of students and faculty.

The data garnered from the perceptions expressed by the students and faculty who participated in this study provided valuable insight into the answers of the research questions. The findings clearly illustrated the efficacy of the CMS in learning and the characteristics of its use that enhanced learning and those that created barriers to learning. They also revealed that accessing and managing information is paramount to learning in the perceptions of both students and faculty.

The Dog That Did Not Bark in the Night

While discussing the research findings, I was reminded of Sir Arthur Conan Doyle's Sherlock Holmes short story, *The Silver Blaze* where the crime was solved because a "dog did not bark in the night" (Doyle, 2004). When analysing the research findings of a case study, it is sometimes as important to reflect on and analyse what was *not* said as it is to reflect on and analyse what *was* said. It was in thinking about what was **not** said by the participants in the study that some of the key elements of the efficacy of a CMS were revealed.

Coates et al. (2005), sum up quite nicely much of what is written about the use of course management systems for learning. They posit that CMSs:

have the capacity to influence how students engage with their study and to change collaboration, communication, and access to learning materials. [CMS] enrich student learning by offering access to a greater range of interactive resources, making course contents more cognitively accessible, providing automated and adaptive forms of assessment and developing students' technology literacy. Asynchronous online tools allow students to interact with learning materials, their peers and the entire university in ways not bounded by time or place. (p. 66)

This study was grounded in the Principles of Good Undergraduate Education which emphases that good practice encourages student-faculty contact, encourages co-operation among students, encourages active learning, gives prompt feedback, emphasises time on task, communicates high expectations, and respects diverse talents and ways of learning (Chickering & Gameson, 1985).

While the results of this study clearly illustrated that the use of the CMS had a very positive affect on engagement and access to information, and was seen by some of the participants to help the students and the faculty to develop technology literacy, much of the descriptions of the potential of the CMS in the literature review were not revealed in the study. In analysing the data, I realized that at this case study college, the use of the CMS did not offer access to a greater range of *interactive* resources, it was not use to provide for automated and adaptive forms of assessment. The students' comments did not illustrate descriptions of active learning experiences. For the most part, the professors did not utilize the features that facilitate prompt feedback, except for minimal use of the gradebook, and there was not much mention of the communication of high expectations and respect for diverse talents and ways of learning enabled by the use of the CMS.

Yet, almost all of students who responded to the survey, 98% (n=357), felt that the use of the CMS was an integral aspect of their college experience, over 90% of the students preferred taking courses that used the CMS and the vast majority of them were satisfied with their experience with the CMS and thought that the professors used the course sites in ways that improved their overall teaching. Ninety four percent were very satisfied with their experienced use the CMS course sites. Even though the students preferred taking courses that used the CMS and felt that it should be mandatory for all of the professors at the college to use it, they did not want to spend more time learning online and they did not want the use of the CMS to result in less

time spent with the face-to-face classroom.

Information and the CMS

As I reviewed the findings of the study, again reflecting on the literature about the use of information and communication technology in general and the CMS in particular and on what I **did not** find in this study, I realized that the efficacy of the CMS in learning was about information access and organisation. Over and over again the students who were interviewed talked about the use of the course sites helping them to get a sense of what was being done in the course, and that the course sites helped them to organise how and what they did. The professors' comments corroborated those of the students about the invaluable role the CMS played in helping them, the professors, to manage, organise and keep track of the important information for each course.

I think it helps me to learn because it keeps me on track. You can go back to notes and check say Chapter 1. It helps me to learn but it is not as though if it was not there I would not be able to learn, it is more of a guide (S10).

> Access to course materials [is of utmost importance] if we don't have the materials we don't know what we need to learn (S1).

I guess I like [the CMS] for the way it can centralize a lot things I need to be doing, I have my information there, like for me, information management is much more difficult these days than time management. I mean that's the issue. There's just information everywhere and I have it everywhere, and I never know where I can find what I need, and so [the CMS] has been helpful in helping me to organise and manage that information (F16).

It was especially interesting that one of professors who did not use the course sites, when asked at the end of the interview if there was anything she wanted to add about the use of the CMS and learning said in reference to the way in which the CMS enables access to information and helps the students to be stay on track, said:

> A lot of my students come into the program and they're late, you know, two weeks late, and I'll say to them, you know, it's pretty late, you can't just crash a teacher's course in week three or week four and go in, and then I will ask the teacher if they use [the CMS] and I will say to the student, okay, you're responsible for making sure you know that material before you walk into your first class, so I find it can be useful that way. Also for students who are special needs, I can see that for them having the reinforcement of [the CMS] is very helpful (F09).

Few researchers have focused on the ways in which information can be a crucial resource in educational achievement and attainment. Certain conditions facilitate the management and organisation of this information, in many instances, this is critical for "successful" learning. Not being able to manage and organise and access information would result in students being "lost" and it may discourage them from successfully completing their courses. If they are in "control" of the information they would feel more confident about successfully completing their courses. The use of the CMS helped the students who participated in this study to learn by enabling them to easily access, manage and organise that information. The information management it afforded was also invaluable to the professors who used the CMS.

It is often noted in the literature, in a negative context, that professors put a lot of value on the CMS supporting traditional tasks, such as distributing their required readings. Even though the cynics on campus often note that this is "wasted effort", this is in fact a critical adaptation to a fundamental change in how students prefer to get access to course materials (Dutton et al., 2004, Lane, 2008; Awidi, 2008).

Communication and Collaboration and the Use of the CMS

The survey findings illustrated that the features of the CMS that received the lowest, but not negative, rating in this study were the ones that facilitated communication and collaboration. While just over 75% of the students agreed that the use of the CMS helped them to communicate with their classmates outside of class, almost 10% of the respondents said that this was not used by them. Over 30% of them said that they did not use the CMS to have helpful online discussions with their classmates and just over half of the respondents agreed that online discussions with other students were helpful. Over half of the students found that the online discussions with professors were not helpful and 25% of them

said that they (the teachers) did not use them. This perception was supported by findings from the interviews with the students; there were very mixed reactions to the discussion boards. The students said that they would only participate in the discussions if they were graded and some students indicated that found discussions that were just questions and answers "better" than those that were really "discussions". They did not like posting and then having to wait for a response. All the students stressed that even though there might be some students who preferred to use the online discussions, they much preferred the ones that happened in class. This disillusionment with the discussion board, when compared with in class discussions, was also a finding of the interviews with the professors.

Classroom Interactions With the CMS as a Support

These students showed a very strong preference for face-to-face interactions with their professors and fellow students. They described the convenience of having information on the CMS so that they easily "catch up" if they missed a class, because "It is not like in high school where you have friends in class. It is very difficult to make friends [at college] as the students are many different ages and backgrounds, so it is not easy to get notes from a classmate' (S4). However, their emphatic message was that campus based learning was a fundamental aspect of their education. They affirmed that even though it was useful to communicate with professors through email, "First I always send an email to my professor, to make an appointment, and then I go to see them. I prefer to see my professor face-to-face, I think it is a better connection" (S5). When asked about whether or not they would attend class if the lecture notes were available online, they were all emphatic that class attendance was not affected by the availability of notes. "Yes, absolutely, I would go still go to class. The purpose for coming here to college is for the interaction and contact with the professor in class, if not I would just do online classes" (S1). One student indicated that he was doing a fully online course and that he was doing well in that class, but he repeated several times that he preferred taking campus based classes. Their message was that even though they prefer taking courses that use the CMS and are of the opinion that the use of the course sites should be mandatory; "campus based" classroom learning, face-to-face interaction with their professors and classmates, was a fundamental element of their education. They stressed the importance of the social interactions with professors and classmates that occur on campus. The greatest barrier to learning from the use of the CMS would be if it resulted in less time with their professors. It is clearly a finding of this study that the CMS has a place, and that place is that not as replacement for, but as a support to, bricks and mortar education.

Technology and Learning: The Efficacy of a CMS in Learning

Educational technology presents many challenges to the academy. Policy makers in higher education face important and expensive decisions about the role of technology in their operations. But, the most important place to focus must be the heart of the scholarly endeavour, enabling learning. It is evident from the findings of this study that the benefits of these systems in terms of flexibility and accessibility and in the ways they help students (and faculty) manage and organise information is integral to learning and should not be understated. However, many of the features that are part of the CMS are not utilized. These findings illustrate that just having access to tools does not facilitate their use.

The fifth edition of the McGraw Hill Ryerson *Technology and Student Success in Canada* (2007) report concluded that one of the things that has to occur before technology becomes truly integrated into the curriculum is that there has to be evidence that its use can help teachers achieve important teaching and learning objectives. This supports the views of Butler and Sellbom (2002) whose study was conducted at Ball State University in Indiana and, a similar study conducted at Illinois State by Chizmar & Williams (2001), which both concluded that the attitude of faculty has a strong influence over how technology is integrated. Those studies proposed that the skepticism that faculty had regarding the overall effect that technology integration had on student learning was a barrier to its effective use since faculty cannot find convincing data that technology matters to learning. The findings of this study are strongly indicative that it is the perception of the students that there a number of characteristics of its use that have a very positive affect on learning.

This study revealed, the CMS, like a variety of other technologies, are no longer considered as desirable adjuncts to education, instead they are regarded as essential elements of the learning landscape. In reflecting on and discussing the connections between the latest research on learning, the findings of this study, and their implications, it was suggested that I consider *Mark Hopkins and the log*. This aphorism, coined

by James Garfield, a Williams College alumnus in 1871, who when after listening to an impassioned plea from a Williams College professor for more and better resources, proclaimed: "The ideal college is Mark Hopkins at one end of a log and a student on the other" continues to capture the essence of education today (Mark Hopkins, was the President of Williams College). Undoubtedly, the crucial medium was not the log, but the interactions between the teacher and the student. The key elements of effective learning are the connections and interactions between faculty and students, about a subject, which takes place in a setting, a context. Learning is situated in and impacted by the context.

The findings of this study indicate that there are a variety of purposes for using a CMS, and that when used effectively, the CMS is perceived by the students and faculty in this case study research to have a positive effect on learning. The ultimate goal of the research was to address whether, and under what conditions, course management systems, facilitate learning and or create barriers to learning. The aim of the findings of this study is to enable the Mark Hopkins of the 21st century to take advantage of the resources available through the use of the CMS to facilitate the interactions between the teacher and the students, to enhance learning.

Conclusions

Almost all colleges and universities are using some form of course management system, such as is the case at the college at which this study was carried out. These systems are used more often to create a web based presence in campus-based courses, than to deliver fully online courses, as was the original intent of the systems (Malikowski et al., 2007). The participants in this study saw the CMS as an integral element in their college education and they emphasised that its use, as a support for their campus based courses, was perceived to help them learn. For these learners who span several generations, and range in age from 17 to over 41, the social interactions that come from being in class with their peers and teachers is of utmost importance. This affirms the view of McNeely (2005), himself a member of the Net Generation, who surmises that "relationships are a driving force in the learning process [and]…. learning through social interaction is important" (p. 44).

The Research Questions

In answering the research questions the study concluded that the students and faculty perceived that the use of these tools as a support for campus based courses adds much value to learning and is an integral part of college education. This affirms the assertion made by a number of researchers (Caruso, 2006; Coates et al., 2005; Coates, 2006; Hanson & Robson, 2003; Salaway et al., 2007; West et al., 2006) that students perceive that they learn more when the web is used to augment other teaching methodologies. While, based on the views of the student representatives on the Student Federation Council and my own observations, I expected to find that there were ways in which the use of the CMS at the college added value to learning; the overwhelmingly positive perceptions of the students were surprising. The professors at the case study college are, for the most part, using the basic features of the CMS. Even though this type of use is criticized by the skeptics (Awidi, 2008; Lane 2008) , the insight gained from this study posits that this is a fundamental adaptation to facilitating the way that students prefer to access information and it has a positive effect on learning.

There are a number of characteristics of the use of the CMS that were identified by the participants in the study, to enhance and enable learning; the greatest benefits of which are the ways in which the CMS, when used effectively, facilitates access to and organisation of information, thereby helping the students to keep track of what they need to do to be successful in the courses. The greatest constraint to learning is over, under, or misuse of the CMS course sites. Even though on the surface it appears that the systems are being used to solely augment conventional practices, the use of the CMS has, in fact, added new dimensions to the ways of teaching and learning. The model for the effective use of a CMS to support the campus based experiences, presented, is based on the conclusions about the characteristics of the use of a CMS that enhance learning and those that create barriers to learning.

In addition to the conclusions of the study that emerged from the analysis of the findings based on the research questions, there were a number of other conclusions that provide valuable insight into understanding how, when, why and for what purpose the use of a CMS affects learning. The results of this study, illustrate that the predominant conception of learning is that of the transmission of knowledge. It questions some of the assumptions made about the technology skills of students and suggests that the use of the CMS is still in a state of flux. There is disparity between

the students' view of the very integral role the CMS plays in their learning and the practices of the faculty.

Conceptions of Learning

The teachers and CMS advisers interviewed for this study hold a variety of conceptions of learning, but the predominant view encapsulates learning as the transfer and acquisition of information. This orientation towards knowledge transmission is the reality in most classrooms on campus even though many teachers philosophically support constructivist practices and problem solving. Norton, Richardson, Hartley, Newstead, and Mayes, (2005) in their investigation of the variation between teachers' beliefs and practices across four universities in the UK concluded that teachers' intentions were more orientated towards knowledge transmission than were their beliefs which advocated the facilitation of learning through problem solving and a focus on learning. Herein perhaps, lies the crux of the problem with technology in education. While information and communication technologies, such as CMSs, can enable new forms of teaching and learning they cannot, of themselves, change educational practices as much of what is written implies. The preoccupation of descriptions in the literature, guided by constructivist theories, of the use of the CMS to transform teaching and learning has caused an important aspect of its use to be overlooked.

The findings of this study provide compelling evidence that, even though the use of the CMS focuses on supporting the transmission of information, it is perceived by the students to be an integral part of their education and its use has very positive effects on learning. It also provided valuable insight into the ways in which the use of the CMS enabled students to organise, keep track and process information. This disputes the claim made by Awidi (2008) that if the CMS emphasizes information or content management, it does not merit acquisition.

Students' Technology Skills

The college's eLearning plan makes reference to the ways in which the ways in which the Net generations of learners prefer to learn, as being different from other generations. This view is supported by a number of claims in the earlier literature, based mostly on speculation, that the Net Generation of students, those born in the early eighties and later, is unique in that they are the first to grow up with digital cyber technologies. It is assumed that they have distinctive ways of thinking, communicating and learning (Oblinger & Oblinger, 2005; Prensky, 2006; Tapscott, 1998; Barnes, Marateo, & Ferris, 2007). There is no question that computer and networked communication have become socially and culturally embedded throughout the lives of the students on our campuses, however, the findings of this study question the notions that the Net generation students learn differently from other generations of students and that the majority of college students, seek to integrate technology into **all** aspects of their learning experiences. The students who participated in the study ranged in age from 17 to over 41 and spanned several generations of learners. Their perceptions of the use of the CMS in learning were overwhelmingly similar between gender and among age groups and across generations.

This is supported by the first ever virtual longitudinal study carried out by the CIBER research team at University College London (2007) that questions the common assumption that the 'Google Generation' – youngsters born and brought up in the Internet age – is the most web-literate. The study reports that, although young people demonstrate an apparent ease and familiarity with computers, they rely heavily on search engines, view rather than read, and do not possess the critical and analytical skills to assess the information that they find on the web. The report, *Information Behaviour of the Researcher of the Future* (2007), also shows that research-behaviour traits that are commonly associated with younger users – impatience in search and navigation, and zero tolerance for any delay in satisfying their information needs – are now becoming the norm for all age-groups, from younger pupils and undergraduates through to professors. The discussions with the students and faculty who participated in this study verified this. This challenges the view expressed by the professors in the McGraw Hill study who felt that they were being encouraged to use technology in their courses primarily to address the needs of the "younger" students on campus, to the determinant of learning.

The CMS as a Utility, Not as an Option

The students who participated in this study felt that all professors should be required to use the CMS to support their campus based courses. Its use, not only provided a means for meeting the students' expectations regarding the electronic accessibility of course-related information (McGee et al., 2005; Morgan, 2003), but also helped them to stay on track, and improved their learning.

This presents a conundrum. It was evident, from the findings of this study that while students viewed the CMS as a utility and an integral part of their learning, the professors still viewed the use as optional. This research concluded that institutions need to implement strategies that will help motivate faculty to cultivate the technological skills and strategies necessary to more effectively integrate the CMS into their teaching to meet the needs and expectations of not only the new generation of students, but all students attending college.

The Effect of Lecture Notes on the CMS on Class Attendance

Faculty often express a concern that if lecture notes or PowerPoint slides are posted on the CMS the students would not attend class. The students in this study emphatically stated that this is not the case. In the interviews with the students they stressed the importance of classroom interactions with the teachers and as one student said "We need the teacher to learn." While noting that class attendance was not dependent on the availability of lecture notes on the CMS they noted that all some professors did was repeat, verbatim, whatever was written on the PowerPoint slides and this resulted in very uninteresting classes. The professors' concern that if course notes are posted online, that of itself, will affect class attendance is unfounded.

The Gap Between Potential of the CMS and Practice

Even though, based on the usage statistics, the adoption of the CMS at the college is high; its actual use by most faculty is basic. The findings of this study verify the observation of Kopyc (2007) that, "while it is true that faculty use computers every day to send email, compose texts with word processing, and search the Web, the number of faculty using technology to enhance their teaching is relatively low." Malikowski et al. (2007), Lane (2008) and Morgan (2003) noted that even experienced online teachers use Blackboard and WebCT primarily for grade administration, e-mail, and presenting static content. This was confirmed by the findings of this study; the professors, who participated in this study, even though aware of the other functionality available within the CMS, generally used only the basic features of the CMS. Their use of the CMS focused on delivering information (West et al., 2006).

It is of fundamental importance to ensure that there is institutional support for faculty and students so that they use the CMS wisely and well, to ensure its seamless integration into the campus based experience. Rogers (1993) contends if an innovation is perceived as better, more efficient or effective it is more likely to be adopted. Critical to this is the degree to which successes (and failures) of the innovation are visible. The findings of this research suggest that even though workshops and committees remain valuable resources for fostering engagement with the CMS, as is seen by the high adoption rate, further measures are needed to tackle the CMS conundrum in a more sustainable way.

Factors Contributing to the State of Flux of the Use of the CMS

Ioannou and Hannafin (2008), critical of the use of the functionality of the CMS, ask an important question. Is it possible that CMSs have introduced so much new functionality so fast that users have not had a chance to seriously reflect on what they need or want? As Salaway et al. (2007) noted "there is reason to believe that institutions are still in a flux implementing course management systems" (p. 29). This research supports that view.

The uneven and sporadic use of the features of the CMS may be explained by the work of Hooper and Rieber (1994) who suggested that integration of technology occurs along a spectrum of effectiveness and involvement. They noted five stages that teachers move through as they integrate technology into teaching and learning: familiarization, utilization, integration, reorientation, and evolution. At the first stage of familiarization, teachers are first exposed to the features of the CMS and their use of the system is basic. At the utilization they begin to use the CMS to support and enhance the curriculum moving beyond the basic uses, such as was the case with a few of the professors who were interviewed for the study. The integration stage is reached when the CMS is used for activities that cannot be attempted without it. During reorientation and evolution, many different features of the CMS are used, not because they are available but because of their pedagogical value, and the use of the CMS results in fundamental changes in teaching and learning. Based on this model this study concludes that there is still much work to be done before the use of the CMS reaches the evolution stage.

The variable use may also be explained by the work of Ertmer (1999) who identified two sets of obstacles to the integration of technology in education. They identify first order obstacles

which include problems with the hardware, infrastructure and support for using the technology, and second order obstacles which require changes in pedagogy or personal preferences that influence the professors' use of the technology. The findings of this study indicated that the college has a well established infrastructure and the CMS is supported in a variety of ways. The issues of stability, noted in the literature as being one of the greatest barrier to integration of the CMS into teaching (West et al., 2006) was not present at this college. In light of this it can be concluded that the second order obstacles provide the likely explanation for the uneven use of the CMS. These barriers are typically rooted in teachers' underlying beliefs about teaching and learning and their personal preferences and comfort level with technology. They are entrenched in personal perspectives of teaching and learning and pedagogical principles.

Questioning Assumptions About the Use of CMS-based Discussions

The findings of this study suggest that there is much work to be done surrounding the use of online discussions and collaborations. Clegg and Heap (2006) postulate that the faculty who must facilitate these discussions "usually have no training, no role models, no benchmarks and no quality standards regarding this particular medium" (¶1). They propose that faculty need help to improve their interactions online, and to develop a framework for effective facilitation. The conclusions of this study, about the mixed messages surrounding the use of the communication and collaboration features of the CMS questions the assumptions in the literature of the effectiveness of this particular mode of communication between faculty and students and among students.

The Importance of the Teacher

This research concluded that the fear of some faculty that the value of the teacher would be decreased by the use of technology is unfounded. As technologies evolve, faculty members have a more complex, not a lesser, role to play in creating and facilitating learning experiences. This research observed the existence of a fine line: educators need to constantly consider and assess strategies that make use of technology such as the CMS, and balance that with the interactions in the classroom. The systematic use of the CMS actually enhances the role of the teacher, at least for those who seize the opportunities that it offers and enables.

Reflective Practice: Assessing the Use of the CMS

Since its adoption, as noted by one of the CMS advisers, the use and integration of the CMS has not been assessed or evaluated, until now. The current practices at the college are driven more by the availability of the technology, than by pedagogy. There is not much reflection on the part of the professors about the strategies that have been employed to use the CMS. The interviews with the CMS advisers revealed that when the CMS was purchased, there was the hope that, making the technology available would result in it being used.

A number of recent studies of the implementation of CMSs, mostly done in American universities (Zemsky & Massey, 2004; Lane, 2008; Moergan, 2003; Collins & vand er Wende, 2002), support the findings of this study and indicate that although CMSs have been widely adopted, significant changes in teaching and learning are uncommon. In many ways these studies are critical of this use of the CMS mainly to supplement existing practices. These studies reflect the inherent assumption of many administrators that simply adding technology to the repertoire of teaching and learning tools will change practice in education (Zenois et al., 2004). This is not the case. Despite the fact that the lessons learned from the unsuccessful endeavours of educators to incorporate radio and television into teaching and learning, provide compelling evidence that this is an ill conceived strategy many current policies and practices are technology driven and lack a pedagogic rationale (Kirkwood & Price, 2006). It is therefore not surprising that there is a sense on college campuses that the potential of technology and the CMS is not fulfilled. Much of the earlier discussions in the literature have focused on access to, quality and skills required for technology use; these are no longer much of an issue. The divide is now about quality of use of the tools to enable learning. The findings of this research question the observations in the literature that the potential of the use is unfulfilled. It instead highlights the importance of assessing the impact of the CMS in the context in which it is used, and concludes that it plays an important role, even though it is not the role that was predicted and expected.

Current State of CMS Research

The CMS research has so far focused on technical issues and issues about the use of certain features of the CMS. It is almost predominately survey based. This research provides helpful information, but in order to advance CMS use in

ways that enable learning, CMS research needs to be grounded in frameworks about how people learn. Given the popularity of these systems and their presence of just about every university and college campus, an increasing number of professors will likely need guidance on how to effectively use the CMS as a compliment to campus based instruction.

Whatever one believes about the potential of the use of the CMS to impact learning, there is no question that the use of the CMS is more than a passing trend. It has affected learning and teaching at multiple levels at the college, and stimulated changes in how learning and teaching occurs. No single technology or tool is likely to meet the needs of or be perceived in the same way by all learners. It is essential to attain a more theoretically driven understanding of the educational rationale and consequences of using the CMS. Models for its effective use in campus based learning are key to harnessing the opportunities the use of the CMS affords, thus enabling effective educational experiences for learners.

Implications

At the case study college, the technical infrastructure is stable and well established and there is support through help desks, elearning advisers and training opportunities yet, the faculty and the CMS advisers recognised that they were not using the CMS to its full potential. At the same time the students strongly advocated for its use to be mandatory, as they saw it as in integral aspect of the campus based experience. Examining the disparity between the low use of the features of the CMS, its widespread availability with each course having an automatically created course site, and the views of the students that it helped them to learn, suggests that there are many factors in the academic digital divide that need to be understood before the CMS is used effectively.

Based on the findings and conclusions of this study there are a number of areas to which colleges must pay particular attention. Tinto (2002) identified several factors which enhance student persistence, the most important of these conditions focused on ensuring that the settings on campus foster learning. He noted that institutions that are successful in creating learning environments which engage students, facilitate contact with faculty and other students, and provide them with support for learning, are more likely to retain and graduate their students. The overwhelmingly positive perception of the students about the ways in which the use of the CMS positively impacts their learning highlights the importance of the implications of the conclusions of the study.

Defining Necessary IT Skills for Students

As the use of the CMS becomes ubiquitous on campus there are implications for the technology skills of both the students and the faculty. If the CMS is used in all courses, and it is not an optional way for students to access course materials and engage with course content and activities, those without adequate technology skills may be disadvantaged. Even though, not a concern at this large, urban, college it may be an issue at a smaller, rural college. It is crucial to ensure that polices and practices are in place to ensure that technology is an enabler and not an obstacle to learning. Colleges should identify and require base-level technology skills and offer training sessions that prepare students with technology skills needed to be successful, offering where possible short training sessions during the first week of classes or before classes begins. These technology skills should be communicated in college materials, advising sessions and program/course requirements. The previous experiences with the use of educational technology, of the students in this study, varied widely. The conclusions of this study revealed that it should not be assumed that all students are comfortable with using technology to learn, in particular the younger students.

Student IT Fees

In collaboration with the Student Council, a student IT fee was created at the college in 1990. This fee was matched by the college, to build college capacity for providing student access to computers and education technology for course work as an option to enhance learning. This was part of a strategic initiative at the college. Almost twenty years later, as the use of technology, such as the CMS, has come to be viewed as a standard part of instructional infrastructure, its function has shifted from option to utility. This shift, in turn, has implications for the IT fee, which may not be appropriate as a means of providing a utility service. An economist would say that IT, as a utility, is an externality which is assumed, like a fire department, to benefit everyone. Its aggregate or public value can be measured, but its individual or private value is difficult to discern. An implication for policy is that the IT fee is now more like a tuition fee than a users' fee.

Tradition as a Barrier to Integration

Even thought the professors using the CMS are positive about the impact of the CMS on learning, the CMS advisers believe that the college, based on what was available at the time, made the right choice, and the overwhelming majority of students said that the CMS is an important aspect of their college education; history is a barrier to its successful integration into teaching and learning. The perception at the college among some faculty and administrators, eight years after the CMS was adopted that academics were not consulted and did not have much input into the decision to purchase the CMS, is a barrier to its use. Many strategies designed to overcome this perception, including committees designed to discuss computing and technology issues, IT days and conferences with an aim of linking pedagogy with technology strategies, have not been successful in overcoming this barrier. There is still much work to be done to get all of the stakeholders focused on working to ensure that there is effective use of the CMS. The involvement of faculty in decisions surrounding the purchase of new technology for teaching and learning is of utmost importance.

Ongoing Support and Professional Development for Faculty

Ongoing professional development and support for faculty is essential; this was a concern of the professors who participated in the study. Faculty need to have a base level of competency with the use of computers and the Internet in order to successfully utilize the features available within the CMS. There was also a desire, expressed by the faculty who participated in this study, for them to have opportunities to share their practices and purposes for using the course sites with each other. They expressed a desire for collaborative conversations, in addition to structured workshops, with their colleagues who are using the course sites. These conversations would be a way to share ideas about reasons for using the features with the CMS and their potential for addressing specific learning needs. Intentionally setting up opportunities for faculty to learn how to use, and to showcase successful work within, the CMS, facilitating positive communication among adopters, and sharing findings such as those of this research study are all strategies that should be fostered to increase its effective use.

In addition it is important for faculty to converse with students and to evaluate the use of the CMS from the students' perspectives. Not one of the professors interviewed had had any discussions about the ways that they were using the sites with the students enrolled in their courses. It is critical that we follow the advice of Coates (2006) and put the students at the centre of conversations about learning. Gathering and sharing knowledge through seminars, hallway conversations, facilitated discussions and formative feedback from students, will assist faculty and administrators to better understand and access the implications of the use of the CMS as a support for courses offered predominately in the classroom.

Consistent Use of the CMS

The students emphasised the importance of consistent use of the CMS and of the structure and organisation of the information posted on the course sites. The inconsistent use of the CMS, by faculty, created barriers to learning. Students clearly want more of the courses to be supported by the use of the CMS, and for faculty to use them in a somewhat standardized manner. This is not to say that all professors should follow identical procedures, but collaboration for purpose of consistency will decrease confusion for students enrolled in multiple courses within a program.

The Hybrid Course Model: Time Spent in Class Versus Time Spent Online

From descriptions in the literature, one would have expected, such as do the administrators at this college, that the CMS use would result in supporting richly interactive hybrid courses. Classification of hybrid learning varies in the continuum from fully face-to-face to fully online. Often, "hybrid" or "blended" learning is used to describe any course that combines traditional face to face instruction with Internet based technologies (Swenson & Evans, 2003). Generally it follows Twigg's (1999) definition which refers to the "replacement" of traditional class time with out-of-class learning and assessment activities. The reason for offering these courses is often promoted as a way to accommodate the needs of today's students by offering instruction that is accessible and flexible. While taking this into consideration, the findings of this study suggested that the balance between time spent online and face-to-face must be carefully considered. The students in this study were emphatic that if the use of the CMS results in less time in the face-to-face classroom, this could be a barrier to learning. In other words, CMS use should not be traded-off against conventional teaching.

At this college, in a number of programs,

the business faculty are encouraged to offer more courses in the hybrid mode. Based on the conclusions of this study, with increasing adoption of the CMS into campus-based learning, it is important to carefully monitor and continually assess the substitution of time spent in the classroom with activities online. Substituting face-to-face time with online time may have implications for the perceived quality of student learning.

Connecting Faculty With Research-Based Models

It is of fundamental importance for institutions to connect faculty to current research which demonstrates the pedagogical value of technology in learning contexts." At the same time, as Kopyc (2007) observes, is important to avoid all encompassing models as that fails to accommodate individual pedagogical practices. She goes on to stress that it is imperative for institutions to explore effective uses of technology in teaching and to share those findings not only with those within the institution, but also with colleagues at other institutions. One of the reasons for not using the CMS, provided by those professors who did not use it, was that they were not aware of the ways in which the use of the CMS could benefit learning. This finding supports Perry's (2004) view that "getting the word out is among the most important attributes of a successful effort to implement a new technology based learning environment" (p. 36). It is the intent of the model for effective use to provide one example of ways in which the use of the CMS can enhance learning.

Model for Effective Use

It was not the aim of this research study to provide a blue print for the effective use of the CMS, but it does offer a much-needed theoretical and empirical rationale for a model to enhance learning when the CMS is used to support campus based education. One of the most important messages to come from this research is that educational institutions and those who teach and learn in them need to be constantly reflecting on and investigating the diverse nature of students, the ever changing environment of higher education and the context in which learning takes place. Mainstreaming any technology because we hope it might address the needs of a diverse student body is a flawed strategy. In order to successfully and effectively utilize the features of the CMS we need to focus on evidence based practice in which we actively examine our assumptions, seek evidence as to their effectiveness and be prepared to adapt or change our practices when the evidence suggests a need to do so (Kirkwood & Price, 2006).

The most recent studies about the use of the technology in education indicate that students prefer a moderate amount of technology in their courses (Salaway et al., 2007). This is consistent with the findings of this study. The study concluded that the students have a very strong preference for campus based instruction, supported by elements of the use of the CMS course sites. In *Describing a Decade of Canadian University Students* at the CSSHE Conference in Vancouver, Patterson (2008) affirmed that, by a large margin, the preferred type of instruction for undergraduate students is classroom based with on-line supports. While supporting the results of the Patterson study, the findings of this study highlighted that it is not enough to just conclude that the students prefer a moderate amount of technology (Salaway et al., 2007), what is in fact of primary importance is that the balance between what is done in the online environment and what is done face-to-face in the classroom should strongly favour the latter. The message from these students was clear that if the use of the CMS resulted in less interaction with the professors then that would be a barrier to learning. This study provided valuable insight into understanding what the students perceive to be "moderate use of technology" and informs the model for the effective use of a CMS in campus based courses. The model also emphasizes the fundamental premises of *Mark Hopkins and the log,* as described in Chapter Five.

Theoretical Framework for the Model

For the last decade, a prominent debate in higher education has been the examination of *learning* versus *teaching* as these concepts relate to the learning process. This debate was described by Barr and Tagg (1995) who proposed a shift in how instruction should be perceived and called for a change in teaching from an instruction centered (focus on teaching) to a learning centered (focus on learning) paradigm. If one assumes that learning is the product of teaching and that the purpose of teaching is for learning to occur then this debate is an odd one. However, one of the positive outcomes of this debate has been a focus on all factors related to learning, and much literature and research has highlighted the importance of the creation of effective learning environments.

Faced with this shift in emphasis from teaching to learning, colleges were prompted to examine their classroom practices and to find ways

to enable students to be "active discoverers and constructors of their own learning" (Barr & Tagg, 1995, p. 21). As the teaching versus learning debate was taking place on college campuses, descriptions about the potential of technology to enhance learning flourished in the literature. A good example of this is provided by the work of Bransford et al. (2000) who in their book *How People Learn Brain, Mind, Experience and School*, stated that "computer based technologies can be powerful pedagogical tools – not just rich sources of information, but also extensions of human capabilities and contexts for social interactions supporting learning" (p. 230). This potential has been the lens through which, much of what is written about the use of technology, including the CMS, for learning, is analysed. As is evident in the eLearning plans of the College at which this study took place, it was the forecasted *potential* of the CMS that was the driving force behind the adoption of course management systems at almost every college and university.

As this study progressed, it quickly became evident that this, the information age has resulted in additional challenges for educators and educational institutions. More new information has been produced in the last there decades than in the last five millennia (Haddad & Draxler, 2002). As rapidly as information is being generated, there are growing means by which to disseminate that information, Learners are poorly equipped to cope with the explosion of information resources competing for their attention. The perceptions of the students and professors interviewed for this study confirmed this. The age old objective of education, the advancement, application, dissemination and creation of knowledge and the search for truth, faces new challenges in light of the explosion of easily accessible information. The findings of this research illustrated that if we look at the use of the CMS through the lens of the ways in which, when used effectively, it can help students organise, manage and keep track of the information they need to be successful, harnessing the anytime anywhere access that the online environment makes possible, a model for its efficacy in learning emerges.

Information is the foundation of knowledge. The "information explosion" sparked by digital technology has fostered an increasing awareness of the sheer mass of information available today. As great amounts of information become readily available and easily accessible to anyone with access to the Internet, the ability to intelligently process that information takes on increased importance. Developing the dispositions and skills necessary for informed information processing, and finding ways for student to organise, manage and keep tract of the information necessary for them to be successful in their courses, have always been elements of good course design, however, they are even more critical components of education in an information age.

Cognitivism, emphasises that instructional materials must be presented to learners in ways that facilitate students' learning. If materials are organised effectively and in ways that help learners to make connections then it helps them to learn. Cognitive theory is at the core of how students make sense of information; it attempts to analyse how individuals receive, retrieve and process information. Several types of learning strategies can be used to assist information processing. Information processing models, as the name implies are focused on how information is processed rather than on how learning happens, even though it could be argued that that distinction is semantic.

Gagne (1985) suggests that learning tasks can be organised into a hierarchy according to their complexity, and that there are a number of prerequisites that should be completed to facilitate learning at each level. He states that there are a number of instructional events that should provide or satisfy the necessary conditions for learning and serve as a basis for designing instruction. Considered the father of instructional design, he used his Conditions of Learning (1965), to introduce the concept that all instruction is not equal and that different types of instruction are required for different times of learning outcomes. As Boettcher (2007, ¶33) surmises "what this principle means is that *what* a faculty member *does* makes a difference to what students *do*, and what students learn." Gagne's work illustrates the importance of designing teaching and learning events to facilitate student success. It informs the model of using the CMS to help students process the important and relevant information for a course.

When the CMS is used to guide the students' learning by making them aware of the learning objectives of the course, the outline and schedule for the lessons, important dates especially those for tests and assignments, summaries of important content, examples of credible resources, and opportunities for review and practice; it is not only convenient, but it helps them to manage, organise and keep tract of information; it helps them to learn.

The model proposes that the CMS should be used as a framework for helping students understand what is to be learned, and what they need to do to be successful in the course by enabling them to be organised and stay on track. This model proposes the use of the course sites to provide guidance for learning, and encompasses the use of the basic features of the CMS as a place to post information, announcements and grades.

Model for the CMS as Guide and Organiser

This model proposes that the CMS is used as a reference for the course and is fully integrated with the classroom based experience, but does not detract from time spent interacting with the teacher and classmates in the campus-based classroom. The information on the course sites should encompass the important elements of the curriculum - the rationale, aim, content, evaluation and resources.

Anytime, anywhere access to important course information including:

- course outlines
- schedules
- due dates
- explanations of assignments
- course expectations
- timelines
- extra resources, especially for those topics that are not covered in-depth during face to face class time
- review quizzes, or information, relevant to the learning objectives of the course
- samples of excellent projects or past student work

Materials posted on the course site must be:

- organised in folders, not all in one place. For example, all assignments should be in an assignments folder. The folders should be easily identifiable and clearly marked. If the information in the folder is time sensitive then actual dates should appear in the folder description, Not just Week one or week fourteen.
- updated regularly, making all of the information available to the students during the first week of classes is confusing and overwhelming.
- added in a timely manner - if there is an expectation that a document should be printed and taken to class, then that document would have to be posted so that the students have time to print the document, not just a few hours before class or the same day as the class.

Lecture notes or PowerPoint presentations as Advance organisers for the lecture must:

- include relevant and significant elements of the lectures - summaries of the main points of the lecture, not the information that will be repeated verbatim in class;
- be focused so that the elements of the notes or slides should be such that the classroom lecture increases detail or complexity;
- organise and sequence the content and highlights key facts, concepts and principles;
- have a practical bias through examples, exercises or empirical illustrations in order to make the content more meaningful to the learners.

Announcements and email messages must be posted:

- often, preferably at least once a week providing information about the week's schedule and important tasks;
- and or sent to the students with enough time for them to be checked in a timely manner, especially if they are about classes that are cancelled or classroom changes. For example if an announcement about a cancelled class is posted 10 minutes before class is scheduled to begin it is not helpful.

Grades must:

- be posted in the gradebook as online

access to grades is a motivating factor for students; it encourages them to work harder to get better grades.;

- also include additional feedback, provided through the gradebook, especially for online review tests as this helps them to learn.

The information on the sites should include the main and most representative elements of the course. Information, easily available, via the Internet, is no longer structured in a clear and logical fashion; it is very fragmented, multi-channeled and simultaneous. Helping learners to make sense of information, in this age of information overload, is increasingly a more complex element of instruction and role for faculty. The features made available by the use of the CMS can assist with this task.

The intent is for the model to be continually adapted as faculty become more familiar with the more advanced features available through the CMS. It is clearly evident that much more research is needed. This study has outlined some key factors of the use of the CMS which affect the way students learn, in the context of the College, where the study took place. There are many other contexts, in which learning is situated, and it is of utmost importance for further research to identify other models of effective use.

Conclusion

There is no doubt that new approaches to learning and teaching have to emerge, to keep pace with this connected world in which access to information is immediate and considered by many to be paramount. At the same time grounded in the philosophy that learning has more to do with making connections between ideas and concepts than on the transmission and acquisition of information, and based on the findings of this research, it is evident that the intellectual excitement, interpersonal concern and motivating components provided by teachers in the on campus classroom are key to making those connections. It is this that students, even those who have grown up in a digital world, value most in learning. Using the CMS to replace face-to-face contact in the classroom was not desired by either the students or faculty. The ideal of "Mark Hopkins on one end of a log and a student on the other" continues to capture the essence of campus based education. When the CMS is used to enhance the interactions that take place on the log, but not to replace Mark, it is highly valued by the students.

Even though Blackboard was the CMS that was the focus of this research, CMSs are very similar in the tools that they are comprised of, and the processes which they facilitate. The principles here, even though based on a case study of business students at one Ontario College, may be relevant to a range of institutions, disciplines and class settings. As Katz (2003) noted, some form of the CMS will most likely become the fabric of the higher educational experience, in much the same way that "chalk, blackboards, paper, textbooks, uncomfortable chairs, touch screen monitors, erasers, and presentation software have become part of the historical fabric" (p. 56). There is growing evidence that these systems have the potential to add much value to, but not replace, the campus based learning experience. Effectively integrating course management systems into teaching and learning is an essential step in the evolution of the use of technology to facilitate learning.

The adoption of course management systems to enhance learning will follow the path directed by the dualism that defines and adds richness to higher education; that of the opponents who will seek to constrain its use and the advocates who will further its use. There is no revolution that was predicted in the earlier literature, and one is not likely to happen, instead there is an intellectual evolution, another element in the historical scholarship of academics as teaching practices are researched, reflected on, and renewed, ensuring both relevancies to new ways of knowing and grounding in traditional values.

Contribution to Knowledge

The perceptions of the students and faculty about the purposes of using a CMS, the characteristics of its use that enhance learning and those that create barriers to learning, and their perceptions about the effective use of a CMS, can be used to establish standards of good practice around the use of a CMS in campus-based courses. They lend insight to the usefulness of a CMS in improving the learning experience and elucidate some of the conditions that learners perceive to be integral to learning in this information age. It is hoped that the findings will stimulate debate surrounding the best practices for using a CMS to compliment campus-based courses and assist colleges in responding to the challenge of effectively integrating CMSs into academic

practices to increase the relevance, scope and efficacy of students' educational experience. The study identifies how the use of a CMS augments and complements rather than substitutes campus-based classroom activities, and sets some parameters that are worth considering in the complex process of adoption and integration of a CMS.

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