

FACTORS THAT INFLUENCE FACULTY UPTAKE AND CONTINUED USE OF
COURSE MANAGEMENT SYSTEMS

by

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Abstract

Course Management Systems (CMS), central to the online learning experience, are instructional tools that offer educators innovative pedagogical choices in delivering classroom content. However, it is critical, for institutions that have recognized learning technologies such as CMS as part of their strategic plans, to be engaged in understanding the issues that surround faculty adoption and use of such technologies. Factors influencing uptake and use of Course Management Systems (CMS) were studied through responses collected from an online survey and subsequent interviews with faculty members at The University of British Columbia (UBC). 43 faculty members from professorial ranks, 33 users and 10 non-users of WebCT, participated in an online survey. Five users and one non-user, from these participants, were also interviewed. In addition, three administrators, who are in technical support roles, were interviewed. The survey and subsequent interviews were carried out between January and April 2005. Faculty members were from faculties and schools ranging from Arts to the Applied Sciences.

A majority of faculty members surveyed rated availability of time, time taken in course set-up and delivery and students' interests as the top three factors that influence uptake and use of CMS. Reliable and effective technical support, technology related factors i.e. complexity or inflexibility of the course management tool and pedagogical implications are also major factors. Faculty members' perceptions, views, and concerns in the uptake and use of CMS were also uncovered through this study.

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Dedication

To my family: Dad, Mom, my sisters Violet, Maureen, Pam and Rachel, brothers Nelson, Desmond and Steven.

Chapter 1 : Introduction

In the last five to ten years, Information and Communication Technology (ICT) has had a profound influence on teaching and learning. With the advancement of Internet technologies, online learning has now emerged as an instructional paradigm that is widely accepted and implemented. Most institutions are currently either building or expanding their *e-learning* programs and courses to meet the demands of remote, diverse and larger communities of learners. "Virtual education" is gaining popularity and even traditional universities are now being pressured into espousing distance and e-learning programs in order to survive or keep up with current demands in education (O'Donoghue, Singh, & Dorward, 2001, p.513). Some of the pressure on institutions to adopt these online trends in education also comes from students.

Course Management Systems (CMS), designed to support such e-learning endeavours, are powerful tools that offer educators and course designers innovative pedagogical choices and strategies in providing classroom content and learning experiences. CMS are instrumental in reproducing classroom content while overcoming the constraints of distance and time. They also serve as aids in enhancing the quality of face-to-face instruction by supplementing classroom content in innovative ways. These web-based learning tools are significant additions to instructors' repertoires of pedagogical strategies. Instructors have an additional dimension to their roles: managing, moderating and providing instruction asynchronously through the medium of the Internet.

The impetus being given to e-Learning is evident in many higher education institutions. The University of British Columbia (UBC), for instance, as of February, 2003 had 583 active online course sections and around 28,000 "active student accounts" connected with these courses (UBC, 2004b). There are plans to significantly expand these numbers as the *e-Strategy* initiative takes a central role in UBC's goal to provide and promote excellent learning experiences (UBC, 2004d). Also, The University of Florida (UF)¹ a university, comparable in terms of student population to UBC, was planning to support 30,000 discrete student accounts in WebCT² by summer 2003 (University_of_Florida, 2003, p.7). With the current trend for online learning, e-learning initiatives appear to be meeting with considerable success. However, while online learning provides excellent learning opportunities it also offers unique challenges. Some e-learning endeavours seem to be thriving, while others seem to be less successful. Mount Allison University in New Brunswick, Canada for instance, has been grappling with "markedly" slow course management system adoption rates and is currently working on challenges they face in promoting CMS among faculty and staff (Francis, 2004). CMS are central to e-learning programs and to ensure an effective and successful implementation of an e-learning initiative it is important to take a closer look at issues that surround CMS and their adoption, integration and use in the higher education context.

¹As of August 5, 2004, University of Florida (UF) had around 46,000 students. UBC, as of winter 2003, listed around 40,000 students. These numbers make the two universities somewhat comparable in terms of student population.

² WebCT is a prominent course management system product that is used in several higher education institutions in Canada and also has a strong international presence. Information available at <http://www.webct.com/>

1.1. Statement of the Problem

Faculty play a pivotal role in online education and are an important and integral part of an e-learning system. They are instrumental in designing and delivering the content, moderating online discussions and facilitating learning. They are “crucial resources”, key to successful implementation of instructional technologies and distance education on the internet (Passmore, 2000). Despite the recent thrust by higher education institutions to expand distance education programs and related technologies, faculty seem to resist participation in these initiatives (Howell, Williams, & Lindsay, 2003; Olcott & Wright, 1995). There is “reluctance by many faculty members to place their courses online” (Oravec, 2003, p.91).

CMS adoption rates with instructors and faculty do not seem to be keeping up with the growth rates of online learning. A 2001 survey of instructional support directors in Canadian post secondary educational institutions revealed that “50 percent of colleges and 80 percent of universities have purchased some form of WebCT license,” but only 11 percent of the instructors indicated they use WebCT (Cuneo, Campbell, & Harnish, 2002, p.595). These numbers are similar to a survey conducted at a Midwestern college in the US where 92.7 percent of the faculty used WebCT less than 5 times per semester (Savery, 2002).

George, Sleeth & Pearce (1996) suggest that institutions “hastening to adopt technological sophistication”, might likely be overlooking one of the important factors influencing the change, i.e. the instructor (p.604). It is suggested that faculty, particularly in the area of distance education, have been characterized as “the neglected resource” (Dillon & Walsh, 1992). Institutional support (Bower, 2001),

Intellectual property rights (Passmore, 2000), inadequate technical support and funding (Barnard et al., 2001) are some of the factors that have been cited as sources for instructors' lack of adoption and participation in distance education technologies such as CMS. A deficient faculty reward or incentive system in most higher education institutions has also discouraged faculty from adopting and using instructional technologies (Gilbert, 1996; Passmore, 2000). Traditional reward structures that revolve around the maxim "publish or perish", pervasive in most research-based institutions, provide little or no encouragement to faculty who might be inclined to adopt technologies, such as CMS in their teaching. However, instructional technologies are here to stay and as a result CMS will remain an integral part of the technological landscape of higher education. Also, how higher education institutions use technology reflects what they teach about "technology's role and application" in education (UBC, 2004f). Higher education institutions therefore need to align their technology plans with their overall organizational goals. UBC, for instance, is evidently poised to do so (UBC, 2004d). Consequently, it is critical for institutions that have recognized technologies such as CMS as part of their strategic plans to be engaged in understanding what factors influence faculty adoption and continued use of these technologies.

1.2. Statement of Purpose

The purpose of this study is to discover sources of faculty members' reluctance or keenness in adopting and using CMS, particularly those from professorial ranks. Understanding faculty concerns and obstacles to adoption is crucial to ensuring an institution-wide implementation of a course management

system. Savery (2002) believes that “examining perceptions of a target audience is a widely used strategy based on the premise that perceptions matter and often influence behaviours” (p.1). The study is designed, therefore, to allow the exploration of the motivators, inhibitors, perceptions, attitudes and beliefs of university faculty concerning adoption and use of CMS. The study was conducted primarily in the context of The University of British Columbia (UBC). While the study assumes UBC as a case, the results are expected to provide knowledge and information that is applicable to CMS and related technology integration in Canadian higher education institutions, and probably North American institutions more generally.

1.3. Research Questions

The research questions focus on investigating factors that contribute to the adoption and continued use of CMS:

- 1) What are the factors that influence faculty uptake and use of CMS?
- 2) What are faculty perceptions and views of CMS?
- 3) Why do faculty, who have access to CMS, choose not to adopt these tools?
- 4) What are the factors that influence faculty to continue or increase use of CMS?
- 5) How can uptake rates of CMS among faculty be increased?
- 6) How can faculty be helped and supported so that they could use or continue to use these tools effectively to deliver courses?

1.4. Theoretical Framework

To understand the issues surrounding faculty adoption and use of CMS, Rogers' (1995) theory of Diffusion of Innovations (DoI) and other instructional

technology related theories pertaining to users' concerns were used as a basic theoretical framework. Extant studies, including surveys that dealt with faculty concerns, obstacles, motivators, perceptions, attitudes and beliefs in uptake and use of instructional technologies, particularly CMS, were also employed.

Rogers' (1995) classic theory of DoI helps one to understand the features related to the adoption of CMS. The theory posits that technological innovation is "communicated through particular channels over time among members of the social system" (E. Rogers, 1995, p.10). Faculty play a pivotal role in the implementation of CMS and, therefore, constitute a vital part of this "social system," i.e., the academic community. Hall and Hord's (1987) Concern-Based Approach Model suggests that "the first order of business" for change facilitators is to understand the practices, attitudes, skills and concerns of teachers (p.5). Burkman's (1987) theory of User Oriented Instructional Development (UOID), suggests that change facilitators should be conversant with the "problems and preferences" of potential adopters and should build rapport and communication with them (p.451). A combination of all these theories provides an effective means to analyze the issues of adoption and diffusion of CMS. Further, recent surveys conducted in universities and colleges, pertaining to CMS, distance education and instructional technologies, and their use by faculty, are useful in understanding the underbelly of the practical issues in implementation of CMS in higher education institutions. These surveys provide an overview of the factors some of which are, excessive preparation time (Ansorge & Bendus, 2004), technology related issues and student reported problems (Morgan, 2003) that are obstacles or concerns with faculty who want to use CMS to deliver online courses.

Aside from the area of CMS, research and studies concerning faculty issues in online and distance education have also been examined as the Web is now the main medium for offering online learning (Cuneo et al., 2000) and CMS are central to the delivery of distance education. Several faculty issues are common to these topics. Therefore an examination of issues in online and distance education provides useful input to the discussion of adoption and use of CMS. For the purpose of this study the terms online learning and e-learning, albeit subtly different, will be used interchangeably.

1.5. Significance and Outcomes of the Study

An analysis of the results of the study is expected to reveal not only a list of factors that influence faculty adoption of CMS, but also a set of guidelines/recommendations to the administration from a faculty perspective. Examining these factors could aid administrators in planning and developing faculty support and effective institutional policies that promote adoption of CMS as well as continued and increased use of such systems. The improved online education model built as a result of these recommendations that include the best interests of the key resource, the faculty, will consequentially aid in providing students with better learning experiences.

Higher education faculty are role models for prospective teachers. Faculty attitudes and beliefs about technology are likely to impact future teachers' use of technology in their own teaching careers (D. L. Rogers, 2000). "Technology literacy" has been established as a vital skill for students in schools and colleges in the 21st century and teachers, particularly in schools, are instrumental in imparting and

building on those skills. An increased adoption and use of emerging instructional technologies, such as CMS, in higher education circles, particularly teacher education, should have far reaching effects on these teachers and in turn their students. However, our informal observations at an education department in UBC revealed that out of 35 instructors a mere five use CMS for some form of online learning experiences in their courses.

Results of this study will add to previous research on faculty and online learning technologies and will extend the knowledge and awareness of faculty issues in the area of uptake and use of CMS. There is only a modest amount of research available on the adoption and use of online instructional technologies, particularly CMS, relating to higher education faculty in the Canadian context. Results of this study have the potential to make a valuable contribution to faculty research in Canadian higher education.

In a local context, the information generated by the study is expected to provide valuable input that will aid those involved in UBC's e-Strategy³ initiative in their planning and implementation of e-Learning strategies. "The components of e-Strategy are now aligned more closely with the pillars of Trek", which is UBC's "vision for the 21st century" (UBC, 2004d). This study, therefore, might be a timely and valuable contribution toward these initiatives.

1.6. Definition of Terms

Asynchronous Communication: is an event that takes place in online learning "in which people are not logged on at the same time. For example, the instructor might

³ "e-Strategy is a guiding framework to align UBC's technology initiatives with the university's strategic goals"(UBC, 2004d) .

publish a lecture on a website and learners would read it when their schedules permit" (Carliner, 1999).

Change agent or change facilitator: Individual or a group who influences a client's innovation decision in a desired direction and creates an environment for a particular change to occur (E. Rogers, 1995).

Course Management Systems: A set of web based or online tools that facilitate courses to be delivered online. They can also be used to enhance traditional face-to-face classroom instruction. These tools help in managing everything from curriculum, assignments, examinations, group projects, grades, to general classroom communications (Syllabus, 2003).

Diffusion: This is process by which an innovation is communicated through a social system over time (E. Rogers, 1995, p.11).

Distance Learning: "Distance learning can be simply defined as an instruction and learning practice utilizing technology and involving students and teachers who are separated by time and space" (Majdalany, Gibran, & Guiney, 1999). Distance learning could be delivered through video, satellite and currently CMS seem to be emerging as a popular medium.

Distance education: "Teaching and learning in which learning normally occurs in a different place from teaching" (WorldCampus, 2004). It is delivered synchronously or asynchronously to students through the help of audio- and videotape, videoconferencing, interactive TV, Internet and correspondence.

Distributed Learning is the delivery of education or training using multiple media and technologies, when and where it is needed. "It may involve learner-instructor

interaction in both real time (synchronous) and non-real time (asynchronous)" (DLN, 2004).

E-Learning: Simply defined is electronic learning and "refers to training, education, coaching and information that is delivered digitally. E-Learning is normally delivered through a network or the Internet but it may also be delivered via CD-ROM" (DLN, 2004). Using the Internet to deliver instruction can be considered either e-learning or distance education (Wright, Stewart, Wright, & Barker, 2002).

Innovation: "is an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (E. Rogers, 1995, p.11).

Synchronous Communication: Synchronous communication is what takes place when "all participants are online at the same time and communicating with one another. For example, an instructor might schedule a guest lecturer to take question at a particular time; all interested people would connect with the lecture when the guest is online" (Carliner, 1999).

Uptake: in the context of this study, uptake or adoption is the decision to use a technology and implementation is the actual use of technology.

Chapter 2 : Relevant Theory and Research

Course Management Systems (CMS) play an important and integral role in 21st century higher education. They are used in innovative ways to support distance learning and enhance traditional classroom based instruction. A 2003 survey conducted by EDUCAUSE⁴ lists CMS as being one of the top ten Information Technology (IT) issues of significance to higher education institutions (Crawford & Rudy, 2003). Currently, there is an increased presence of some kind of course management tool in universities and colleges across North America. A Canadian survey of instructional support directors revealed that "50 percent of colleges and 80 percent of universities have purchased some form of a WebCT license" (Cuneo et al., 2002). CMS by various vendors now offer tools that support among other features, synchronous (chat, whiteboard) and asynchronous communication (discussions/bulletin board, email), course content management, course administration (student lists, grades) and assessment (quizzes etc.). This multifaceted functionality renders these CMS as formidable and comprehensive systems that are able to support e-learning and enhance face-to-face instruction.

CMS have primarily been instructional tools that have grown and developed bottom-up by faculty (Boettcher, 2003). They have since grown into complex systems and have fostered an industry which now has several vendors and products. Experts believe that, in less than a decade, we are now in the fourth wave of CMS (ibid.). From using them for basic individual course organization and student communication to "web-enhanced campus courses" to integrating enterprise

⁴ EDUCAUSE is a non-profit organization involved in promoting the use of Information Technology (IT) in higher education.

administration functions, we now have CMS, some even open source, built to industry design standards (ibid.). The widespread growth of CMS in higher education has resulted in the need for faculty, who play a key role in the implementation process of such instructional systems, to adopt and use them. CMS along with the support systems that they often need to be coupled with are cost intensive and the successful implementation of these instructional tools in higher education rests primarily on faculty uptake rates.

From the advent of CMS faculty have been challenged to augment their traditional "chalk-and-talk" teaching methods by providing more online learning experiences. CMS seem to be "the most rapidly diffusing e-learning technologies across the world" (Dutton, Cheong, & Park, 2004). This increased presence of CMS in higher education institutions is indicative that there is an amplified expectation for faculty to adopt and use these tools either online or in classrooms. However, despite 50 percent of colleges and 80 percent of universities, in the Canadian survey seen earlier, reporting the presence of WebCT licenses only 11 percent of the instructors indicated they use WebCT (Cuneo et al., 2002, p.595). There is arguably a need for more faculty members to adopt and increase use of CMS. It is therefore important to take a closer look at the issues that surround faculty uptake of CMS.

This review begins with a discussion of the "theory of diffusion of innovation". It also includes discussions of other user based concept models related to diffusion of innovations. This is followed by an examination of the role of faculty in the adoption of CMS. After this discussion, the review will focus on factors that impact on the adoption and use of CMS. A brief examination of possible support structures

to enhance use of CMS is also presented at the end of the chapter. The chapter concludes with a summary of the theoretical framework as well as the issues and their relevance to the rationale of the study.

2.1. Diffusion of Innovation Theories and CMS

Widespread adoption of an idea or innovation takes time. Theories of diffusion of innovations provide a theoretical background in understanding the essential elements of adoption. The understanding of these elements will help to aid efforts in increasing adoption and use of CMS.

Theories of adoption and diffusion have been formulated within several different views, for instance the *top-down* model where the administration of an organization drives adoption and diffusion of a technological innovation and *bottom-up* where individual users drive the process of diffusion and the organization is pressured into institution-wide adoption (Carr, 2004). There is another distinction that is made in the theories of adoption and diffusion. It is the *determinist* and the *instrumentalist*. The determinists view technology as the driving force behind social change while the instrumentalists view social and human factors as the main causes for change to occur (Carr, 2004; Surry & Farquhar, 1997).

CMS are instructional tools that have usually initially been adopted bottom-up by faculty; however, more advanced versions have been implemented top-down. The theories that follow have been included in order to understand the issues in adoption and diffusion of CMS from an instrumentalist's point of view. This view implies that they deal with adopter-related social factors of the system.

As instrumentalist diffusion theories suggest, considering the social context where an instructional product is used is vital to the successful adoption of the technological innovation. In the words of Surry and Farquhar (1995): "Technology is a social phenomenon. The design, development, adoption and diffusion of technology are inherently social processes (p. 592)". Studies suggest that instructional designers and developers often fail to consider the "social context" where instructional products are to be used. Researchers have been calling attention to the need for a thorough analysis of the social environment during the development of instructional technologies (Surry & Farquhar, 1995; Tessmer, 1990). Consequently, it might be argued that if designers and developers are indeed ignoring the "social context" where an instructional technology product is adopted and used, then the need for change facilitators to be aware of this "social context" is even more important. This awareness would benefit the change facilitators in two ways. First, the knowledge would inform and aid the institution in the process of adoption. Second, it would equip the institution with information and feedback that they could provide to developers who could in turn use that information to refine and revise their products.

It is difficult to examine and understand the diverse issues that surround the topic of adoption and diffusion of CMS solely with the help of one theory or model. Therefore, Rogers' (1995) theory along with other user based concept models that are applicable to the context of CMS are presented in the following sections.

2.2. Diffusion of Innovation Theory

Rogers' (1995) theory of diffusion of innovation is a general theory that has been used extensively as a basis for studies in adoption and diffusion of technological innovations (Carr, 2004; Surry & Farquhar, 1997). Rogers (1995) posits that technological innovation is "communicated through particular channels over time among members of the social system" (E. Rogers, 1995, p.10). Rogers (1995) suggests that there are four distinct elements that play a role in the diffusion of innovations: *Innovation, communication channels, time and social system*.

An innovation, technological or otherwise, is "an idea, practice, or object perceived as new by an individual" (E. Rogers, 1995, p.11). The perceived characteristics of innovations influence their adoption rates. The five characteristics as suggested by Rogers (1995) are: *Relative advantage* which is the perceived advantage of an innovation over the idea or practice it supplants. *Compatibility* or the "degree to which an innovation is perceived as being consistent with existing values, past experiences, and needs of potential adopters" (p.15). *Complexity* is the perceived level of difficulty to "understand and use" an innovation. *Triability* is the degree to which the innovation allows itself to be experimented before being adopted for use. A "triable" innovation allows potential adopters the possibility of learning by doing. *Observability* is "the degree to which the results of an innovation are visible to others" (p.16). Rogers suggests that these five vital characteristics seem to influence the "rate of adoption" of a technological innovation.

Communication channels are the conduits through which adopters and other participants in an innovation "create and share information with one another" (E.

Rogers, 1995, p.17). This exchange of information could be among adopters or between the adopters and the support group implying that the “diffusion” of information is indeed socially driven.

Time is the pace at which the innovation is adopted in the system. Time is an important factor in the implementation process of any technological innovation. The element of time in the context of this theory is critical to the overall success of the diffusion of innovation as it is an integral part of the *Innovation-Decision* process. The Innovation-decision process is one that every adopter goes through and is described by Rogers (1995) as consisting of five steps. The first step of *Knowledge* is when an adopter “learns of the innovation’s existence and its functionality”, the second step of *Persuasion* occurs when the adopter forms a “favourable or unfavourable attitude to the innovation”. *Decision*, is the third step where he or she either adopts or rejects the innovation. The fourth step of *implementation* takes place when the adopter applies the innovation and puts it to use. Finally, the fifth step of *confirmation* transpires when an adopter “seeks reinforcement of an innovation-decision that he has already made” (p.20).

The element of Time is also directly related to the *rate of adoption*. The rate of adoption is the “relative speed at which an innovation is adopted” by potential adopters in a system (p.20). Rogers (1995) suggests that the rate of adoption is best represented by an “S” curve. A suggested variation of this curve for adoption of interactive technologies, such as CMS, is also shown along with Rogers’ version of the curve in figure 1.

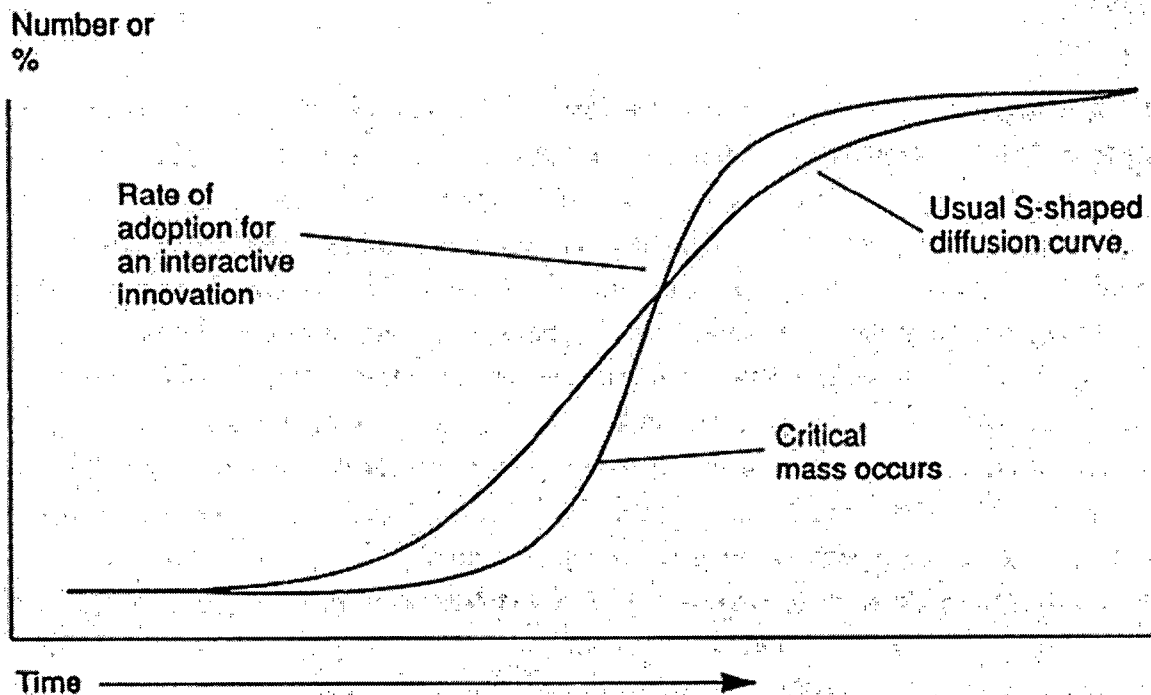


Figure 1 : Adoption curve for interactive technologies (Robinson, 2001) shown with adoption (usual S-shaped) curve by Rogers (1995)

The *social system* is the last of the elements of the diffusion of innovations theory. Rogers (1995) defines the social system “as a set of interrelated units that are engaged in the joint problem-solving to accomplish a common goal” (p.23). The social system can consist of potential adopters, organizations, related groups, departments, and any other individuals who are stakeholders in the implementation of the innovation. The adopters are a fundamental part of this social system and the theory classifies the adopters into “categories” based on the time these individuals adopt the innovation. These classifications are: *innovators*, *early adopters*, *early majority*, *late majority* and *laggards* (p.22). These adopter categories are “ideal types” that are “conceptualizations based on observations of reality that are designed to make comparison possible” (p.263). Innovators are the first to adopt an

innovation and laggards, the last. The typical characteristics of each adopter category as described by Rogers (1995) are listed in table 1. The distribution of potential adopters in an organization as proposed by the theory follows a normal curve with the five adopter categories, each claiming a percentage of the total. The distribution is shown in figure 2. Rogers (1995) describes this distribution as one based on "ideal types" and therefore is an abstraction of empirical research.

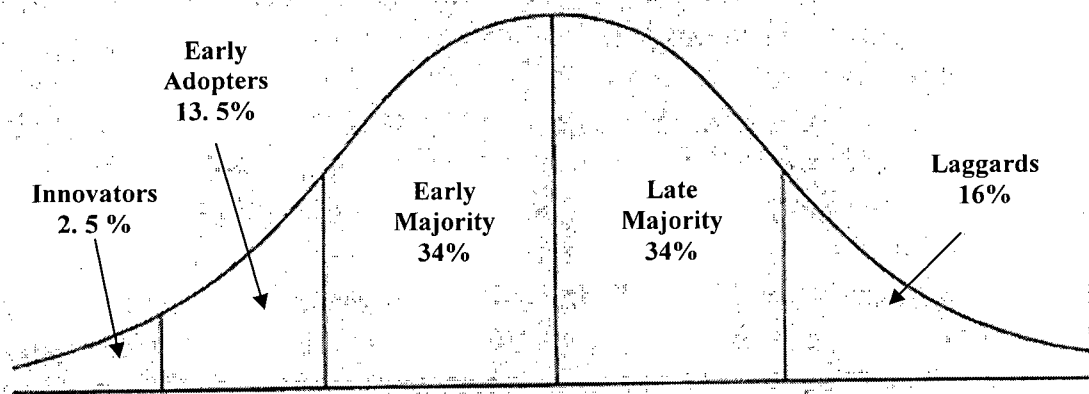


Figure 2 : Adopter categories mapped on the normal adopter distribution (E. Rogers, 1995, p.262)

Table 1 : Dominant characteristics of adopter categories
(E. Rogers, 1995, p.263-265).

Adopter Category	Dominant Characteristics
Innovators	<ul style="list-style-type: none"> • Venturesome. • Able to understand and apply complex technical knowledge. • Able to cope with high degree of uncertainty at time of adoption. • Maintain a close contact with members of the group. • May not be respected by other members of the local system.
Early adopters	<ul style="list-style-type: none"> • More integrated members of the local social system than innovators. • Command respect from peers. • Highly influential in speeding up the diffusion process. • Serve as good role models.
Early Majority	<ul style="list-style-type: none"> • Interact frequently with peers. • Do not hold positions of opinion leadership. • Deliberate before adopting an innovation. • Provide interconnectedness in the system's interpersonal network. • The innovation-decision period is longer than early adopters and innovators.
Late Majority	<ul style="list-style-type: none"> • Approach adoption from a sceptical perspective. • Adopt only after most members in the system have adopted. • Adoption may be a result of economic necessity and peer pressure. • System norms must favour innovation before they are convinced about adoption. • Uncertainty about the innovation must be removed before they can feel safe to adopt.
Laggards	<ul style="list-style-type: none"> • Last to adopt. • Possess traditional values. • Decisions are based on what was done previously. • Innovation-decision process is significantly lengthy. • Suspicious of innovations and change agents. • Might be isolates in their local social system.

The *adopters* in this context of CMS are the faculty and the administration and the related support network are the change agents or change facilitators. In order to increase the adoption of an innovation i.e. CMS, Rogers (1995) posits that its *perceived characteristics* should be considered. The *time* element gives a sense of the rate of adoption and also stages of the adoption process. The characteristics and the distribution of the *social system* i.e. the faculty, who are fundamental to the process of diffusion of innovation, provide a heuristic to understand the dominant features of faculty types as suggested by Rogers (1995).

2.3. Other Theoretical Perspectives Supporting Adoption and Use of CMS

2.3.1. Concern-Based Approach Theory

Hall & Hord (1987) carried out research for over a decade in schools and colleges and compiled a comprehensive set of tools, techniques and approaches that would assist “change facilitators” in promoting changes such as technological innovations in educational institutions. They emphasised the need for change agents such as administrators and support personnel to understand the “change process as it occurs” in their institutions (p.3). The Concerns-Based Approach Model (CBAM), a conceptual model, which stemmed from the synthesis of their observations of how instructors moved through different stages when adopting and implementing new programs, procedures or innovations, suggests that understanding the clients involved in a change process is central to the successful implementation of the technological innovation. The word “concerns” is particularly significant because it

underlines the role of the “human side” of change (p.viii). To that end, CBAM suggests that “the first order of business” for change facilitators is to understand the practices, attitudes, skills and concerns of the instructors (p.5).

CBAM works on the foundation that change facilitators should probe adopters or users and study the resulting reactions in the light of three dimensions: *Stages of Concern*, *Levels of Use* and *Innovation Configurations* (p.13). They can then design appropriate support and intervention from the synthesis of the information of these three dimensions. The *stages of concern* that a user could have are: *self* which would be more individual focussed, *task* which deals with the logistics, administrative and scheduling aspects of the use of the technological innovation and *impact* which deals with increasing the “effectiveness of the innovation” (p.13). At different points in the process of uptake, different stages of concern namely self, task or impact will be intense and the knowledge of the intensity of the stage of concern will help a change facilitator provide the appropriate support to the instructor.

Different *levels of use* are: *mechanical*, where a manual is used to carry out functions with the tool after which they will move to a more *routine* level of use. *Refinement* is when the user adapts and makes the innovation more suitable to his or her context (p.14). *Integration* is when the user combines his efforts and skills along with that of his or her colleagues to make the innovation more suitable to his or her group. *Renewal* is when the user reassesses the innovation and seeks to modify it to suit his needs, for instance possibly think of a different version of a product or amend a process or procedure (p.84).

The third dimension of "Innovation configurations" addresses the innovation itself, and focuses on describing the "operational forms" or different configurations of the innovation in the system (p.14). This seems to be more relevant when an innovation can be modified by designers but it also could be interpreted to be a means by which administrators and change agents can make subtle changes in the product or its application to suit the users' needs. Change facilitators could use this information, for instance, to decide on a newer version of the tool.

The three dimensions of CBAM could serve as useful parameters to guide and inform change facilitators in planning and implementation of faculty support. Determining the stage of concern helps in determining individual needs of instructors. The levels of use provide a change facilitator with information of how adopters are using an innovation. This information can help change facilitators decide on how to help instructors effectively use an innovation. The element of "Innovation configurations" provides feedback on general use and features of the instructional tool.

2.3.2. User Oriented Development: Better Quality does not always mean Better Uptake

Burkman (1987) also supports the need to pay attention to potential adopters' or users' needs, perceptions and opinions. His theory of User Oriented Instructional Development (UOID) is chiefly targeted at Instructional designers but the principles and ideologies that Burkman (1987) suggests is relevant to the discussions of adoption and implementation of instructional technologies.

Burkman (1987) uses the QWERTY⁵ and DVORAK typewriters as an example to highlight the belief that users' experiences, perceptions, needs and opinions play a vital role in the adoption of innovations. The QWERTY typewriter was inferior to a later designed DVORAK version which claimed to be an appreciably superior and efficient technological innovation. However, potential adopters did not believe it would be "personally advantageous" and in spite of efforts to promote this superior typewriter model, it eventually was rejected (p.439). The conclusions that he draws from this are threefold: First, potential adopters' views on how the innovation will personally affect them strongly influences adoption. Second, in the process of adoption and implementation, "effectiveness and efficiency" are not the only factors that users consider and third, the task of changing attitudes of potential adopters to new innovations is certainly not a simple one (p.439). This rebuffs the belief that "better quality automatically leads to better acceptance" (p.439).

Burkman (1987) suggests that change facilitators should work with potential adopters and be conversant with their "problems and preferences build rapport and communication with them (p.451). He emphasises the need for a good support system that will encourage users to adopt an instructional technology and continue or increase use.

The type of support that is suggested is listed under four categories: a) *Moral support*, which includes the proverbial "pat-on-the-back", words of encouragement,

⁵ Christopher Sholes in 1873 came up with the QWERTY version of the typewriter with letters, Q, W, E, R, T, Y arranged so that it would prevent jamming of keys at fast typing speeds. The layout was designed to slow down typists and in turn reduce jamming. Later, when jamming of keys was eliminated from typewriters a more efficient form version was designed by August Dvorak in 1932. This had the keys laid out for efficient and easy reach of the typist. The Dvorak design never took off and as a result even this document is typed using the QWERTY style keyboard (Burkman, 1987, p.438).

and “formal rewards” such as salary benefits, work load adjustments etc. b) *Tactical support* refers to bringing about changes in “organisational practices and procedures” to facilitate adoption which for example could be “changing the criteria used to evaluate instructors”. c) *Training support* refers to ensuring that instructors can effectively use the tool and carry out what is required of them. d) *Material support* could range from providing instructors with books, reading materials to software or any supplementary items that would aid them in the use of the tool (p.449).

In summary, UOID underscores the need to recognize the role faculty play in the adoption process and to focus on their needs, opinions and perceptions. It emphasises the need to provide support and open a channel of communication with the users.

2.4. Application of the Theoretical Framework

A combination of the concepts in the preceding sections provided an effective means of looking at the issues of adoption and diffusion of CMS. While some of the concepts and constructs do appear to be commonsensical, they offer a logical and practical view of the different issues that concern the adoption and diffusion of instructional technologies.

Using Rogers’ (1995) theory as a framework, I present the view that faculty constitutes the social system in which CMS have to be diffused. Consequently, it is important from an organisational viewpoint to look at the diffusion pattern and the adopter categories that exists in the social system. Knowledge of potential adopter categories can assist administrators in shaping faculty training, development and

incentive programs. Adopter or faculty categories have been used to understand adoption and use of instructional technologies (George, Sleeth, & Pearce, 1996; Hagner & Schneebeck, 2001). For example, if an institution determines from the adopter distribution that its potential adopters are mainly "late majority" faculty then from the prominent characteristics of these types it is known that these faculty members would typically approach adoption with scepticism. The motivation and support structures to promote adoption and continued use of CMS could then be geared toward this target group of users. Hagner and Schneebeck (2001) for instance, have used Rogers' (1995) adopter categories to engage faculty in adoption of new teaching technologies. They have characterized Rogers' (1995) categories as: Entrepreneurs (first wave), risk aversives (second wave), reward seekers (third wave) and reluctants (p.3). This implies, for instance, that the early and late majority adopters according to Rogers' (1995) categories are reward seekers and the motivation for this group would therefore be closely tied to the reward structures of the institution (Hagner & Schneebeck, 2001, p.4).

Knowing about typical adoption patterns can help administrators of Instructional technologies "guide expectations and inform strategy" (Robinson, 2001, p.21). The construct of *perceived characteristics* of CMS could be a useful guideline to make a realistic appraisal and to "highlight areas where effort needs to be concentrated" (ibid, p.24). Administrators and support personnel could, for instance, highlight the *relative advantages* or facilitate *observability* of the course management system when engaging with the faculty. Also, estimating the rate of adoption of a course management system would help in organisational planning and budgeting

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initiatives. The four elements of the theory of diffusion along with constructs such as characteristics of adoption, rate of adoption, innovation-decision process, and the adopter categories thereby form a useful theoretical framework for the study of adoption and use of CMS.

Rogers' (1995) theory, albeit insightful, makes the process of diffusion of a technological innovation appear simplistic. This could make sceptics question its predictive capacity. The actual process of adoption and diffusion is understandably complex and involved. For instance, the adopter categories appear to be idealistic and have "little to say about those who choose not to adopt an innovation" (Robinson, 2001, p.22). However, it should be noted that this theory provides a practical heuristic for understanding the elements behind diffusion of innovation.

Hall and Hord's (1987) CBAM and Burkman's (1987) UOID models provide useful guiding principles for user support and motivation. Knowledge of the stages of concern and levels of use from CBAM would determine the personal and professional needs of a faculty member. UOID emphasizes that technological superiority and quality of an instructional tool alone does not determine adoption of an instructional tool. Burkman (1987) suggests the need to be aware of faculty needs, attitudes, opinions and perceptions and describes the levels of faculty motivation.

Rogers' (1995) and Burkman's (1987) principles and theoretical ideologies are supported by Surry & Farquhar (1995) who have underscored the role of users and the social context as key to the adoption process. The "Adoption analysis" theory posited by Surry and Farquhar (1995) combines Rogers (1995) concept of

perceived characteristics along with Burkman's ideologies and is “defined as a process that seeks to determine and account for the social and technical problems that will be bred by the introduction of an instructional product into an organisation” (Surry & Farquhar, 1995, p.595).

Adoption analysis lists individual and organizational factors that shape the “adoption and integration” of instructional technologies (p.595). These factors, as listed in table 2 are sources of potential issues that would influence the adoption of instructional technologies. The factors are divided into two categories, individual and organisational factors. Individual factors are a combination of general user characteristics and perceived characteristics as outlined by Rogers (1995) theory of diffusion of innovation. The user characteristics include skills, experience, motivation and knowledge base. The organisational factors, which are a combination of the “physical environment” and the “support environment”, include “personnel, expertise, attitudes, hardware, software, facilities, and services available within, or to an organization” (Surry & Farquhar, 1995, p.596).

The views and concepts presented in this section of the review provide a substantial theoretical framework for understanding the influence of the user characteristics on the adoption and use of CMS. Rogers’ (1995) theory provided an insight into perceived characteristics of an instructional tool. The user categories according to Rogers (1995) listed typical characteristics of potential adopters. Hall and Hord’s (1987) CBAM and Burkman’s (1987) UOID illustrated user support and motivation. Finally, Surry and Farquhar’s (1995) adoption analysis is a convergence of these concepts.

Table 2 : Individual and organizational factors affecting the adoption of an instructional tool (Surry & Farquhar, 1995).

Individual Factors	
User Characteristics	Perceived Attributes
Motivation	Compatibility
Anxiety	Complexity
Knowledge Base	Observability
Prior Experience	Relative Advantage
Skill Level	Triability
Organisational Factors	
Physical Environment	Support Environment
Patterns of Use	Production Services
Reasons of Use	Storage/Delivery Services
Classroom Facilities	Technical Support
Management Characteristics	Ongoing Monetary Support
Existing Hardware and Software	

2.5. Faculty: A Key Resource in Higher Education

Faculty have been characterised as being an important (Olcott & Wright, 1995) crucial (Passmore, 2000) and essential (Betts, 1998) resource in higher education and vital to the successful implementation of distance education technologies such as CMS. However, most of the research in the field of distance education has primarily focused on the technology, the organization and the learners. Devries & Tella (1998) identify the “dominant theme”, of research in this area, as being the “learner and the organization”. It is suggested that higher education faculty, particularly in the area of distance education, are “the neglected resource” (Dillon & Walsh, 1992). Another view is that they are perceived as “bottlenecks in innovation” (Passmore, 2000). George, Sleeth & Pearce (1996) suggest that institutions “hastening to adopt technological sophistication”, might likely be overlooking one of the important factors influencing the change i.e. the instructor” (p.604).

While studies, in the last decade, suggest that faculty have been receiving less attention than deserved, recent trends have seen an impetus toward determining faculty concerns and needs (McKenzie, Mims, Bennet, & Waugh, 2000). An increasing number of institutions are scrambling to ascertain faculty issues in areas such as technology and e-learning. The Campus computing survey determined that “assisting faculty integrate technology into instruction” appears to be an “important IT issue” for upcoming years in several institutions (Greene, 2001). While this is a movement in the right direction, there is a need to further intensify

efforts to examine faculty needs and explore means of motivating and supporting them to adopt and sustain instructional technologies such as CMS.

The need to examine and explore faculty issues in the areas of technology, instructional tools and e-learning is critical now than it has ever been. The advent of distance education, the proliferation of web-based instructional technologies, and recent e-learning initiatives have challenged, changed and diversified the faculty role (Beaudoin, 1990, 1998; Paulson, 2002; Schifter, 1999). Faculty are required to be versatile and adaptive to technological changes that constantly permeate their classrooms. Although the traditional model of “teacher-student-classroom” where instructors mainly played the role of “sage-on-the-stage” will not disappear, it will now cease to hold a dominant position (Plater, 1995). Higher education faculty are expected to be able to assume additional roles of facilitators of learning, creators of online content and e-moderators⁶. Despite the change in faculty roles and the intensification of sophisticated online tools in education, faculty “remain crucial to the quality of the e-learning experience” (Barnard et al., 2001).

2.6. Faculty and Use of CMS

In simple terms, CMS are an integrated suite of web-based tools that facilitate partial or full online course delivery. The advent of CMS has given a renewed impetus to distance education as institutions increasingly use the web to deliver online courses. This has made the Web the main medium for offering online learning (Cuneo et al., 2000). CMS have germinated out of the teaching community. The “first set of course management system applications were developed by faculty”

⁶ E-moderating is the term given to the emerging role of instructors in online learning, especially in synchronous web technologies (Salmon, 2004).

(Boettcher, 2003). However, these systems have now grown into superior corporate products that have been elevated to “enterprise” status, in many institutions, “with expectations of the same scalability, reliability and interoperability that characterize other mission critical applications, such as registration and accounting systems” (Barker, 2004). A 2003 EDUCAUSE⁷ survey of its members reported CMS as one of the top ten IT issues that have the “potential to become more significant” in the year ahead (Crawford & Rudy, 2003).

The top three vendors for CMS are WebCT, Blackboard and eCollege. These three companies have captured the majority of the market. The college technology review 2002-2003 reports 94 percent of American post secondary schools that took part in a survey seem to have CMS. 46 percent show as using Blackboard, 35 percent as using WebCT and 4 percent using eCollege (MarketData, 2003). In 2000, Campus Computing Canada surveyed all colleges and universities in Canada and reported that 78 percent of institutions offering online courses indicated that they would intensify adoption and implementation of WebCT over the next three years (Cuneo et al., 2000, p.35). This widespread acceptance seen in higher education is sufficient evidence that CMS are an integral part of colleges and universities.

However, faculty adoption of CMS has been low , for instance, the 2001 Canadian survey, reports that only 11 percent of instructors surveyed were using WebCT (Cuneo et al., 2002). A faculty survey at a mid-western college in the US reported that the “least frequently used technology was the WebCT course management application” with 92.7 percent of the faculty using it less than five times

⁷ EDUCAUSE is a non-profit organisation whose main aim is to promote “intelligent use of Information Technology (IT) in higher education institutions. More information is available at <http://www.educause.edu/>.

per semester (Savery, 2002, p.5). "While 80 percent of public four-year colleges make course-management tools available to their faculties, professors use them in only 20 percent of their courses" (Lynch, Altschuler, & McClure, 2002). Despite the availability of the technology and infrastructure, faculty uptake rates are relatively low. This indicates a need for institutions to look closely at the issues that surround faculty adoption and use of CMS.

CMS are currently used by higher education faculty to provide courses ranging from distance education courses, with virtually no instructor-student face-to-face contact, to traditional classroom courses enhanced by some online content. Campus Computing Canada's 2000 report for online learning categorized online and offline courses offered by Canadian post-secondary institutions into four types (Cuneo et al., 2000, p. 13). Having established that CMS are the main medium for online learning we could use the same categories to describe types of CMS courses. The various types are:

a) *Mainly offline with online support*: this is a regular face-to-face instructed class that is gradually including some online technologies.

b) *Roughly equal mixtures of offline and online components*: where classes might meet face to face for half of the term while during the other half activities are done online.

c) *Primarily online distance, minimal offline support*: these are basically online courses with little or none offline support

d) *Purely online distant*: courses offered by “virtual post-secondary education institutions” or “cyber-universities” are mainly under this category. (Cuneo et al., 2000, p.15)

The first type of courses is the fastest growing type “involving technology in Canadian post-secondary education institutions” (Cuneo et al., 2000, p.13) which indicates that CMS are being increasingly used to enhance classroom instruction. The study carried out in the University of Wisconsin system of 15 institutions revealed that 80 percent of faculty surveyed used CMS to augment face-to-face class instruction, compared to 27 percent who used it in fully online courses (Morgan, 2003, p.4). The “hybrid format” of courses which is the second among the types listed above is also becoming increasingly popular (Young, 2002). This means that faculty involved in more traditional forms of teaching might eventually be expected or persuaded to adopt and use CMS.

Understanding how faculty use CMS is important to faculty support efforts in an institution. Mann (2000) posits that instructors tend to incorporate the Web into their traditional classroom courses in phases. The three phases of his “phase theory” are: *lesson enhancement*, *resource-based teaching* and *online learning environment* (p. 7). In the first phase, the instructor, with the help of institutional technical support, will introduce web-supported course material as an “extra-curricular activity”. This might include threaded discussions, online lesson assessment and some self-expression exercises that involve the Web or course management system tools (p.7). The second phase incorporates online resource-based learning in the form of text, graphics and video. This phase includes online resources of content i.e. notes

and resource packs, resources that support a learning activity i.e. manuals and guides, resources that support the learning process i.e. student logs and online resources that build on other resources i.e. textbook guides (p.13) The third phase of online learning environment is where students are encouraged to carry out collaborative work and support each other while using the online tools in learning and problem-solving activities (Mann, 2000, p.17). This might involve links to other sites that provide learning environments. While this theory appears to be intended to describe the stages an instructor goes through to include the Internet in a course, it also provides a basic concept of how instructors would adopt and use CMS to enhance traditional classroom instruction.

CMS are Web based course support tools that allow faculty various modes of course content delivery. Faculty seem to be using these tools in innovative ways and gradually integrating the tools in their teaching. However, despite the widespread acceptance of CMS by institutions, it appears that there is reluctance from faculty to adopt and use these tools. It is essential to know how faculty, who have not yet used CMS, perceive these tools. It is also important to know more about the views and experience of faculty who have used CMS.

2.7. Do Faculty Perceptions Influence Adoption of CMS?

Having adequate knowledge of faculty perceptions and attitudes to an instructional tool is crucial in promoting its adoption and use. Savery (2002) believes that "examining perceptions of a target audience is a widely used strategy based on the premise that perceptions matter and often influence behaviours" (p.1). We often share opinions and perceptions on various matters and our attitude towards a

particular object could be greatly influenced by these constructed perceptions. These perceptions also influence our decision to use these objects. Cope & Ward (2002) conducted a study with 15 experienced high school teachers in Victoria, Australia. They were examining the connection between teachers' perceptions of learning technologies and how it would impact the success of integration of these learning technologies into classrooms. Their findings suggested that teachers with "inappropriate" perceptions of learning technology failed to integrate technology in their classroom (p.72). The same argument is germane to faculty in the adoption and integration of a web based instructional tool such as a CMS. Errington (2001) asserts that teachers' beliefs can have a significant impact on success of innovations. Errington's (2001) exploration of the nature of university teachers' beliefs suggests that "decisions about what teachers feel they can, or will support by way of flexible learning initiatives are influenced by the degree of perceived support available at all levels of the institution"(p. 29).

How faculty perceive the factors that play a role in the integration of instructional technology in education will influence their decision to adopt or use these technologies. Consequently, it is important that perceptions of faculty who have not used CMS be examined.

2.8. Issues in Faculty Uptake of CMS

Studies have recognized potential factors and issues that influence faculty adoption and sustained use of instructional technologies. There are also several studies that focus on trends, challenges and issues with faculty and distance education. CMS are central to distance education. As a result, it might be argued

that studies that inform instructional technology integration and distance education implementations are appropriate and applicable to the discussion of CMS. This section examines researchers' views on factors that influence faculty uptake and use of instructional technologies including CMS in online and distance learning.

Howell, Williams and Lindsay (2003) have identified trends in distance education meant to inform decision makers on current issues in the field. These thirty-two general trends were identified during an "integrative literature review" of "books, journal articles, reports, and web sites" published in the three years prior to the study and bearing relevance to "information technology and impact on the larger, higher education community". The faculty trends relevant to this discussion are as follows:

- A shifting or "unbundling" of traditional faculty roles where traditional faculty roles are being "unbundled" and are being performed by other professionals such as designers and adjunct faculty.
- A growing need for faculty development, training and support as they move from traditional teaching methods to more technology based instruction.
- Faculty tenure being challenged with the emergence of more non-traditional faculty roles.
- Faculty resistance to course delivery via technology.
- Demands of "reduced workload and increased compensation" by distance education faculty members.

These trends provide a snapshot of the issues in current implementations of CMS in higher education: Instructor's evolving roles, resistance to technology, faculty compensation structures, faculty workload and faculty development and support.

Resources, intellectual property rights, and reward structures are significant issues that beleaguer faculty who adopt and use Web-based course delivery or choose to use Information Technology (IT) to enhance teaching (Gilbert, 1996; Passmore, 2000). Passmore (2000) suggests that faculty have "limited access and experience with web-based design, development and delivery". They lack resources such as personal knowledge of application of IT, training resources, instructional design support and funding. Passmore (2000) also believes that the uncertainty of intellectual property rights of online courses developed inhibits faculty from participating in Web-based course delivery. Oravec (2003) asserts that two kinds of intellectual property issues are prominent in this area, first is the ownership of course materials and second, the "fair use" of these materials that are freely available on the Internet (p.94). Passmore (2000) also suggests that the faculty reward systems of higher education institutions are not geared to provide adequate incentives for web-based course delivery. He makes the observation that more senior tenured faculty members at his institution seem to be undertaking online teaching projects for the reason that they have "the least to lose". With research taking a prominent role in professorial circles faculty will shy away from any efforts that diminish their image as researchers in the eyes of the administration (ibid). Gilbert (1996) suggests that underestimating the difficulty of faculty in adopting new technologies is also a factor that hinders successful integration of technology in instruction. Administrators do not

have a clear understanding of the challenges faculty have to face in adopting and using such complex technologies. Another factor underlying the faculty resistance is the concerns about the quality of instruction that distance education technologies enable (Bower, 2001).

Ely (1990, 1999) who is extensively cited in discussions of adoption and use of instructional technology posited eight conditions that “facilitate the implementation of educational technology innovations”. His eight conditions are: dissatisfaction with the status quo, existence of knowledge and skills by the users, availability of resources, availability of time, existence of rewards and incentives, participation by all parties in decision making, and finally, commitment from the institution and leadership. These conditions listed by Ely (1990, 1999) resonate with current issues such as resources, institutional and technical support , availability of time and reward structures, that are some of the factors that influence adoption and use of instructional technologies, such as CMS, in higher education. The presence of these factors in higher education suggests that institutions may not be ensuring the existence of appropriate conditions that facilitate course management system implementations.

In a Canadian context, the advisory committee for online learning, in their 2001 report, echo some of the same concerns and factors (Barnard et al., 2001). They cite ownership of online courses, release of faculty from regular duties in order to create online courses, faculty support in technical and instructional design issues, incentives and rewards, funding and improvement of access to infrastructure as prominent factors that influence faculty in participating in delivery of courses online.

2.9. Institutional Studies of Factors that Influence Uptake and Use of CMS

The factors presented by researchers in the previous section are examined in detail in this section in the light of surveys that have been conducted in various higher education institutions in North America. There are factors that could influence faculty by either motivating them or deterring them from adopting or increasing use of CMS. Therefore they are discussed under two prominent themes: factors that inhibit and factors that motivate.

2.9.1. Factors that Inhibit Faculty

2.9.1.1. Resources

Resources include time, workload, equipment, funding and other related human and monetary resources. Ensminger and Surry (2002) carried out a survey to study the “perceived importance” of the eight conditions that facilitate implementation of educational technologies as posited by Ely (1990, 1999), listed in the previous section of this document. Participants, among others, were higher education faculty who were on a list-serve forum for instructional technology. 88.9 percent of the participants ranked resources as the most favoured condition for support and sustenance of educational technology (p.7). Resources as suggested by Ely (1990, 1999) include hardware, software, funding and personnel.

Distance Education (DE) faculty who participated in a survey in The State University of West Georgia (UWG) listed “lack of time to develop a course” as a significant factor that would inhibit their participation in distance education. 70 percent of faculty who had taught a DE course and an equal percentage of faculty

members who had never taught a DE course before chose this item to be a prominent inhibiting factor. This implies that even faculty who have not taught using DE technologies perceive time taken to develop an online course as an obstacle (UWG, 2000).

Another survey, albeit conducted in a community college i.e. different from the setting of this study, in south-eastern US reported that "faculty workload" was a significant factor that deterred faculty from participating in distance education. Faculty workload affects time available to faculty to dedicate to online teaching projects. The institution used Blackboard, a prominent CMS, as the medium for online course delivery. Faculty who taught only DE courses, those who taught both DE and classroom courses ("combination-delivery"), and those who taught only classroom courses participated in the survey. Participants from all three groups chose "workload" as either the number one or number two inhibiting factor. In the same survey, faculty from all three groups reported another resource, namely "lack of grants for materials and expenses", as one of the top ten inhibitors to faculty participation in DE programs.

Other resource related issues, albeit of lesser concern, were equipment problems and availability of equipment to faculty, which ranked 7 and 9 respectively in a list of 13 concerns, as identified by web-based course instructors at the Southern Regional Education Board (SREC), an online educational consortium of 15 south-eastern US states (Wilson, 1998).

2.9.1.2. Preparation or Course Development Time

Time required to use or apply instructional technologies is a major factor that impacts adoption rates. 75 percent of faculty at the University of Nebraska-Lincoln (UNL) who were surveyed responded that it takes more time for course preparation using CMS (Ansorge & Bendus, 2004, p.13). The UNL study had 77% of its participants from the professorial ranks. Administrators at UNL concurred with faculty on the excessive time that CMS demand in course preparation (ibid. p.14). The most common reason cited by faculty who had discontinued use of CMS was the excessive time required in the development of courses using CMS (ibid. p.9). Faculty surveyed at the University of Wisconsin System (UWS) which is "made up of a wide-range of institutions from research universities to four year comprehensive institutions" also believe that CMS are time intensive. They believe loading and reloading course materials takes considerable time (Morgan, 2003). Web-based course instructors who responded to a survey at the Southern Regional Electronic Campus (SREC) claimed that time to develop and maintain course material was their number one concern (Wilson, 1998). A vast majority, 76 percent, of faculty at the University of West Georgia (UWG) who teach both online courses, using WebCT, and classroom courses feel that online courses involve a greater time investment in comparison to face-to-face courses (McKenzie et al., 2000).

It is also suggested that the amount of preparation time required is likely to diminish on repeated use of the technology. Pachnowski and Jurezyk (2003) concluded from their longitudinal study at a large mid-western university in the US that for a majority of the faculty the time they needed for preparation of an online

course, beyond that required for a traditional classroom course, reduced over time. They noticed that instructors using Web-based technologies required noticeably large amounts of time for preparation during the first semester but over semesters the preparation time reduced. However, about 30 percent of the faculty still reported spending large amounts of preparation time even in the third year of the study (Pachnowski & Jurezyk, 2003). This suggests that although preparation time decreases over semesters it still is a prominent factor. It also suggests that faculty support is vital in the first semester.

2.9.1.3. Faculty Rewards, Incentives and Policies

Lack of recognition of time and effort put into preparation and delivery of online courses during tenure and salary increases is an obstacle to increased use of CMS. 57 percent of faculty, using CMS, who responded to the UNL survey, agreed that this is a factor that would deter them from using CMS. Administrators surveyed also shared faculty members' views on this issue (Ansorge & Bendus, 2004, p.14). Rewards and incentives, another one of Ely's (1990, 1999) eight conditions, was perceived by 72.2 percent of respondents who were higher education faculty on an instructional technology list-serve as the second most important factor in the successful implementation of educational technology (Ensminger & Surry, 2002, p.7).

The survey conducted in a community college in south-eastern US by O'Quinn and Corry (2002) revealed that various issues concerning rewards and incentives were concerns that would deter faculty from participating in DE and in turn use online technologies. Faculty from all three groups i.e. those who taught only DE

courses, those who taught both DE and classroom courses ("combination-delivery") and those who only taught classroom courses ranked lack of monetary support (i.e. stipend etc.) as one of the top five factors that would "inhibit" their participation in distance education. Lack of salary increase ranked in the top five for the DE and the combination-delivery faculty and lack of release time, a necessary incentive to develop online courses, was a top five issue for the combination-delivery and the classroom only faculty.

Poor reward, incentive and policy structures built around the use of CMS hinder faculty from spending time and efforts in applying these tools in their teaching. Given that preparation and delivery of such courses takes time, it is important that this time spent is acknowledged during tenure and salary increases.

2.9.1.4. Faculty Development, Training and Support

Faculty need to feel confident about using CMS before they can bring it into their classrooms or deliver a course online. The faculty at Ball State University (BSU) in Indiana rated "knowledge of how to use the technology" as the second most important factor affecting technology adoption (Butler & Sellbom, 2002). Adequate faculty training, development and support of CMS are therefore crucial to the sustained growth and use of such instructional systems in the institution. Faculty surveyed at UWS believe "their use of CMS would grow if the software were easier to use and if training" was provided (Morgan, 2003). Technical support and technical training were among the top five concerns of the SREC DE faculty using the Web for course delivery (Wilson, 1998). In the same vein, lack of technical support was one of the top five inhibiting factors that decreased faculty participation in distance

education technologies at the community college in south-eastern US (O'Quinn & Corry, 2002). In contrast, a majority of the faculty and administrators at UNL did not view the "lack of training workshops" as an obstacle to CMS use (Ansorge & Bendus, 2004, p.15). This finding suggests that there might have been adequate training workshops provided or faculty did not seem to need such workshops.

Training and support should be co-ordinated in order that faculty receive this assistance in a timely fashion. 45 percent of the Illinois State University faculty surveyed by Chizmar and Williams (2001) strongly supported the statement "I seek technical help when I want to know how to accomplish a specific task using technology" implying that timely technical support is important to faculty (p.22). They believed that adequate and timely institutional support would encourage them to increase use of instructional technologies.

Training and support could be provided by various means such as workshops, product demonstrations and the technical help-desk. However, aside from conventional training sessions, a majority of the faculty suggested that peer project demonstrations of instructional technologies is an effective and useful way of developing knowledge in applying instructional technologies (Chizmar & Williams, 2001, p.22). However, they felt the "greatest impediment to seeking training in instructional technology is lack of release time (ibid. p. 23). These studies suggest that adequate knowledge and training is vital to the uptake and use of CMS.

2.9.1.5. Technology Related Factors

Working with CMS could be technologically challenging and daunting for faculty. Complexity, inflexibility and difficulty in using the technology were seen as

obstacles to sustained use of CMS for about 10 percent of participating faculty at the UWS. 16 percent expressed student reported problems as the source of their reduced use of CMS. This issue significantly affected "the rate, level and success of CMS use" (Morgan, 2003, p.3). A majority of faculty at the Ball State University (BSU) in Indiana chose "reliability of technology" as the number one factor that influenced their adoption of technologies (Butler & Sellbom, 2002). With the constant growth and intensification of features and functions in CMS this factor will continue to be a significant issue that affects the adoption and use of CMS. Developers should be giving major consideration to designing and rendering CMS to be increasingly user-friendly and administrators should be providing effective support to assuage difficulties that faculty have from technological issues with CMS.

2.9.1.6. Other Factors

Seventy two and two tenths percent (72.2%) of the instructional technology list-serve faculty perceived Ely's (1990, 1999) condition of "participation", where faculty are part of the decision making process, as the third most important condition in the effective implementation of instructional technologies. In other studies, factors that were of importance were "lack of support from department colleagues" (O'Quinn & Corry, 2002). Lack of faculty experience and interest was also cited as one of the major obstacles to online courses in a California State University- Northridge (CSUN) (DistanceEducationReport, 2003). 50 percent of UNL faculty believed that "lack of faculty interest would likely be an obstacle to CMS use" (Ansorge & Bendus, 2004, p.15).

The O'Quinn and Corry (2002) survey of the community college faculty revealed that "concern about quality of courses" delivered through DE technologies was the number one concern with faculty who taught only classroom courses. However, This was a concern of a much lower priority in the case of faculty teaching only DE courses and those teaching both DE and classroom courses (O'Quinn & Corry, 2002) implying that faculty who have never taught using instructional technologies such as CMS perceive that using such a medium of course delivery would result in a lower quality of instruction.

Intellectual property rights was last on the list of 13 concerns of instructors of web-based courses at the SREC (Wilson, 1998). Similarly, "lack of royalties on copyrighted materials" was a low-priority concern with faculty who taught DE courses at the south eastern US community college. However, the same item was one of the top ten concerns of faculty who only taught classroom courses (O'Quinn & Corry, 2002). This finding suggests that classroom faculty appear to perceive lack of royalty and intellectual rights as issues of greater importance in the adoption and use of Web-based technologies, than faculty who are using such a medium for course delivery.

2.9.2. Factors that Motivate Faculty

Factors such as personal motivation and intellectual challenge are powerful motivators in faculty uptake of CMS. Faculty who used WebCT at UWG ranked "desire to get students involved in technology" and the "opportunity to use technology more innovatively to enhance course quality" as the top two motivations

behind their choosing to deliver courses online (McKenzie et al., 2000). In the same vein, DE Faculty surveyed at two mid-west colleges in the US ranked the opportunity to provide “innovative instruction” and apply new “teaching techniques” as their number one incentive to deliver education via DE technologies (Rockwell, Schauer, Fritz, & Marx, 1999). In another survey, faculty at UWG, who had not taught DE courses, suggested that “personal motivation to use technology” would be a motivator for them to adopt WebCT. The same survey reported that faculty who had not taught distance education courses and not used web technologies felt that monetary support such as stipend was number three on the list of factors that would motivate them to uptake distance education (UWG, 2000).

While pedagogical enhancements appeared to be the reason given behind initial adoptions of a CMS by the UWS faculty, a closer look uncovered that expediency with class management tasks such as student access to course documentation, student communication and grades management was in actual fact responsible for course management system uptake (Morgan, 2003, p.2). In addition, Peer recommendations and peer demonstrated usage also influenced their adoption of CMS (ibid.). Faculty using CMS at the UWS sustained or increased their use because they discovered innovative ways to use these tools in their classes. Increase in knowledge through peer discussions and training sessions, which incorporated practical examples of applying CMS, also assisted in intensifying their use (Morgan, 2003, p.3).

Departmental support is another motivating factor that helps faculty in adopting CMS. Faculty who had taught DE courses with WebCT at UWG cited

personal encouragement from department head or dean as one of the top five motivating factors that prompted their participation (UWG, 2000). Persuasion by the department chair or dean was a reason also for faculty in UWS to initially adopt CMS (Morgan, 2003, p.2).

2.10. Implications of Issues in Uptake to CMS Adoption and Use

A number of factors influence faculty in either adopting CMS or increasing use of such technologies in their teaching. Some of these factors help motivate while others serve as obstacles or barriers. Administrators and change facilitators need to identify all factors, motivators and inhibitors, and attempt to eliminate barriers while building on the motivating factors. The factors that appear to play a prominent role as inhibitors are: resources such as time and funding, course preparation time, rewards and incentives, training and support and technical factors. Prominent motivators are: department support, opportunities to apply innovative methods, opportunities to use new technology and peer-support.

Motivating factors for faculty who use online technologies appear to be different from those who do not. Wolcott and Betts (1999), through their study, made a remarkable observation about faculty motivators. Faculty members who were participators in the distance education program listed intrinsic factors such as intellectual challenge, personal motivation to use technology and opportunity to develop new ideas, as motivators that would increase their participation. On the contrary, non- distance-education faculty named extrinsic factors such as monetary support, technical support, salary increments and working conditions, as factors that would motivate their future participation. Schifter's (2000) study also uncovered

similar findings. These findings suggest that faculty who use CMS and those who have not yet used CMS have different factors that motivate them to adopt or continue using these tools. It appears that, while intrinsic factors are behind the motivation of the former; extrinsic factors might be what motivate the latter. Extrinsic factors or incentives might therefore be important in encouraging faculty to initially adopt CMS.

Berge (1998) in his description of barriers or obstacles to online teaching in higher education listed these impediments under three categories: policy development or organisational, technical and cultural barriers. While the first two categories are self explanatory Berge's (1998) survey results lists faculty resistance to innovation and resistance to online teaching methods as cultural barriers. The change in faculty roles that online teaching has introduced is a source of concern. Faculty feel loss of autonomy and control of curriculum. There is also an apprehension that technologies would reduce faculty jobs (Holden, 1999, p.2). Berge (1998) believes that the most critical obstacles to online learning are cultural barriers and suggests that a majority of the barriers, albeit under categories other than culture, stem from faculty culture of an institution or department. "Faculty culture' is one of the largest issues governing success or failure" of a technological innovation (Francis, 2004).

Factors influencing faculty adoption have been discussed under two themes: motivators and inhibitors. There appears to be more studies on factors that deter than factors that motivate use of CMS. One reason for this might be the investigative nature the studies have chosen to adopt. In exploring the factors that influence

adoption and use, most studies have chosen to consider the obstacles. Another reason could be that some motivators could also be perceived as inhibitors for instance, monetary support could be seen as both a motivator and lack of the same an inhibitor. However, the factors have been discussed and presented in this review as either a motivator or inhibitor, to reflect the studies and surveys that they originated from. In addition, some factors such as intellectual property rights that were suggested as major issues by researchers did not resonate with the same intensity in the surveys. A reason for this could be that this is an issue that probably gained momentum only in recent times and will possibly emerge as a major obstacle in the near future.

While most factors that influence adoption and use appear to be common across faculty who are users and non-users of CMS, the magnitudes of importance of these factors are different between the groups. It is important to understand the factors that significantly impact non-users of CMS so that administrators can plan strategies in promoting uptake. Knowledge of the factors influencing continued use among users can help in efforts of faculty support. It is imperative that course management system administrators are aware of the factors that influence faculty uptake and continued use of CMS. While it appears from the Ansorge and Bendus (2004) survey that administrators concurred with faculty on a few issues, studies suggest that administrators do not understand the full extent of the factors that motivate or inhibit faculty adoption and use of distance education technologies (Schifter, 2002).

2.11. Institutional Support Framework

The factors presented in previous sections influence adoption and continued use of CMS. Most of the factors amount to support and assistance that an institution needs to provide in order to ensure the successful implementation of these technologies. Administrators have to constantly grapple with what kind of support is adequate and appropriate, and how it could be made available. Support to promote adoption and use of CMS in an institution, as described in previous sections, could take the form of motivation, technical support, favourable policies, and rewards and incentives. This support framework should be designed to suit the needs of CMS users and be aligned with institutional goals and priorities.

Motivation is an essential form of support and Keller (1983) posited a model of motivation design based on four types of “motivational conditions”: *Interest*, where a person’s curiosity and attention is aroused. *Relevance* is to connect the information being given to “important needs and motives”. *Expectancy* is the condition where the person can develop confidence in success in the particular subject matter and *satisfaction* is the condition where the person is extrinsically and intrinsically satisfied with the subject matter (p.396). Surry and Land (2000) have applied this model to generate strategies in order “to motivate higher education faculty to use technology”. The ARCS (i.e. Attention, Relevance, Confidence, and Satisfaction) model that they propose based on Keller’s (1983) theory could be useful to an institution to motivate faculty to use CMS and also to build training and technical support structures. Table 3 illustrates the ARCS categories and lists the obstacles as seen in the higher education faculty context. Some of these factors

have been discussed in previous sections. Table 4 lists sample strategies for each of the ARCS categories and Surry and Land (2000) have divided those strategies to reflect Rogers' (1995) categories of individual innovativeness. The following tables provide useful information that would help administrators in building suitable support structures to encourage adoption and use of CMS.

Table 3 : Categories of ARCS model and application to motivating faculty in higher education(Surry & Land, 2000, p.149).

ARCS Category	Resulting condition	Higher education problem	Application of theory
Attention gaining	Increased curiosity and arousal	Many faculty unaware of technology and how it can be used to teach	Showcase practical uses of different types of technology
Relevance	Fulfilment of important personal needs	Many faculty view time needed to learn about, develop and use technology as detracting from other tasks	Make development and utilization of technology factors in retention, tenure, and promotion decisions
Confidence building	Increased expectancy for success	Many faculty do not know how to use technology, have little or no support, and lack facilities	Provide opportunities to master various types of technology. Establish effective support system and infrastructure.
Satisfaction	Attainment of intrinsic and extrinsic rewards	Reward systems for technology use are lacking at many universities.	(Intrinsic)More effective or efficient teaching and research.(Extrinsic)Variety of incentives and rewards

Table 4 : Sample ARCS strategies for each of the Rogers' (1995) adopter categories (Surry & Land, 2000, p.150-152).

	Innovators	Early adopters	Early majority	Late majority	Laggards
Attention	Demonstrations of leading-edge technologies, awareness of other innovators (local or national)	Vendor demos, Peer demos, Newsletters, Listservs.	Local, regional and national conferences, Peer demos, Newsletters, Listservs.	Campus-wide conferences, Peer demos, Newsletters, Listservs.	Demos of basic technologies, Campus-wide conferences, Peer demos, Newsletters, Listservs.
Relevance	Organizational commitment to change. Advanced facilities for development and utilization.	Grants, Release time, RTP, Equipment, facilities for development and utilization.	Mini-grants, RTP, Equipment, Access to technology classrooms.	Mini-grants, RTP, Equipment, Access to technology classrooms.	Retention tenure and promotion (RTP) policies.
Confidence	Organizational acceptance of failure. Ongoing training in advanced hardware and software.	Organizational acceptance of failure. Ongoing training, Infrastructure, Support system.	Ongoing training, Peer-tutoring, Infrastructure, Support system.	Ongoing training, Peer-tutoring, Support system.	Ongoing training in basic hardware and software, Peer-tutoring, Support system.
Satisfaction	University awards. Priority for equipment and facilities. Publications, Grants. Release time, Travel, RTP.	Publications, Grants, Release time, Travel, RTP.	Publications, Grants, Release time, Travel, RTP, Facilitated /improved teaching and research.	Publications, Grants, Release time, Travel, RTP, Facilitated /improved teaching and research.	Mini-grants, RTP, Facilitated /improved teaching and research.

Faculty development and support is a process that warrants systematic planning and implementation. Holden (1999) describes the experience of the IT committee at the County College of Morris in planning a faculty development program for WebCT. The committee first conducted a "faculty technology skill survey" and then used the results of the survey to determine the training requirements for their faculty members. The principles that they used to create an environment that promoted faculty participation in training included: "voluntary and non-threatening faculty participation, ongoing support, systemic and substantive training and excellent teaching and learning principles demonstrated by enthusiastic instructors" (p.9). These principles, voluntary participation in the training program for instance, could harness the intrinsic motivation that faculty members demonstrate in adopting new technologies. In addition, "using interested faculty members as recruiters, mentors and trainers provides the foundation for a comfortable professional development environment" (p.10). Gilbert (2000) also suggests harnessing the talents of "compassionate pioneers". They are faculty who have substantial knowledge and experience in the technology and "feel a commitment to help their colleagues". Faculty are more open to learning from colleagues.

Francis (2004) describes new approaches that a small Canadian undergraduate university i.e. the Mount Allison University, New Brunswick, undertook to increase uptake of WebCT among faculty members. Their philosophy of faculty development and support was built on a few fundamental tenets. The tenets included, winning over "one faculty member at a time", using a syllabus based approach in WebCT training, encouraging WebCT to be used as classroom

enhancement rather than classroom replacement, providing shorter training sessions, improving training and support materials and providing excellent campus WebCT support with a quick resolution of WebCT course and enrolment management issues. The institution also plans to provide incentives to faculty who want to replace time spent in tenure-track activities such as publications with time to integrate WebCT into their teaching. Some of these initiatives appear to be mainly applicable to small sized institutions; however, they are simple and powerful ideas that might help any higher education institution.

Developing an effective and efficient technical support model for CMS is an enormous challenge for the administration. Following a survey at the University of Florida (UF) the administration is re-engineering its CMS support program and Johnson (2004) describes and suggests the five basic processes that form the foundation of this support model. He suggests defining support staff roles as the first step, this helps understand the various tasks related to providing support. The next process is identifying the responsibilities that each of these roles will assume. The third step is to estimate the number of personnel to cover each task and role. The fourth process is to assign responsibilities to the staff and finally, "establishing priorities for various roles" helps staff priorities their time and effort to ensure effective support is offered. These five processes appear to be general and commonsensical nevertheless they do provide a rough sketch for establishing an effective technical support program.

The motivation and support models presented in this section are meant to provide some concepts in building faculty development and support structures and

have been taken from relevant studies in higher education context. The technical support should reflect the needs of the users and therefore users' input is vital in building an effective support system.

2.12. Summary

The challenges that are facing higher education institutions in the implementation of instructional technologies are diverse and complex. Although CMS, as discussed in preceding sections provides faculty with additional pedagogical choices and benefits in online and classroom instruction, it should be borne in mind that there are alternate views, for instance, that believe that it is cost intensive and contributes to no increase in the quality of instruction (Harrington, Gordon, & Schibik, 2004). It is important for institutions that have recognized technologies such as CMS as part of their strategic plans have a lucid understanding of these various issues. CMS affects all stakeholders in higher education, particularly, faculty who play a central role in the process of teaching and learning. There are confluences of factors that are generated as a result of the rapidly changing face of technology. The change resulting from constantly evolving technology, such as CMS, is inevitable. In the words of Gilbert (2000), "what we need in higher education is a vision of improvement and change – how to keep moving forward, how to know when we're making mistakes, and how to correct them". Knowledge of the issues that arise from adoption -- compounded by those issues that surface with the continued use of technologies such as CMS -- is essential for the efficient implementation and successful integration of such systems in institutions. This chapter has reviewed relevant theory and research in the area of

faculty and CMS in order to provide insights into the issues that concern faculty uptake and use of CMS.

Rogers' (1995) theoretical framework of diffusion of innovation and related user oriented instructional technology adoption models provided a model to guide the review. The latter half of this chapter, dealing with the practical aspects of the topic of adoption and use of instructional technologies, focused on studies and surveys that presented concrete issues that impact on various higher education institutions.

The studies examined here were mainly in the areas of adoption and integration of instructional technology, online learning, distance education and CMS. It was assumed that Web based instructional tools such as CMS dominate these areas and, therefore, issues surrounding adoption and use are common to these areas. The majority of the relevant research and studies appears to be dominated by a few higher education institutions mainly in the US. There is only a modest amount of research that is available in the adoption and diffusion of CMS in the Canadian context.

Several factors influence the adoption and use of CMS. These factors, as the theory and research suggest, depend on the stage of implementation of the technological innovation. These factors also depend on the rate of adoption and the degree of use that already exists in an institution. The factors and their combined effect are unique to an institution and, therefore, interested individuals in an institution must feel the pulse of their faculty members to get a realistic

understanding of where they are and the direction they are taking in the implementation of CMS.

Chapter 3 : Research Method

In this chapter I present methods and measures of the study. The chapter starts with the section describing the background of the participants of the study. Data collection procedures, measures and coding are also presented in the sections that follow. The chapter ends with a discussion of the analysis of the data in the study.

3.1. Participants and Setting

The University of British Columbia (UBC) is the third largest university in Canada (UBC, 2004a) and has 25 different faculties and schools (UBC, 2004e). WebCT, one of the most widely used CMS, was developed at UBC in 1996 (UBC, 2004c) and since then the use of this course management system has grown considerably at UBC and other educational institutions around the globe. The focus of this study is particularly on UBC faculty from the professorial ranks. Like in other research-oriented universities, these faculty members are deeply involved in research, teaching and service. Indeed, research plays a central role in their professional lives, while often relatively less attention is given to teaching. The intent of focussing on faculty members from professorial ranks, who are mainly researchers and hold positions that commit them to a long-term basis to the advancement of teaching and learning in the institution, was to study how such faculty view, adopt and use CMS.

3.1.1. Faculty Participants

Participants for the study were selected by the method of non-proportional stratified sampling (Gall, Gall, & Borg, 2003, p.174). After ethical clearance was

confirmed, a list of faculty members, (professorial and non-professorial appointments) was obtained from the ITServices department. The list classified faculty members in two groups namely users and non-users of CMS i.e. WebCT. Each list was first broken down into the different faculties and schools. Faculty from professorial ranks namely with titles Professor, Associate Professor and Assistant Professor were then filtered out from the list. The list then consisted of faculty members from the professorial ranks from 11 faculties or schools within the users and 17 within the non-users. An equal number of participants were randomly chosen, by using a random number generator⁸, from each of the schools to make up a list consisting of 200 users and 200 non-users. This accounted for 400 prospective participants representing both users and non-users of CMS from different disciplines that the university has to offer. The participants were sent an email with the faculty consent letter (refer Appendix A) as an attachment. The text in the body of the email was exactly the same as the attached letter. The faculty were asked to complete an online survey and the link to the survey was provided in the email and letter.

Participants who filled in an online survey were also asked to indicate whether they would like to partake in an interview. Only those who indicated that they would like to be interviewed were contacted by email. The faculty interview consent form (refer Appendix B) was attached to the email. Following a reply from the faculty member a convenient place, date and time was scheduled for an interview through email.

⁸ The online random number generator <http://www.pangloss.com/seidel/rnumber.cgi> was used.

3.1.2. Administrator Participants

A small group of three participants who are basically in administrative and technical support positions related to leadership and support of learning technologies within the various schools and faculties were also interviewed in order to obtain an administrator's perspective of faculty issues. It should be noted that the term "administrator" used here does not reflect the job titles of these participants. Also, these administrators are not to be confused with university administration or institutional level policy and decision makers. These participants are administrators in the context of instructional technologies, of which CMS is a significant part. The three participants were randomly selected, using the same method as described in the previous section, from a list of 16 that was provided by the director of the Office of Learning Technology (OLT). The participants were sent an email with the administrator interview consent form (refer Appendix C) attached to the email. Following a reply from the administrator participants a convenient place, date and time was scheduled for an interview.

3.1.3. Response Rates and Participants

Responses to the online survey were solicited from 400 faculty members and a total number of 43 faculty members responded to the survey. Six of the 43 survey participants were also interviewed. In addition, three administrator participants were also interviewed. In total, the number of participants in the study is 46. The complete breakdown of participants is shown in table 5 below.

	Solicited	Response Received
Faculty Survey		
User	200	33
Non User	200	10
Total	400	43
Faculty Interviews		
User	7	5
Non User	1	1
Total		6
Admin Interviews	5 ⁹	3

Table 5 : Detail Breakdown of Participants

33 users and 10 non-users responded to the online survey with a response rate of 16.5 % and 5 % respectively. With regards to interviewing participants, five user and five non-user interviews were planned initially. On completing the survey, seven users indicated that they would like to be interviewed five responded to follow-up emails and were interviewed. Only one non-user volunteered and was interviewed. Three administrator interviews were planned as part of the study and five had to be approached before three responded and consented for an interview with a response rate of 60%.

3.2. Data Collection Procedures

3.2.1. Survey Questionnaire

The online survey was hosted at Survey Monkey¹⁰. Survey Monkey provides a set of web tools that helps design, host, collect responses and analyze results of online surveys. A copy of the online survey (in Microsoft word format) maybe found

⁹ Five administrators were randomly chosen from the list of 16 and sent emails before three responded and confirmed their willingness to be interviewed.

¹⁰ Survey Monkey is available online at www.surveymonkey.com

in appendix D. Participants could access the survey by clicking on the link provided in the email and letter of consent. There was no login or password required to be able to access the survey. No formal signed consent letter was to be returned by participants. Instructions in the survey and the consent letter clearly indicated that completing and submitting the survey was an indication of their consent to participate in the study. The survey was common for both users and non-users and was anonymous. It was designed to allow the participant to complete the survey in approximately 15 minutes. By estimates from online times recorded the users took at an average 15.6 minutes to complete the survey while non-users completed the survey in 12.5 minutes. The survey was launched in the week of January 24th 2005 and was kept open until the week of April 11th 2005. A friendly reminder with the consent letter was sent to participants starting in the first week of March 2005.

3.2.2. Interviews

The faculty interviews were standardised open-ended semi-structured interview (Gall et al., 2003, p.240). The questions that were used to structure the interview are in appendix E. These questions were sometimes augmented by clarifying questions that varied from participant to participant. The faculty interviews were scheduled to be 30 minutes but the 6 interviews conducted ranged from 23 minutes to 118 minutes. The participant signed a consent form as seen in appendix B prior to the commencement of the interview and a copy of the signed form was given to the participant as a record.

The interview format for the administrator participants was identical to that of the faculty participants however few of the questions were different. The details of

the questions may be found in appendix C. The interviews were scheduled to be 30 minutes long however the three interviews ranged from 42 minutes to 55 minutes.

3.3. Measures

3.3.1. Survey: Description of Questions

The survey questionnaire was common to users and non-users and contained 11 sections consisting of four-point Likert scale, multiple choice and open-ended questions. In addition, one question was about ranking of the factors that influenced faculty uptake of CMS. Section I was mainly used to collect demographic information from respondents such title, status, department and also asked them to identify themselves into one of five statements that best described them in terms of adopting new technologies, these mapped into the five adopter categories as described in Rogers' (1995) DoI theory . The section II was common to both users and non users and elicited Likert scale responses on their views on CMS. Section III, also common for both users and non-users, listed factors that typically influenced faculty in the adoption and use of CMS and asked them to rate the factors into "low", "medium" and "high" depending on how it affects or would affect their adoption and use of CMS. There was also an open-ended question at the end of this section that asked the participants to identify and rank the top three factors that impacted or would impact their decision to adopt CMS in their teaching. Section IV was designed to determine usage information and only CMS users completed the section. Sections V and VI exclusively for non-users were sets of Likert scale questions to determine why non-users did not use CMS and what would make them consider using CMS in their courses. Both these sections had an open-ended question at the end of each

section where participants could add comments on any of the questions in that particular section. Section VII was a multiple choice question for users that listed reasons and asked users to check off chief reasons that first made them decide to use CMS. Sections VIII and IX exclusively for users were sets of Likert scale questions designed to obtain information on what their experience was with CMS and what would make them expand their use of CMS in their courses. Both these sections had an open-ended question at the end of each section where participants could add comments on any of the questions in that particular section. Sections X and XI were common to both users and non-users. Section X was a set of Likert scale questions to elicit input on how the administration could provide assistance to faculty members in their use of CMS. Section XI was an open-ended question asking respondents to provide suggestions on how the institution could encourage faculty members to adopt CMS. All sections were clearly marked and instructions were provided on the navigation of sections for users and non-users. The details of the questions and the survey may be found in appendix D.

3.3.2. Interview: Description of Questions

Faculty participants who were interviewed were asked questions that basically expanded on the different sections that were in the survey. The questions may be found in appendix E. The questions listed were asked and sometimes if the respondent already gave the answer to an upcoming question while answering another question the question was skipped. In addition, clarifying questions were asked depending on responses from the participant. Respondents sometimes went beyond the questions and volunteered input and comments.

Administrator interview questions were different from the faculty questions and were designed to gather input on faculty perceptions of CMS, what the administrators think are factors that drive faculty to adopt, what the institution support structures for CMS are and what the administrators think could be done to increase faculty adoption of CMS. The details of the questions may be found in appendix F. Again, in addition to the questions asked there were also clarifying questions depending on the responses from the participants. Respondents often offered comments beyond the scope of the questions.

3.3.3. Research Questions and Questionnaires

The table 6 shows the relationship between the interview and survey questions and the research questions.

Table 6 : Interview questions and their connection to research questions

Research Question	Corresponding Questions in:		
	Survey	Faculty Interview	Administrator Interview
What are the factors that influence faculty uptake and use of CMS?	Sections: III, VII	2,3,4,5a, 5b	2, 3,4a, 4b
What are faculty perceptions and views of CMS?	Sections: II, VIII	1b, 1c, 1d	1
Why do faculty, who have access to CMS, choose not to adopt these tools?	Section V	1,e	5
What are the factors that influence faculty to continue or increase use of CMS?	Section IX	6	6
How can uptake rates of CMS among faculty be increased?	Sections: XI, VI	7	8
How can instructors be helped and supported so that they could use or continue to use these tools effectively to deliver courses?	Section X	8	7

3.4. Coding

Section I of the survey data was mainly demographic information and as the data from these questions would only be used for describing participants there was no coding involved. Sections II, V, VI, VIII, IX and X were sections with Likert scale questions. The questions were itemised alphabetically under each section and the possible responses were on a four-point forced choice Likert scale model. The following were the four choices: strongly disagree (SD), disagree (D), agree (A), strongly agree (SA). In section III the factors that typically influence faculty uptake was listed numerically from 1 to 12 and the respondents were asked to rate each factor as influencing their uptake to a low, medium and high degree. These three possible responses were given the following values: "low", "medium", "high". Respondents were also asked to list the top three factors in order of importance by reference number of the factors under the section.

There were no other questions in the survey that were coded. Open-ended questions from the survey and responses to interview questions were all grouped together depending on their relevance to the research questions.

3.5. Analysis of Survey and Interview Data

Data from the online survey was downloaded into an excel file from the "Survey Monkey" website. Non-Numerical data such as demographics and CMS usage were used to generate graphs from excel. The numerical data from all sections except section XI, the open-ended question, was transferred into SPSS for descriptive analysis. Using the cross tab function in SPSS the frequencies and proportions for users and non-user responses to the Likert scale questions were

generated. The results were then pasted back into Excel spreadsheet files for ease of presentation. The proportions (percentages) of responses were mainly used in the discussion and analysis.

The responses to the section III were also transferred to the SPSS and the frequencies and proportions of the responses to the 12 factors were generated using the cross tabs function in SPSS and the results were transferred to spreadsheets. The responses for the three top rankings were also entered into an SPSS file and the top three ranks and factors that respondents most often chose under each rank were obtained by the cross-tabs function in SPSS. The responses to open-ended questions were tabulated and analysed in relation to the research questions.

The interview data was transcribed and the documents were loaded into Atlas-ti¹¹. Atlas-ti has tools to aid in the content analysis of textual data. Using codes, memos and quotations, which are integral components of the Atlas environment, data was organised and clustered to look for themes under each of the interview questions and in turn research questions.

¹¹ Atlas ti is a qualitative text analysis tool available at <http://www.atlasti.com/>

Chapter 4 : Results and Discussion

In this chapter I present both the results and discussions of the data gathered through the online survey and the interviews. The chapter begins with a section on the demographics of the participants; followed by a section on the CMS usage patterns of the respondents the study. The rest of the chapter is organised in the order of the six research questions that the study sought to answer. Under each of these sections, the results are first presented followed by the discussion.

4.1. Demographics of Participants

The purpose of this section is to present and discuss the demographics of the 46 participants in the study. The different aspects of demographics include the title, faculties or schools represented by the participants and how they describe themselves in terms of adopting new technologies. The interview participants are also profiled separately. Information on the gender of the participants was not collected during the survey and therefore is not part of the discussion. This section also presents and discusses the response rates to the survey.

4.1.1. Results

4.1.1.1. Survey

The survey was common for both users and non-users of CMS. As explained in chapter 3, section 3.1.1, responses were solicited from 200 users and 200 non-users. 43 responses were received in all. Figure 3 shows the breakdown of the survey participants into the three professorial ranks under users and non-users of CMS. Among the 33 users of CMS, 8 (24%) were professors, 7 (21%) associate professors and 16 (49%) assistant professors. Two participants (6%) chose to

identify themselves under non-professorial ranks, one as instructor and one as lecturer and they have been shown under the “other” category because the focus of this study is on faculty from the professorial ranks. Among the 10 non-users, 3 (30%) were professors, 2 (20%) associate professors and 5 (50%) assistant professors. All the participants from the professorial ranks identified themselves as being tenure or tenure-track faculty. Both the “other” participants listed their status as being sessional¹².

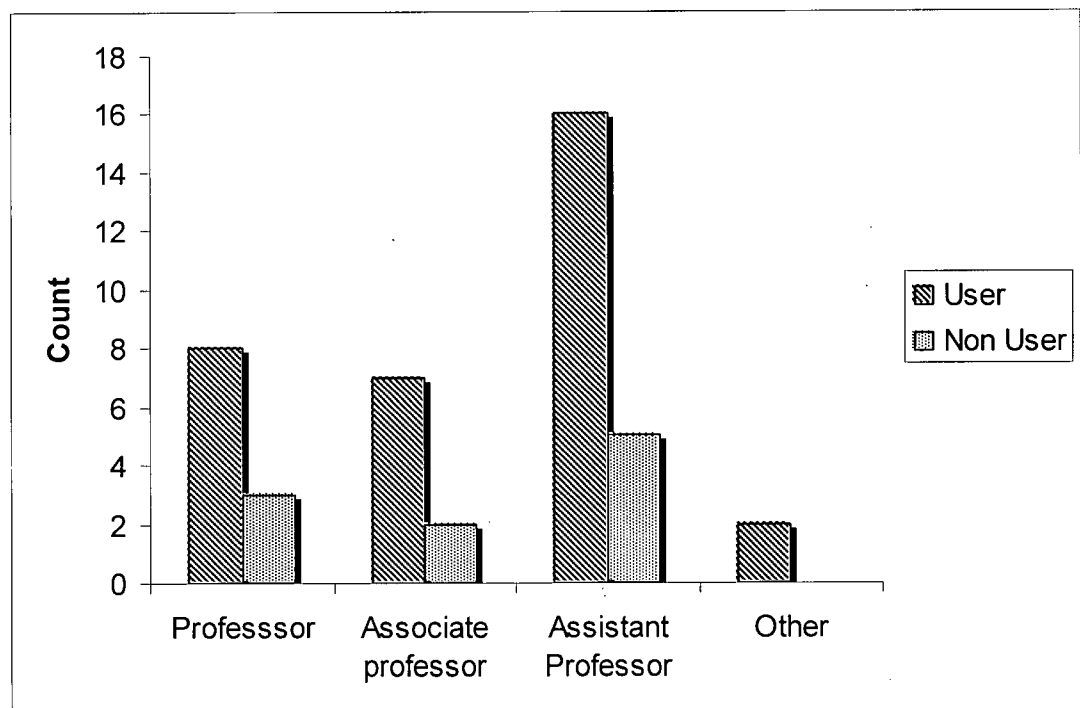


Figure 3 : Breakdown of survey participants into professorial ranks

The total number of participants, both users and non-users, is 43. As the survey was designed to be anonymous no personal details of the participants are known. Therefore, in order to make references to survey participants, particularly

¹² Sessional instructors and lecturers are typically not tenure or tenure track and would be on renewable contracts.

when presenting an anecdotal comment written by the respondent, I have named participants as Survey Participant 1 (SP1) to SP43.

Figure 4, shows the different faculties that were represented by participants. Both among the users and non-users the majority of respondents were from the Faculty of Arts.

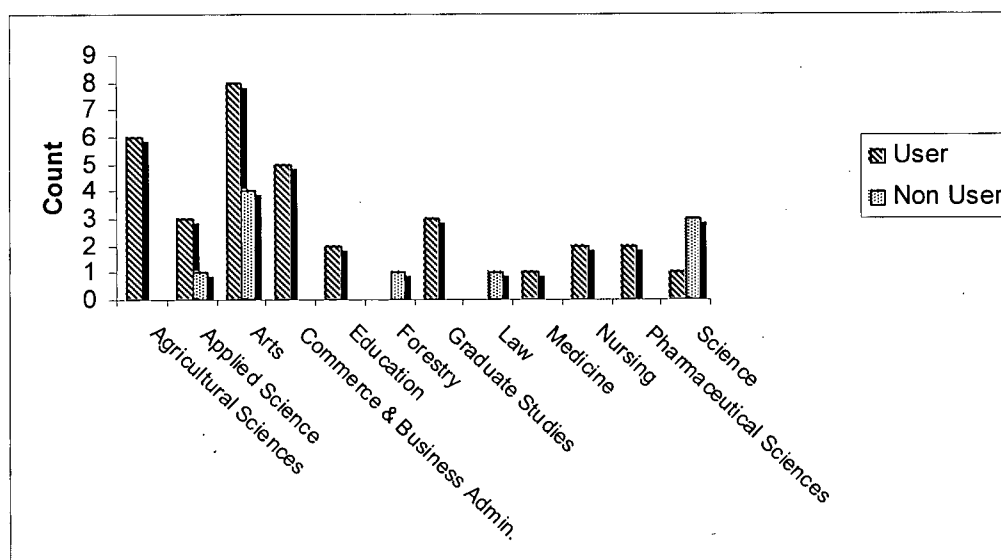


Figure 4 : Faculties and schools represented by the survey participants

The participants were also asked to choose a statement that best described them in terms of adopting new technologies. These statements were choices of a question under section I of the survey and maybe found in appendix D. The five choices offered maps into the adopter categories as posited by Rogers' (1995). The details of these categories maybe found in table 1 under section 2.2 of this document. The adopter categories and the survey participants are shown in figure 5.

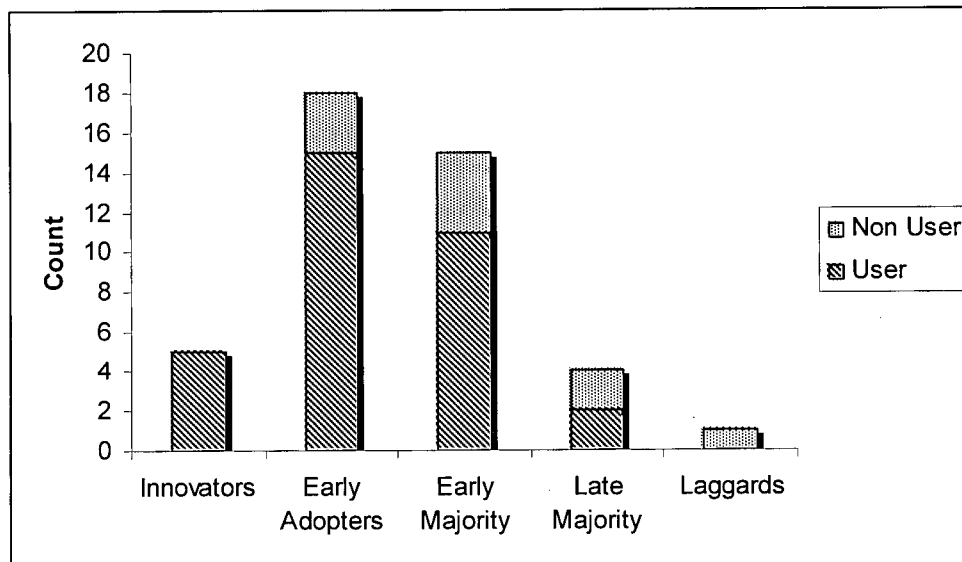


Figure 5 : Survey participants and Roger's adopter Categories

4.1.1.2. Interviews

In total, nine interviews were conducted, six of which were faculty members and three were personnel who were in the role of providing technical or administrative support to faculty members in the area of CMS. These personnel are also instrumental in facilitating uptake and use, especially when a faculty member seeks to adopt WebCT i.e. the course management tool in use at UBC. Thus, they may be viewed as being "change facilitators". The faculty members who consented for an interview were those who had already completed the survey. The administrator participants were recruited separately and were not part of the survey. Table 7 lists the nine interview participants along with their title. The participants are given pseudonyms to maintain anonymity. These pseudonyms will be used in discussions in this chapter when I need to make references to these participants. As mentioned earlier, the gender of the participants was not part of this study and is therefore not included in the profile of the participants. The pseudonyms chosen should not be

seen as an indication of the gender. There were both male and female interview participants. In addition, the titles of the administrator participants have been left out to maintain anonymity as the titles are unique and often identifiable. The names of participants' Faculty or School have also been replaced by letters such as "Faculty A". The Faculty or School that administrator participants belong to is also omitted as there are only a handful of such personnel in each Faculty and listing the Faculty that they are associated with might also jeopardise anonymity. It should be noted, as explained in previous chapter, that the term "administrator" used here does not reflect the job titles of these participants. These participants are in administrative and technical support positions related to leadership and support of learning technologies within the various schools and faculties and hence I have used the term "administrator" to describe their function and role. Also, these administrators are not to be confused with university administration or institutional level policy and decision makers.

Number	Name	Title	CMS Category	Faculty
1	Bob	Associate Professor	User	A
2	Jack	Professor	User	B
3	John	Professor	User	C
4	Sam	Assistant Professor	User	C
5	Tom	Assistant Professor	User	D
6	Chris	Associate Professor	Non-User	E
7	Darcy		Administrator	
8	Dave		Administrator	
9	Joe		Administrator	

Table 7 : Profiles of interview participants

4.1.1.3. Response Rates

33 responses to the survey were received from a sample of 200 faculty members who used CMS. Among 200 non-users who were sent emails to

participate in the survey, 10 responded. This yielded a response rate of 16.5 % and 5 % for users and non-users respectively. Interviews were planned with five faculty members who used CMS and that number was achieved from seven who volunteered after completing the survey. Out of five interviews that were planned with non-users only one was carried out as there was only one participant who volunteered to be interviewed. From a list of 16 administrator personnel, five were approached for an interview before reaching the planned target of three interviews for a response rate of 60%.

4.1.2. Discussion

As discussed in previous sections, the focus of the study was on faculty members from professorial ranks. Prospective participants were randomly selected from a list that filtered out faculty who were not from professorial ranks. However, two of the 43 respondents identified themselves as lecturer and instructor. Potential reasons behind this could be a discrepancy in the information that was obtained from the institution's online administrative directory that lists faculty contact details and titles or change in title and status of the faculty members since the online directory was last updated. These participants were therefore categorized as being "other" to make the distinction that they were not faculty from the professorial ranks.

The faculty response rate on the survey, despite reminders being sent to the participants, appears to be low. Many studies have reported different overall expected response rates to surveys. Response rate to paper based questionnaires in academic studies, particularly in the education sector, as reported in a comparative analysis study of several published studies is 57.6 % with a Standard

Deviation (SD) of 15.9 % (Baruch, 1999). Another comparative study between web surveys and traditional paper-and-pencil surveys reported that the overall response rates for paper surveys (43 %) are higher than those of web based surveys (33 %) (Mertler, 2003). One explanation for the low response rate of 16.9 % from the user group could be lack of available time. Montez (2003) conducted a follow-up study on a web based survey that was sent out to deans for input on higher education leadership in order to find out reasons for non-response. One of the five major categories of reasons for non-response was "related to investing time to participate" (Montez, 2003, p.10). Another reason might be a similar WebCT survey, conducted by the office of the director of the Office of Learning Technology (OLT) that preceded this survey by about 10 weeks. Faculty members might have felt burdened by multiple surveys on the same subject i.e. WebCT. In the case of non-users relevance to the theme of the survey plays a fairly important role. The participants might have not felt directly connected to the theme of CMS. That combined with the lack of available time, as discussed in the case of users, might have contributed to low rates of response to the survey and interview. The low response rate from non-users was not unexpected and the rates of response and input received are seen in a very positive light in this study as non-users' input is vital to conversations on CMS uptake.

In spite of a rather low response rates there is a good distribution of responses from faculty members across various faculties and schools of the institution. The Faculty of Arts, which is one of the largest schools in terms of number of faculty members and has the largest numbers of users of CMS after the

Faculty of Science¹³, is represented by 8 (24.2%) respondents who are users and by 4 (40%) respondents who are non-users. The faculties of Agricultural Sciences (6 in 43 or 14%), Commerce or Sauder Business School (5 in 43 or 11.6%), Applied Science (4 in 43 or 9.3%) and the Faculty of Science (4 in 43 or 9.3%) are also reasonably represented by number of responses to the survey in total including users and non-users.

The profile of the respondents in terms of Rogers' (1995) adopter categories as presented in figure 5 is somewhat representative of the theorised distribution i.e. Normal distribution as seen in figure 2 in section 2.2 of this document. The graph is constructed with user and non-user data stacked one over the other intentionally to display the normal curve that is formed by the data. When explicated, these data show signs of being representative of the population that would consist of innovators, early adopters, early majority, late majority and laggards. The data shows that there are no innovators that are non-users and no laggards that are users which is logical in the process of adoption of innovations. Also the number of non-users seems to be the highest in the late majority whereas the largest number of users is early adopters. This is evidence that the uptake of CMS at UBC is now growing among the populations of non-users who are early and late majority category of adopters. These groups of individuals are characterized by Joe, an administrator, as being the "second wave" of faculty:

The second group I would say you know the people who start dipping their toes in the water after the first group has trail blazed... and getting and expanding that sort of "second wave" of people... I think that's probably where our faculty is right now.

¹³ This is by looking at the working list that was used to randomly sample and recruit faculty members

As discussed in section 2.11, information on the different Roger's adopter categories along with the ARCS model (refer table 4) is an interesting heuristic that could guide in the process of building training , motivation and support structures for faculty.

4.2. CMS Usage

33 of the 43 participants were CMS users and they responded to questions in section IV of the survey (refer appendix D for details) that elicited their input on how long they have been using CMS, how they would rate their skill level in using a course management system, whether they had used other CMS before they used the current one i.e. WebCT, whether they had built their own course websites, and how they use CMS in their courses. In this section I will first present and then discuss the responses to these questions.

4.2.1. Results

The responses to the question that solicited their input on how long they had been using CMS are presented in figure 6. Eleven (33.3 %) respondents have been using it for less than a year. Eleven (33.3 %) have been using it for 1 to 2 years. Eight (24.2%) have been using CMS between 2 and 5 years and 3 (9%) have been using it for over 5 years. The data are left-skewed with most users being either less than a year or 1 to 2 years. However, two-thirds of the respondents have been using CMS for over a year.

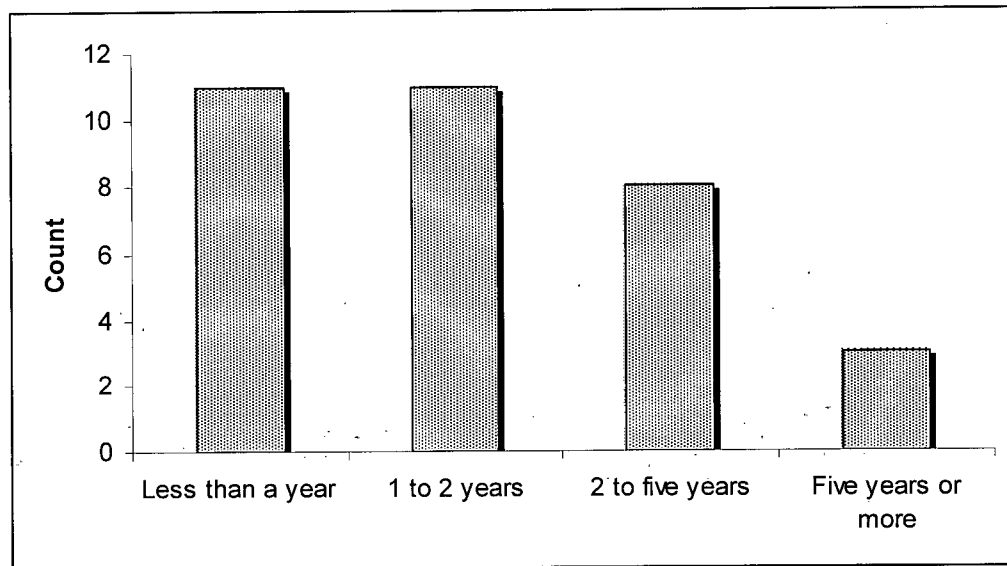


Figure 6 : Years of CMS usage of faculty members

The participants were also asked to rate their skills or expertise in using CMS on a scale that ranged from beginner to expert. The results of this question are presented in figure 7. Seventeen (51.5%) participants rated themselves at an intermediate skill level, 10 (30.3%) rated themselves as novice and 6 (18.2%) as beginners. Nobody rated themselves in the expert category.

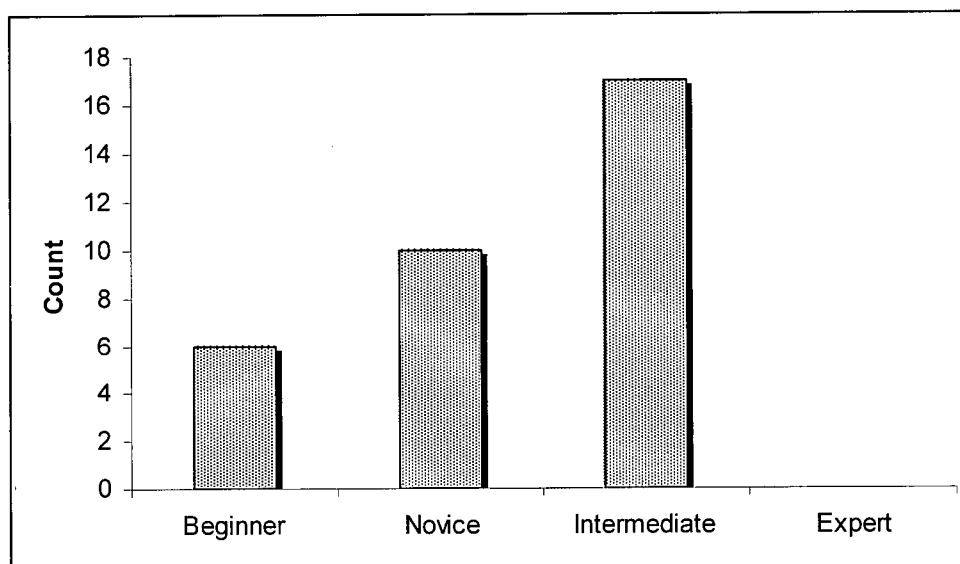


Figure 7 : Self-rated skill levels of participants

Survey participants were also asked if they built or maintained their own course website. The responses to this question are presented along with the skill level and the years of usage and are shown in table 8.

		Years of CMS Use				
Skill Level	Built or maintained own course website	Less than a year	1 to 2 years	2 to five years	Five years or more	Total
Beginner	Yes					
	No	5	1			6
Novice	Yes	3	4			6
	No	1	1	1		4
Intermediate	Yes	1	5	2	3	11
	No	1		5		6
Total		11	11	8	3	33

Table 8 : Skill level, CMS use and experience with own course websites

In response to a question that asked the survey respondents whether they used any other CMS prior to the one they currently use i.e. WebCT, only seven responses were received that named other course management system products. Five used Blackboard and one each used CCnet and First class. These are other

commercially available products that are equipped to carry out functions similar to that of WebCT.

Faculty members use CMS in a variety of situations. In the same section along with the previous two questions, input on how faculty members use CMS in their courses was also elicited. The options ranged from regular face-to-face with some online content to fully online. There was also an option for an open-ended response if there were "other" uses. Respondents were asked to select all options that applied. The results from the question are presented in figure 8.

Four faculty members chose more than one option. The majority of faculty members i.e. 29 in 33 or 88% use CMS in their regular face-to-face courses where they enhance classroom content with some online content. Four chose the "hybrid" course option. Two chose the primarily or mainly online with minimal offline support and two chose the fully online option. No faculty member selected the "other" choice.

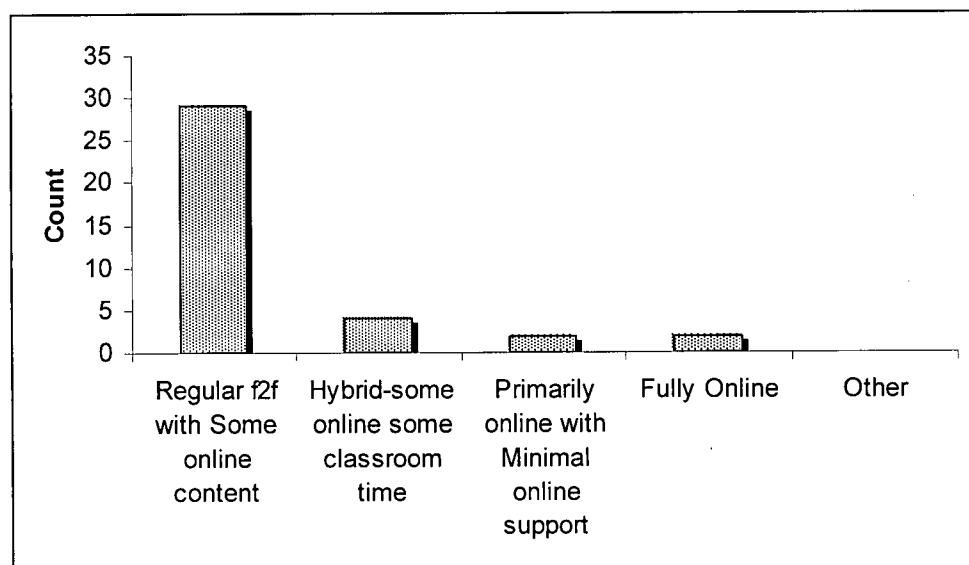


Figure 8 : Course modes in which faculty use CMS

4.2.2. Discussion

From figure 6, a majority of participants have been using CMS for less than a year (11 or 33.3%) or for 1 to 2 years (11 or 33.3%). This is probably explained by increased access and improved support and functionality in CMS in the last two or three years. From table 8 it is clear that more than half of the participants (17 or 51.5%) rated themselves at an intermediate skill level and 22 (66.7 %) of the participants have been using the course management system for over a year. In addition, about 18 (54.5%) participants have either built or maintained their own course websites. This appears to be a rather large proportion. The question that asked users whether they built or maintained their own website was directed towards a "course website" outside of CMS i.e. WebCT. However, from the responses to the next question that asked participants to provide details of these websites it is clear that some participants had indeed also understood that as being course websites in WebCT.

Some of the responses from participants who provided details about the course websites clearly indicated that they built or maintained their own course websites outside of WebCT. For example, "Personal website using Dreamweaver or FrontPage" wrote Survey Participant 23 (SP23). SP26 wrote: "tried to partially build and maintain a system for a design course - too much work and too many system problems to be effective. Much too time intensive". SP31 wrote: "simple frames site to deliver course materials and updates" and SP19 provided a web link to a course website on a departmental server. Some responses indicated that respondents interpreted the question as building a WebCT course website. For example, SP29

wrote: "I have moved students around from one discussion group to another. I have not built a site. I add files to my site". SP17 wrote: "I use WebCT to post course material, notes and practice assignments". SP5 indicated he was a designer for a WebCT course and wrote: "Instructor/Designer for 3 WebCT courses". Some responses did not clearly indicate either position. For example, SP25 wrote: "multiple courses, particularly at the undergraduate level" and SP10 wrote: "2nd year culture class taught at a Japanese University". Therefore, in total 6 (18.2%) of the 18 responses that indicated "yes" to this question seem to have actually maintained their own websites. The number 18 (54.5%) therefore might be more realistically interpreted as 6 (18.2%).

From CMS usage, skill levels and other details in this section there appears to be sufficient indication that the responses from the surveys and interviews represent input from faculty members who have considerable experience using CMS. An interesting observation is that nobody rated themselves as being experts in their use of CMS. One reason might be that the area of CMS is in constant development and change and faculty members probably feel they are not in step with the technology even after having used it for 5 years. Also, faculty members probably use CMS for specific purposes, such as grades, posting reading materials etc. and therefore are possibly only conversant with certain features of the tool. As a result they might feel they do not qualify as "experts" in CMS use.

Twenty-nine (88%) of the faculty members surveyed, use CMS to enhance regular face-to-face classroom instruction. Only 2 (6%) use it in a fully online setting. This is probably because faculty from the professorial ranks have a research focus

and therefore they have fewer teaching assignments each year in comparison with lecturers and instructors whose primary focus is teaching. Also, faculty from the professorial ranks might tend to use CMS mainly to augment face-to-face lectures while instructors and lecturers might tend to use CMS in diverse situations ranging from hybrid to fully online settings. However, this is also evidence that CMS is growing fastest and is increasingly being used in courses where the format is mainly face-to-face classroom instruction augmented by online content. This observation supports other studies such as Cuneo et al (2000) and Morgan (2003) that have also reported similar findings.

4.3. Research Question 1

What are the factors that influence faculty uptake of CMS?

The factors that influence faculty uptake of CMS are discussed in this section.

These factors were presented to survey participants under section III of the survey (refer appendix D). Participants were asked to indicate to what degree i.e. “high”, “medium” or “low”, they thought each factor affects or would affect uptake and use of CMS. The survey data is first presented in tabular form with number of respondents and associated percentages, followed by a discussion section for each factor. The discussion incorporates anecdotal comments from the survey and comments from interviews. The factors and results under this research question are summarized at the end of this section. The captions used for the tables that present the survey responses under each factor are the text that appeared on the online survey (refer appendix D), for example: “Personal Initiative (intellectual challenge, motivation to use technology)” under table 9.

4.3.1. Personal Initiative

4.3.1.1. Results of Survey

The survey results for the rating of the factor “personal initiative” are presented in table 9. Seventeen (40%) of all surveyed faculty members rated this factor as “high” while 18 (42 %) rated this factor as being one that would influence uptake to a “medium” degree. Seven (16%) rated the factor as “low”. Results are presented in table 9.

Personal Initiative	Low	Medium	High	No Response	Total
User	6	12	15	0	33
	18%	36%	45%		
Non User	1	6	2	1	10
	10%	60%	20%	10%	
All	7	18	17	1	43
	16%	42%	40%	2%	

Table 9 : Personal Initiative (Intellectual challenge, motivation to use technology)

4.3.1.2. Discussion and Interview Comments

From the survey data, personal Initiative does not appear to be a strong factor but is in the range of “medium” to “high” in terms of how faculty members rated this factor. In interviews with administrators, Darcy reported personal initiative as not being a major factor as far as faculty uptake of CMS is concerned: “I would probably say that that’s low... I wouldn’t say that that’s a really big one. It happens obviously in some cases but I wouldn’t say it’s the primary factor that people are sort of motivated by”. Joe on the other hand deemed that it was an important factor suggesting that it might be related to faculty personality types, he commented:

That definitely seems to be one of the driving forces at least in our faculty. There are "early adopters", I'm sure you have heard the term...these are people, who like trying out things...so they are excited about new things. It's a certain personality type and they are unafraid of technology. Personal initiative in our faculty and what I've seen in any kind of an adoption of technology and certainly learning tech is driven a lot by... this sounds cool, this sounds neat, this sounds new."

These personality types, as discussed in earlier sections are theorised by Rogers' (1995) as being adopter categories. Faculty members' responses during interviews also seemed to change depending on the way they viewed themselves and technology. For instance, Jack, who suggested that he started using WebCT when it was first released, thus making him an "innovator" in terms of adopter categories, articulated:

I would say that personal initiative... I have fun, like I've never taken a class; I've only used it as a supplement. I just wanted to know what it can do, what it cannot do, what might be interesting and I've had fun sort of playing around.

John, who from his years of experience of CMS implied that he is also an early adopter, expressed that personal initiative was behind his adoption of CMS: "It was definitely a factor and I believe that something like this is the way to go and I am a little curious about how it works too so it is motivation to figure out the technology".

This is contrasted by Tom who while self-proclaiming that he was a late-adopter said that personal initiative was not so much connected to motivation to use and adopt technology but more to watch and see how the technology was being adopted and used. He remarked:

I am what they call a late adopter. I watch very carefully what's happening so my personal initiative is to watch very carefully what's going to be adopted ultimately so I won't just leap into it just because it happens to be new technology.

Personal Initiative might therefore be factor that is related to adopter categories. A closer look at the survey data relating to how individual respondents described themselves in terms of adopter categories and how they rated the factor of personnel initiative is presented in table 10.

Adopter Categories		Low	Medium	High
Innovators	User	0	1	4
	Non User			
Early Adopters	User	3	5	7
	Non User	1	1	1
Early Majority	User	2	6	3
	Non User	0	3	0
Late Majority	User	1	0	1
	Non User	0	1	1
Laggards	User			
	Non User	0	1	0

Table 10 : Adopter Categories and Personal Initiative Rating

From table 10, 11 (33.3% or 11 in 33) users and majority of respondents who described themselves as innovators (4 in 5) and early adopters (8 in 18) rated this factor as high. The survey data and interview comments together suggest that personal initiative might be a factor related to adopter categories. A further detailed look at how this factor is related to adopter categories might make an interesting study.

Dave, an administrator, considered that the motivation behind personal initiative could be a result of other factors and characterized them to be of two kinds. One extrinsic, which is motivation from seeing what someone else has done by using CMS in their courses and the other intrinsic, which is evaluating what personal career gains will result from uptake of the technology. He explained:

there are two things that kind of tweak them to seeking out support or the use of course management systems... one being seeing what someone else has done... the other one is whatever intrinsic motivations the faculty member will have ... will this be recognized?...will the tenure process reward me for engaging in using technology?.

Chris a faculty member and non-user of CMS also articulated that personal initiative was connected to other factors like pedagogical implications. Chris was not one of those for whom technology would drive their personal initiative.” my personal initiative would be more connected to pedagogical implications, I mean ...for my own sake I don't know there is much intellectually to be gained from doing the materials that way”.

Personal Initiative, in terms of motivation to adopt technologies does not appear to be a major factor but does seem to have some influence on uptake of CMS. From survey data this factor might be categorised as being one that influences to a “medium” degree. This factor appears to be related to adopter categories as the personality of individuals and their attitude to adopting and using new technologies certainly plays a role. In the case of innovators and early adopters a curiosity and challenge to adopt and use technology clearly marks the presence of strong personal initiative. In some cases it appears that personal initiative might be also related to other factors and therefore might sometimes be seen as a result of other influences.

4.3.2. Available Time and Other Resources

4.3.2.1. Results of Survey

Examples of resources could be equipment, time etc. The questionnaire however mainly highlighted the availability of time to undertake online teaching and use online

technologies. It is to be therefore noted that time as a resource is probably one of the main elements that should be considered under this factor. Also during interviews faculty members seemed to focus on the “availability of time” aspect of the factor. 25 (76%) users and 8 (80%) non-users rated the factor as “high” while only 2 (6%) users and 1 (10%) non-user rated this factor as “low”. The results are presented in table 11.

Resources(Time)	Low	Medium	High	No Response	Total
User	2	6	25	0	33
	6%	18%	76%		
Non User	1	1	8	0	10
	10%	10%	80%		
All	3	7	33	0	43
	7%	16%	77%		

Table 11 : Resources (Time available to undertake online teaching)

4.3.2.2. Discussion and Interview Comments

Resources apparently play an important role in the uptake and use of CMS. Time seems to be a resource that is scarce with faculty members. The results of the survey data clearly indicate that time available or time as a resource is a factor that significantly influences uptake of CMS. 33 (77%) participants from all surveyed rated this factor as “high”. During interviews, faculty members repeatedly expressed that time available was scarce. They avowed that their research, teaching and service commitments accounted for a weighed-down schedule. “Time available to undertake online teaching would certainly not be something that I would agree with. There isn't enough time as far as I can tell” articulated Tom. The time available to faculty has to be managed and allocated by setting priorities. “Finite time available for preparing courses, not possible to do everything you would like, must set priorities” wrote

Survey Participant 41 (SP41), a non user from Faculty C, on an open-ended question in another section in the survey that asked about reasons for not using CMS. As a result of time management and prioritization of work, technologies such as CMS, that initially warrant a fair amount of dedicated time on the part of the faculty member, tend to take lower priority. Although time available was limited some faculty members did feel that front loading their time in preparing for a course with CMS might aid in saving time later on. Sam who has used CMS for some courses in a limited way commented:

up until now it hasn't been a big issue but clearly if I'm setting up a real CMS type of environment for a course it's going to require a lot more advance preparation rather than ...if you're doing things as you go and you're not using these types of technologies you can get away with not preparing ahead of time and so doing things the day before whereas you can't do that with the CMS technology. The flip side is once it's done it's done at least for that course so the preparation is harder ahead of time I would think but once it's done then you can distribute a lot more easily, so it just depends on where you want to put your time.

Sam suggested that although it is time intensive to prepare for a course using CMS, planning your work is important in making effective use of that time.

An interesting finding was that although Chris, a non user, did think some technologies would aid in saving time in the long run, finding time to learn it was a challenge, given current workload and commitments:

I just think also there's such disincentive to do that in our jobs because there's so little time to muck around learning that stuff. So for instance, I want to learn EndNote which is this bibliographic program and I went to a course that was offered in Faculty B. I did that three months ago or two months ago and actually haven't had time to do it, to fiddle around with it and I'm not sure I can remember what I spent three hours learning and it just is stupid because in the long run it probably saves you time but it's very very hard to get to a place in your life right now where you can do that and I think that's a real problem for getting faculty to do these things ... you're too pressed by what's due yesterday to actually work on something that is not immediately relevant.

Resources influence the uptake of CMS in a significant way. Time as a resource available to faculty seems to be a factor that influences uptake of CMS to a “high” degree. CMS warrants an investment of time for learning the technology and advance preparation of the course. Faculty seem to be pressed for time and therefore unless critical might not consider the use of CMS. Faculty prioritize their work and what is not seen as “immediately relevant” is given low priority and therefore might get left on the wayside and this possibly results in negatively impacting uptake of CMS.

4.3.3. Rewards and Incentives

4.3.3.1. Results of Survey

Survey results show that 22 (51%) faculty members rated rewards and incentives as “low” and 13 (30 %) rated it as “medium” while only 7 (16 %) rated the factor as “high”. Table 11 presents the responses of both users and non-users.

Rewards & Incentives	Low	Medium	High	No Response	Total
User	19	8	6	0	33
	58%	24%	18%		100%
Non User	3	5	1	1	10
	30%	50%	10%	10%	100%
Total	22	13	7	1	43
	51%	30%	16%	2%	100%

Table 12 : Rewards and Incentives (merit pay, stipend, salary increase)

4.3.3.2. Discussion and Interview Comments

The survey data indicate that rewards and incentives such as merit pay, stipend and salary increases are not a factor that influence faculty in the uptake of CMS. A majority of the surveyed faculty members (22 or 51%) rated the factor as “low”. Also in interviews faculty were unanimous in their response that rewards and

incentives was not a factor that influenced their uptake. One explanation for these results is that faculty members that were part of the study were from the professorial ranks in a research-based institution that primarily rewards faculty based on their research and scholarship output. Therefore faculty members do not expect any merit pay or salary increase based on their uptake and use of CMS. Jack, a user of WebCT from when it was introduced over 7 years ago said: "rewards and incentives have never played any role for me. I don't know if anyone has ever noticed I used WebCT". Tom indicated that hypothetically speaking, if rewards and incentives existed, it might influence uptake: "let's be mercenary, if I were told that I would get a reward or incentive, of course I would adopt. It's very straightforward". Administrators talked about the lack of rewards and incentives and felt that it might help faculty in their uptake and use of CMS. Darcy, an administrator in reply to a clarifying question about the rewards and incentives being a factor, supported Tom's view that the presence of such incentives would promote CMS uptake:

Definitely, I think that right now there's a perception that well you know I'm going to invest the time that I have to invest... hours and hours... this could take more time for me to prepare a two-hour lecture... this is going to take you know two months for me to prepare this web based exam or a web-based module and now there's nothing really in it for me except a little comment during a meeting. So yeah! I definitely think that a lot of faculty... that would be very appealing to them. Right now it is "low" [rating of this factor] but if there were in fact rewards and incentives I think it easily could be "high" [rating of this factor].

Joe, another administrator, remarked "that way it's absolutely awful, there isn't any as far as I can tell rewards and incentives at this university on this campus certainly not in our Faculty". Chris, a non-user does not believe that rewards and incentives will be introduced to promote uptake:

I can't possibly imagine it ever happening...it strikes me as hypothetical... it's hard to really engage with it seriously. Yet if I'd heard someone say you know we'll give you a salary increase of \$5,000 if you do this I would probably do it but that'll never happen you know.

From results of survey, rewards and incentives are clearly a non-factor in the uptake of CMS among the faculty of professorial ranks. This is quite contrary to studies such as Ensminger & Surry (2002) that reported that faculty rated monetary support or lack of it as one of the top five factors influencing faculty participating in instructional technologies. One explanation may be that the faculty in this study are from professorial ranks only, in contrast with the Ensminger & Surry (2002) study that does not specify but mentions a mixed group with only a minority of participants probably being of professorial status. However, what is noteworthy is that faculty and administrators, from interview comments, believe that rewards and incentives if offered might promote adoption. They however, do not see it as a plausible option. The absence of rewards and incentives has made it a non-factor in uptake and the notion of the improbability of such incentives being offered might have resulted in it not being seen as a factor influencing future uptake as well.

4.3.4. Policies

4.3.4.1. Results of Survey

Nineteen (44%) of the faculty members surveyed rated this factor as "low", 14 (33 %) rated it "Medium" while 9 (21%) rated it "high". The trends seem to be similar between users and non-users. The details of the results are presented in table 13. The main focus again for this item was the consideration for tenure and promotion.

Policies	Low	Medium	High	No Response	Total
User	15	11	7	0	33
	45%	33%	21%		
Non User	4	3	2	1	10
	40%	30%	20%	10%	
All	19	14	9	1	43
	44%	33%	21%	2%	

Table 13 : Policies (consideration for tenure/promotion)

4.3.4.2. Discussion and Interview Comments

Like the rewards and incentives factor, policies appear to be a “low” to “medium” rated factor in the influence of uptake of CMS. The survey data indicates that policies such as consideration for tenure and promotion are not considered as influencing adoption of CMS to a “high” degree. A majority of the faculty surveyed (33 or 77%) rated the factor “low” or “medium”. During interviews, faculty indicated that this was not a factor that influenced their uptake. Jack, a professor commented: “...never been an issue I mean I've been promoted long enough ago that it's is not something I have really worried about and I don't think it is it a factor”. Jack's comment suggests that it might not be a factor because policies relating to tenure for instance would not apply to such faculty. This prompted a closer look at the data in relation to the title and status of the faculty surveyed. Table 14 lists the responses of faculty to this factor and breaks it down into the title and status.

Title	Status	Low	Medium	High
Professor	Tenure	8	1	1
	Tenure Track			
Associate Professor	Tenure	3	4	2
	Tenure Track			
Assistant Professor	Tenure	1		
	Tenure Track	6	7	6
Other	Other		2	

Table 14 : Status, title and rating of “Policies” factor by participants

Results in table 14 reveal that majority of respondents who rated the factor as “low” were tenured faculty i.e. 12 in 18 or 66.7% and majority of the respondents who rated the factor as “high” were tenure-track faculty i.e. 6 in 9 or 66.7%. This probably reveals a trend which suggests that tenure-track faculty rate this factor between “medium” and “high” and think it would influence their uptake and use of CMS while tenured faculty appear to rate this factor as being “low” or irrelevant. A study looking at this trend in more detail might be interesting and useful. Currently there appears to be no policy that rewards a faculty member from the professorial ranks for using technologies such as CMS in their teaching during consideration for tenure or promotion. Chris, a non-user, commented when interviewed:

Policies... it would be such a minor factor in any of these... yeah, consideration for tenure and promotion... I would consider it but I think teaching right now sort of innovative teaching features so minimally in any of the reward or promotion packages relative to other things that are in practice.

Tom, when asked a clarifying question of whether the presence of policies would influence replied:” ...Consideration for tenure and promotion of course again other things being considered...I certainly want to keep my job so I would consider that

quite seriously". Administrators interviewed had strong opinions about the current state of policies at the institutional level. Dave articulated:

You're talking about the professorial ranks right? Not instructor ranks... about the tenure process and what people are rewarded for... most people will say that the Trek 2010 and the academic plan and some of the changes that have gone on in the tenure documentation say that teaching is rewarded. It may be the case but there's not a lot of evidence on that on the ground...there's some... I mean the wording has changed but the day that we see a professor come to the tenure process and be promoted only on their teaching, when that becomes more common I think he will have got to policies that can really help us here.

Joe echoed Dave's concerns about the absence of policies that support faculty uptake and use of instructional technologies for tenure or promotions:

That's another place where it falls completely flat and it would be great if there were policies like tenure and promotion...I recently ran across this, it doesn't seem to factor in at tenure time it's still in our faculty very research-based. So you're being told that we want you to teach on one hand and we want you to do a good job and if you do we will up your pay but six years down the road when the really important thing comes which is tenure which I think is what most of the faculty members are working towards it doesn't seem to factor in. It's like well you don't have enough publications or you don't have enough grants. They don't seem to realize there's a give and take there. I would be amazing if someone could say... hey wait a second you know x, y or z you are teaching with technology with great results. You're teaching lots of courses you really streamlined the process and stuff ... we are going to reward you with promotion or tenure and as far as I know that does not exist in our faculty and not at UBC

Policies, mainly consideration for tenure and promotion, seems to be rated as "low" to "medium". With a majority of respondents rating it as "low" the factor does not seem to overall have a prominent influence on uptake and use of CMS. Although "policies" is not a factor that influences faculty uptake to a great extent, it does seem to be more of a factor among tenure-track faculty. There appears to be no concrete institutional policies that support use of instructional technologies such as CMS and give faculty credit during consideration for tenure or promotion for using such

technologies. Administrators who were interviewed believe that such a policy might help uptake and support use of CMS.

4.3.5. Intellectual property and Copyright Issues

4.3.5.1. Results of Survey

Survey results show that a majority of 18 (42%) respondents rated this factor as “low”, 14 (33%) rated it as “medium” and 10 (23%) rated this factor as “high”. The trends are somewhat similar between users and non-users of CMS. Table 15 presents the results.

IP & Copyright	Low	Medium	High	No Response	Total
User	13 39%	12 36%	8 24%	0	33
Non-User	5 50%	2 20%	2 20%	1 10%	10
All	18 42%	14 33%	10 23%	1 2%	43

Table 15 : IP and Copyright Issues (ownership of content, fairness of use)

4.3.5.2. Discussion and Interview Comments

Survey results indicate that Intellectual Property (IP) and copyright issues are not a major factor. A majority of faculty members (32 or 75%) rated the factor as “low” or “medium”. Joe, an administrator, thought that IP and copyright issues relating to their own content does not seem to be an obstacle to some faculty:

I don't think it's been much of a restriction so far... people do have concerns but the people who are most interested in creating content online content want to create the content and want to share it and they are not going to let legalities essentially stop them from doing that. They really are sort of like the champions of knowledge and dissemination of knowledge

This sentiment , as described by Joe, among faculty members to freely share and make content available was supported by Chris who albeit being a non user of CMS

did not view IP and copyright issues as a limiting factor and felt it is important to share course content: "Intellectual property and copyright issues that would be totally non-factor to me.....no doesn't bother ... I can see there is some real advantages you know if someone is team-teaching the same course we can actually share each other's labour" .However, to others having the content behind an authentication process that a course management system provides is a comfort. Joe added:

Some of the faculty put their materials online knowing that they are online and not within CMS and so they're freely available to anybody who cares to find them on the web...some of our faculty are fine with that and some of them would rather have it in WebCT where there's a bit more the feeling that they are protected.

Dave also suggested that this authentication process might be a feature that faculty value:

Yeah I mean that's one of the... I think values that faculty look at a course management system for, is that it's a protected...password protected place that they can share their intellectual property but not worry about the wider dissemination of it.

Sam, from Faculty C, whose views concur with that of Joe and Dave, believes the authentication process does provide a level of protection:

Yeah it's is something that I thought about a little bit because I think I tend to have a sort of different way of looking at certain things than others when it comes to certain topics...in that regard my lecture notes can be quite different from what other people are using and I don't have a problem with other people using it but flip side is there is a certain thought that maybe there should be some form of attribution of that information...I actually see CMS as a way of making information available but it actually doesn't make it available to anybody... there is an authentication process that does limit accessibility.

One of the issues with copyright, as in the permission to use someone else's material in an online setting such as CMS, is that laws in this area do not seem to be very clear. Posting of print and related materials that have clear ownership does not seem to be a problem however in the area of digital content there appears to be

lesser lucidity. The copyright clearance process is usually straight-forward in the print world, however, it is not so in the digital realm. Jack articulated: "I try to be reasonably careful like using of someone else's book I got permission from him before I posted". Another faculty respondent SP5 alluded to the uncertainty of copyright laws and in another section of the survey wrote:

It seems unclear to me and those I have asked what copyright laws apply with regard for example to posting links to readings that are e-journal articles available at UBC, or other such articles that are on the web with the assumption of being viewed by single users.

Darcy as an administrator usually is at the receiving end of questions regarding fairness of use of digital content:

I hate being the copyright police and I feel as though I'm the person that is delivering the bad news...its really a tough one because there is well... my feeling is that copyright policy and regulation in Canada is still unclear and in fact when you read it it's contradictory in sections and so we are standing on a slippery slope when you're telling faculty 'I'm not sure if you can take that Marge Simpson's video edit it and put it on to the Web' and I had that request.

Joe would like to see an equivalent of CanCopy¹⁴ for digital and multimedia materials: "I would love to see ... like a digital CanCopy so that instructors could know and then UBC of course, as to who owns the content ... I don't think anyone really knows".

As far as who owns the courses and materials created by the courses in CMS is still a grey area, however policies seem to be changing in recent times. Joe seems to think: "policies here are slowly changing I believe they now moved in somewhat the right direction in that they recognize that if you have a web site that's really like writing a book".

¹⁴ The Canadian Copyright Licensing Agency

Generally speaking, Faculty do not rate IP and copyright issues as a factor that hugely affects their uptake of CMS. Survey results show that they rate it as affecting uptake at a “low” to “medium” degree. Overall, a majority rate it as “low”. Copyright issues relating to fairness of use do not stop some faculty from posting and sharing content online. Similarly, although policies in the area of IP relating to ownership of online content created by faculty are still in a state of flux, it does not hinder faculty from creating and posting content online. However, an interesting finding is that some faculty feel that the authentication process in CMS is a feature that limits undesired wider dissemination and use of their content by providing some degree of protection. Copyright laws in the area of borrowing and using digital materials are still hazy and faculty constantly grapple with what may or may not be suitable to use when incorporating it in their online content.

4.3.6. Time Taken in Preparing and Delivering a Course

4.3.6.1. Results of Survey

Survey results showed that 33 (77%) of the respondents rated time taken in preparing and delivering a course (course set-up and delivery) using CMS as “high”. Nine (21%) rated the factor as “medium” while only one (2%) rated the factor as “low”.

Time Taken	Low	Medium	High	Total
User	1	8	24	33
	3%	24%	73%	
Non User	0	1	9	10
		10%	90%	
All	1	9	33	43
	2%	21%	77%	

Table 16 : Time Taken in preparing and delivering course (course set-up & delivery)

4.3.6.2. Discussion and Interview Comments

Survey results clearly illustrate that faculty feel that time taken in preparing and delivering a course using CMS is a major factor that affects or would affect uptake and use of CMS. Faculty were also unanimous in their responses to this factor in interviews. They articulated that it is time consuming to set-up or deliver a course using CMS. Jack expressed that set-up and maintenance of a course is time consuming: "It takes time WebCT is better than it was but it's still not user friendly like the uploading and downloading of files is primitive". Tom who inherited a WebCT course and worked on revising it to his style implied, through his comments, that it was time intensive:

The course had already been set up but my revision was very difficult because the person who taught the course before me had very different teaching style... very different in fact ...so it was really difficult transforming that in to my own.

John also thought that using the course management system tool i.e. WebCT was more time intensive:

When I was using WebCT, I spent more time fooling around with all the things and it is impossible to explain how frustrating it is. There are many times when I'll be up past midnight when if I had done something any other way especially by paper I would have been done hours before just hours before and the only issue is if I did it on paper... I can't get the paper to the students ...but if I'd done it some other way If I hadn't made a commitment to WebCT...because things are just so slow and so many complicated steps

Chris, although a non user, conveyed what colleagues who have used CMS reported about time taken in course delivery and set-up:

Time taken in preparing and delivering course ...I can see students would say 'I didn't get this, my button, it didn't go here. What do you mean? I didn't know I was supposed to do that?' I can imagine that you have much more time dealing with students inability to navigate, so I don't think it would save that much time and my

sense of colleagues who have done this is it's so intensive in setting up the online materials and keeping them up-to-date every year that there is no time....If it could take less time would I be interested yes definitely if it would take less time.

Despite the complaint that course set-up and delivery took time some faculty think that using a course management tool does help in some aspects. For instance Bob, who also felt that setting up a course with CMS is time intensive, when explaining how WebCT helped in class management of a course with around 400 students articulated: "if I didn't have this I would have taken a lot more time... it was a major timesaver in that sense." Jack had something similar to say: "I mean I have found that it saves time as I was mentioning in terms of classroom management with a large class but it takes time".

Clearly, the time involved in course set-up and delivery is a major factor that affects or would affect uptake of CMS. It is mainly because it is time intensive that it becomes a major factor that is possibly seen as a barrier to adoption. Through interview and survey comments faculty have expressed that they are pressed for time due to their overwhelming workloads. Therefore they would be looking at tools that help them save time. However, some faculty have clearly articulated that time taken in using CMS only results in consuming excessive amounts of time. Therefore it appears that time taken in using CMS influences or has influenced faculty to a "high" degree. However, using CMS, in some cases, helps faculty in certain aspects of course management and therefore they continue to use these tools despite the allegedly hefty investment of time it warrants.

4.3.7. Development and Training

4.3.7.1. Results of Survey

Nineteen (44%) respondents rated this factor as “high”, 15 (35%) rated it “medium” and 8 (19%) rated it as “low” in terms of influencing uptake of CMS. Between users and non- users there appears to be a difference in those who rated the factor as “medium”. About 6 or 60% of non-users think this factor affects uptake to a “medium” level while only 9 or 27% of the users were in that category. Results are presented in table 17.

Development & Training	Low	Medium	High	No Response	Total
User	7 21%	9 27%	16 48%	1 3%	33
Non User	1 10%	6 60%	3 30%	0	10
All	8 19%	15 35%	19 44%	1 2%	43

Table 17: Development and Training (workshops, demos)

4.3.7.2. Discussion and Interview Comments

The survey results reveal that development and training is a factor that influences uptake to a “medium” to “high” degree. The survey results also show that more users rate this factor as “high” while more non-users rate this factor on a “medium” scale. Non-users might not have a full grasp on the level of support required through development and training in the context of CMS and might therefore perceive this factor as being one that does not affect uptake to a “high” degree. To take a closer look at the user data it was cross-tabulated with self-skill rating and years of usage of CMS. The table 18 shows the results of the analysis.

CMS Usage	Skill Rating	Low	Medium	High
Less than a year	Beginner		2	3
	Novice	1	1	2
	Intermediate			2
1 to 2 years	Beginner		1	
	Novice	2	2	1
	Intermediate	1	1	3
2 to 5 years	Beginner			
	Novice	1		
	Intermediate	1	1	4
5 years or more	Beginner			
	Novice			
	Intermediate	1	1	1

Table 18: CMS usage, skill rating and development and training factor rating

From the 32 users who responded to this question. It appears that 11 (11 in 32 or 34.4%) of those who have used CMS for less than two years rated the factor as “high” and 10 (10 in 16 or 62.5%) of those who rated this factor as “high” were users with an “intermediate” skill rating. Therefore possible explanations for this outcome might be that these users have experienced the value of training workshops and therefore rate the factor a “high” or “medium”. They might have also benefited from training or their decision to adopt might have been influenced by the availability of such development or training opportunities. It could also mean that their further use of CMS is influenced by the level of support provided through development and training workshops which might explain most “intermediate” users rating this factor as “high”.

“I just started using Web CT this term and like it very much...had a good semiprivate workshop with Tim¹⁵ who was very helpful” wrote SP9 as an anecdotal

¹⁵ pseudonym used to maintain anonymity

comment on the survey. During interviews the participants conveyed that workshops and demos were important. When asked about the influence of development and training Bob remarked:

... I had one training session for the (Teaching Assistants) TAs and me...and that worked fairly well. It was pretty easy. It was mostly about how to handle grading, how to handle late assignments and the anomalies that occurred and most of the TAs figured that out pretty quickly.

However, some faculty resorted to learning the tool on their own. Sam is self-training himself by using the tool with smaller courses before he needs to conduct courses with larger number of students. Tom did not need training as he thought WebCT was not hard to use. Jack articulated: "development and training I always think it's a great idea but have never gone to one". Chris, a non user, had a similar response: "If there workshops and demonstrations available yeah that would help although it is out of question finding a day to go for workshops and demonstrations".

John, who attended a workshop, commented:

development and training basically isn't much I did take the closest thing to an advanced course and I did learn about the numeric IP¹⁶ address and there was one of two other of those small things... I have to say that it was a little disappointing.

Development and training, albeit not being a major factor, is important and influences uptake of CMS to a "medium" to "high" degree. Overall, taking both users and non-users into consideration, it was rated as a factor of "high" rating. However, more users think it is a factor of "high" influence than non-users. This might be because more users might have seen the need or experienced the benefit in the

¹⁶ This is a workaround to start two browsers for the same course website in WebCT one using the regular web address and the other using an IP address. This helps in logging in as two different account types, for instance, as a student and instructor to view the content as different users would view it.

uptake and use of CMS. Although development and training like workshops and demos are considered valuable, not many faculty members might be partaking in such training opportunities. One reason for not attending such workshops could be again due to the availability of time and workload as discussed in previous sections. Another could be their ability to learn to use the tools on their own. These findings suggest two possible implications for structuring development and training workshops and demos. One suggesting that time should be made available to faculty for making use of the training that is provided the other is to see whether some types of training for instance basic workshops should be provided at all. The data does not clearly suggest in any one direction and therefore a study that looks closely at how faculty respond to development and training opportunities provided to them, in the context of CMS, might prove useful.

4.3.8. Technical Support

4.3.8.1. Results of Survey

From the faculty members surveyed, 28 (65%) rated the factor as “high”, 9 (21%) rated the factor as medium and 6 (14%) rated the factor as “low”. The details of the results are presented in table 19 below.

Technical Support	Low	Medium	High	Total
User	6 18%	6 18%	21 64%	33
Non User	0	3 30%	7 70%	10
All	6 14%	9 21%	28 65%	43

Table 19 :Technical Support (helpdesk, troubleshooting etc.)

4.3.8.2. Discussion and Interview Comments

Technical support includes helpdesk, troubleshooting and other related technical assistance that faculty require to successfully adopt and use instructional technologies such as CMS. Survey results reveal that it indeed does influence faculty in the uptake and use of the CMS to a great extent. As seen in table 18 above, a majority (65%) of faculty surveyed rated the factor as "high". There is some difference between how users and the non-users rated this factor. 7 (70%) non-users rated technical support as a factor that would affect their uptake to a "high" degree. 3 (30%) rated it as "medium". There were no non-users who rated this factor as "low". For non-users this factor is clearly one that is prominent and although the sample of users is a modest one, results suggest they believe it will influence their uptake to a "high" degree. For faculty who have not yet used CMS technology, it is rational and practical to rate this factor as "high" as technical support is indeed a significant part of successful implementation and use of any technology. Chris, a non-user, clearly articulated this sentiment: "Technical support is clearly important. I don't think I would want to do it unless it's clear there is ongoing technical support "

With regards to users the spread of responses is wider. Whereas a majority of respondents (21 or 64%) rated the factor as "high", 6 (18%) rated it medium and 6 (18%) rated it "low". As CMS usage information is available for users a closer look at how users measured this factor in relation to their years of experience with CMS would be worthwhile. Table 20 is a breakdown of faculty members with the

information on years of experience of using CMS and how they rated this factor.

These are participants who are users.

CMS Usage	Low	Medium	High
Less than a year	2	0	9
1 to 2 years	2	3	6
2 to 5 years	1	2	5
5 years or more	1	1	1

Table 20 : CMS usage and rating of “Technical Support” factor

Results from table 20 show that 15 (15 in 33 or 45.5%) faculty members, who rated this factor as “high”, have been using CMS for less than 2 years. The same respondents also form 72 % (15 in 21) of those who rated this factor as being “high”. One way to interpret these results would be that faculty who are recent adopters have been using the support more extensively. Also, technical support has perceptibly grown since CMS were first introduced and course management system tools have also become more diversified and complicated thus technical support has been the factor that has probably influenced more recent adopters and users than older ones. Jack who has been a user of WebCT since its introduction commented “the help desk, troubleshooting...I don't know if I've ever used that”. While Bob a more recent user expressed: “technical support...there's lots of that from the instructional support center” implying that he has used and appreciated the value of the presence of such support. How CMS usage i.e. years of experience is related to the technical support factor might therefore be a topic for further study.

John commented: "technical support at UBC is actually pretty good" but added that in recent times he has seen system hardware and maintenance issues that have been somewhat disruptive. Tom had confusion about whom to approach when he had problems with his course:

The helpdesk and troubleshooting... wasn't always clear who was doing what... again these were personal reasons, I know the WebCT people here were doing all sorts of things, personally that meant I was never really sure whom I should speak to about problems.

Faculty generally seemed to be satisfied with the technical support they received. Administrators and some faculty during interviews expressed that the current course management system is overextended and is on the verge of a breakdown. This might be the reason behind John's comment of system outages. Tom's experience might be related to knowing who to approach for help-desk support and does not reflect the quality of technical service itself. This probably suggests that users also should be made aware of the different support services that are available for CMS use at the departmental and institutional level. Technical support as revealed from the survey results is clearly a factor that is rated "high" in terms of influence on uptake of CMS. Users and non-users both see the need for this support.

4.3.9. Technology Related Factors

4.3.9.1. Results of Survey

From participants surveyed, 27 (63%) rated technology related factors such as complexity, inflexibility and related features, as being one that affects or would affect uptake and use of CMS to a "high" degree. Fourteen (33%) rated the factor as

“medium” while only one (2%) rated the factor as “low”. Users and non-users were fairly consistent in how they their rated this factor.

Technology Related Factors	Low	Medium	High	No Response	Total
User	1	11	20	1	33
	3%	33%	61%	3%	
Non User	0	3	7	0	10
		30%	70%		
All	1	14	27	1	43
	2%	33%	63%	2%	

Table 21 : Technology Related Factors (complexity of product, inflexibility etc)

4.3.9.2. Discussion and Interview Comments

A majority of users and non-users alike rated this factor as “high”. Technology related factors include, complexity, inflexibility and technology related features of the course management system product. From survey results these factors evidently affect or would affect faculty uptake and use of CMS to a “high” degree. 20 (61%) users and 7 (70%) non-users rated this factor as influencing uptake to a “high” degree. Dave in describing how technology related factors would affect adoption of CMS articulated: “certainly ... they [technology related factors] probably would more influence how they adopt the technology... where it's very complex there would look to someone to do... and where it's less complex they will look to learn how to do it” implying that faculty depending on how complex the product is would learn on their own or find help to use the product. This would vary from individual to individual and their skill level. Features of a product will either be a factor that attracts some faculty towards adoption or in some cases present an obstacle to faculty. In either case it will influence adoption and use of CMS. From interviews, it was clear that most

faculty members were not enthusiastic about features of the course management product i.e. WebCT in use. Some features of the tool were praised while others harshly criticised. Sam commented that ease of use of a product is important and described that he found WebCT was relatively well designed:

Certainly ease-of-use is a big factor in all of these things. I mean WebCT itself seems to be relatively well designed. There are things I would change, but you know on the whole that is always going to be one of the issues is, can you work within the structure that is been provided to you and at least for me with WebCT... with my experience with WebCT ... I think it's reasonably good, you can manage it fairly well there is no perfect system.

Jack was able to articulate a concrete example when talking about how some features are good while others are not:

Some things are really good some things are not. Some things are stupid like... when you're trying to enter the grades and setting up columns and things like this it's not user friendly at all in terms of seeing what you want to see. Seeing what the student sees online, if you want, you don't get it with the grades, other things you do but if you want to actually see what the student is seeing when he or she logs in to check grades you can't see it. The only way you can do that is by creating a fictitious student and logging in as that student which of course isn't a great thing to do because then you're also affecting averages. Things like this ...there are certain aspects of WebCT that are just primitive and there are other aspects that are excellent.

Bob expressed a similar view on the product as Jack:

...WebCT is a bit clunky or clumsy in some cases. It's not complex ...I can see the various versions of it improving over time. It's fairly easy to use; I don't think it's inflexible at least for what I was trying to do. I think, if I you're trying to do something like an online discussion with it... I know it's possible but I think it gets a little complicated when you get into that level

John who has been a long time user had harsh criticisms of the inflexibility of some features on WebCT and provided a few examples but summarized his frustration as follows: "Yeah well they don't know who their users are... they have a very straight jacketed model if you fit the model great".

The features of the product also translate into reliability of the product. SP26, a user, wrote the following in the survey as an open-ended response:

Reliability and resources provided are major factors - if it doesn't work properly after much effort has been expended - or I have to invest much more time - I will not adopt, in fact, will abandon! Traditional web pages become too time intensive to maintain - I use WebCT only to distribute information to the students at present.

This comment implies that reliability and flexibility of features of a CMS product, that aid in making the experience of using it easy and result in saving time, play an important role in uptake and continued use of such instructional technologies. Butler and Sellbom (2002) reported that a majority of their faculty selected reliability of technology as a number one factor that influenced their adoption of technology.

Technology related factors influence uptake of CMS in a significant way. From survey results it is clear that this is a factor that ranks “high” among factors that influence uptake and use of CMS. Some faculty find WebCT easy to use while others find it is “clunky”. Faculty generally agree that some of the features are helpful while others need to be updated. It appears that newer versions of the product might eliminate these difficulties. Complexity, reliability and flexibility of features of these products strongly influence uptake and use of CMS.

4.3.10. Pedagogical Implications

4.3.10.1. Results of Survey

Twenty-two (51%) faculty members rated the factor as “high” while 19 (44%) rated the factor as medium. Only 2 (5%) rated the factor as “low”. Table 21 below lists the survey results for this factor.

Pedagogical Implications	Low	Medium	High	Total
User	1	14	18	33
	3%	42%	55%	
Non User	1	5	4	10
	10%	50%	40%	
All	2	19	22	43
	5%	44%	51%	

Table 21: Pedagogical Implications (quality of course, teaching methods)

4.3.10.2. Discussion and Interview Comments

Pedagogical implications are related to enhancements of quality of course and teaching methods through the use of CMS. Both users and non-users rated this factor fairly alike. However, a majority of users (18 or 55%) rated the factor as high while a majority of non-users (5 or 50%) rated the factor as “medium”. Overall the survey results show that this is a “medium” to “high” rated factor. During interviews some faculty members professed that this is a factor that would strongly influence them. Sam declared:

I think that [pedagogical implications] is a big factor for me in general... I wouldn't do it if I thought it was hindering the process if I'm ending up being equal than other methods then that's okay if possible I'm trying to enhance the experience...

Sam's comment implies that there are some pedagogical benefits like enhancing the course experience by using CMS. Chris , a non user, concurred: “pedagogical implications, this would be really important to me, if I thought that really made a difference to the students learning experience I would be very strongly motivated to do it”. What participants considered as pedagogical enhancements seemed to vary between participants. Some thought enhancing the course experience in any fashion accounted for pedagogical enhancements while others related it to teaching or evaluation methods. For instance, SP12 wrote in the open-ended section of the

survey "I don't use CMS as a teaching medium or a pedagogical tool. I just use it to organize course materials in one place that is accessible to students at all times and without having to distribute everything via photocopy". While Bob in answering if it was a factor responded:

It had serious pedagogical implications... I think the course is much better because of the reading material that is made available. I mean I could have handed it out to them but that would have been logistically difficult. Umm... Teaching... it does... the extra reading that they had to do... it made things available to them that would be difficult to give them otherwise. Things like there were surveys that I did. It was a class in ethics and professional practice and I made them do surveys of people in the profession, some of their own opinions about things and that made it easier. Made it lot more... little bit richer.

Jack also believed the discussion groups enriched the experience while enhancing student-student and student-teacher interaction and supplementing pedagogical approaches to the course. He commented: "so it's put me in touch with students but it is also put students in touch with other students". In contrast, John did not believe there were any pedagogical implications that were involved with WebCT. He opined: "I don't think there are pedagogical implications because essentially I don't think there is pedagogy in there". John did not see any pedagogy in the tool and suggested that only the quiz feature might have some pedagogical implications. John's comment suggests that he possibly assumes a more narrow definition of pedagogy than other faculty members interviewed.

Although faculty did have different views on this factor they did in some way converge to the enhancement of course experience and teaching methods. This is similar to the findings of studies such as Morgan (2003) where student communication and class management tasks were seen by faculty as factors for uptake under the guise of pedagogical enhancements (p.2).

Joe thought that faculty who saw the need to and were willing to modify their approaches to learning were more likely to adopt CMS. He commented:

So I think that the faculty who aren't willing to evolve or modify their pedagogies, their sort of approaches to learning are less likely to adopt unless their pedagogical approaches already matched those that sort of work well with CMS but the ones who aren't would probably be less likely to adopt

Pedagogical implications such as teaching methods and quality of course for instance, influences uptake of CMS to a considerable degree. Survey results reveal that faculty rate it at a "medium" to "high" degree. Overall this could be rated as a factor that influences uptake and use of CMS to a "high" degree. Some faculty members strongly feel that using CMS enriches course experience in different ways and in turn results in pedagogical enhancements.

4.3.11. Departmental Support

4.3.11.1. Results of Survey

Only 7 (16%) respondents rated this factor as "high". Nineteen (44%) rated this factor as "medium" while 17 (40%) rated this factor as "low". The survey results are presented in table 22.

Departmental Support	Low	Medium	High	Total
User	13 39%	13 39%	7 21%	33
Non User	4 40%	6 60%	0	10
All	17 40%	19 44%	7 16%	43

Table 22: Departmental Support (encouragement of colleagues, head or dean's recommendation)

4.3.11.2. *Discussion and Interview Comments*

Survey results illustrate that generally most faculty rate this factor as affecting uptake at a "low" to "medium" degree. Non-users have clearly rated this factor as "low" to "medium". Among users, a majority have rated the factor "low" or "medium" but a small number have rated the factor as "high". The responses seem to be fairly spread out among the three choices. One explanation for this might be the inconsistency of support that is available in various departments and faculties across the institution. Therefore faculty in one department might find departmental support playing a stronger role in uptake and use than in another. During interviews for instance, John from Faculty C remarked: "department support... well this is not a factor in my department and I can't imagine it being a factor... There has never been...any pressure to use WebCT and if you randomly polled the faculty most people would say don't use it...." implying that there was little support for using WebCT. Bob acknowledged of a similar trend that exists in his faculty: "yeah Faculty A is fairly passive about it if you want to use it's there and if you don't that's fine too". On the other hand Joe an administrator averred of support and encouragement in his faculty:

we've been very lucky that way in that my former supervisor ... really pushed to have an innovative sort of approach to at that time what was called distance education but has become online learning and teaching or teaching and learning and really encouraged our Dean, who is already pretty progressive in terms of deans of faculties, to provide these resources...

Departmental support includes support from colleagues as well and Sam expressed how that would help in uptake:

It plays a role. I would guess independently in the sense that because other people have adopted the system it makes it easier to adopt it yourself. I wouldn't say if there was nobody in the department that used WebCT and it was just myself I don't think it would make that big of a difference to me but in terms of actually sort of exploring the possibilities... It's a lot easier when the person who has their office next to yours is also trying to find new ways to do things... it just kind of makes it easier when you have people to talk to who have similar experiences...

Jack has been that colleague to members of his department and he articulated examples of how he has encouraged colleagues: "Yeah... I certainly have done that and I have encouraged people to do things like the bulletin board. I have definitely encouraged other people to use it".

Dean's and head's support also positively influences adoption and studies such as Morgan (2003) have found this to be a motivating factor. Dave, an administrator, commented: "I think it's the nature of the curriculum initiatives that are around these days, we are looking at more group work, team work integration that the CMS can often provide the glue... say between three courses that are sharing projects" implying that departments are now seeing CMS as tools that aid collaboration among faculty members and therefore are likely to back their implementation.

Departmental support includes support from heads, deans and colleagues and it appears to be a factor that influences some faculty uptake in a positive way while others in a negative way. From interviews with faculty members it appears that faculty culture and attitudes toward CMS in some departments might be aiding uptake while in others it might be hurting. This finding needs further exploration. Non-users believe it is a factor of "low" to "medium" degree while users believe it is a

somewhat influential i.e. "medium" factor. Overall it appears to have some influence on uptake and use i.e. to a "medium" degree.

4.3.12. Students' Interests

4.3.12.1. Results of Survey

Survey results show that 24 (56%) of all faculty members surveyed rated this factor as "high", 19 (44%) rated it as "medium" and nobody rated the factor as "low". Table 23 presents details of the survey results.

Students' Interests	Low	Medium	High	Total
User	0	11	22	33
		33%	67%	100%
Non User	0	8	2	10
		80%	20%	100%
Total	0	19	24	43
		44%	56%	100%

Table 23 : Students' Interests (increased access to courses, ease of access to course materials, course flexibility)

4.3.12.2. Discussion and Interview Comments

The survey results clearly indicate that faculty rate students' interests as a factor that affects uptake to a "medium" to "high" degree. A majority (22 or 67%) of users rated this factor as "high" and a majority of non-users (8 or 80%) rated this factor as "medium". Users seemed to find this more of a factor that influenced or would influence uptake in comparison with non-users. However, it is clearly a factor of considerable influence. Students' interests include increased access to courses, course materials and course flexibility.

Students appear to be playing a major role in the uptake of CMS. Therefore, besides faculty members taking the lead to provide students more access to course

materials, students are requesting faculty to use CMS in their courses. The administrators were unanimous in their observation of this trend. Dave commented:

I'm getting an increasing number of faculty members that come to me saying my students demanded a WebCT course... you know and not small numbers of faculty probably 20 or 30 this year were... you know ...dear professor get your notes online, so students are definitely pushing faculty members to do some things online.

Darcy concurred:

Student interests definitely in the Faculty and I would say this goes with the broader Faculty...the students push the system, they really push the system and the students would like to see everything online everything and I mean they already get them in hard copies...but they would like a full representation of every lecture up there.

Joe affirmed the observation of both Dave and Darcy but added that he believes students are mainly driving the more reluctant faculty who, as earlier discussed, he characterizes as the "second wave" of adopters:

I've had faculty come to me this semester saying my students want me to put the notes online and so that is definitely a concrete thing that is impacting or they are like... we want to have discussion groups, we want to be able to talk to our group members online, we want some space you know cyberspace to do that in. So that is definitely driving the second wave. First wave, I don't think it matters in fact I think it will be the faculty that will be pulling along the students... the first wave has passed now... now students themselves have been exposed to this technology and so they become the champions and the people that may be pushing the more reluctant faculty into adopting it.

Joe's observation might be corroborated by Jack, who has been a user of WebCT from its inception. He, who might be characterized as being a faculty member belonging to the "first wave", commented about how he faced resistance from students when he initially used CMS in his courses:

...students at that time complained saying we don't have access to computers and how do we log on. I actually had to spend time...like I printed out all the first screens and went through in the class- how you would actually log on to the system and people didn't know how. People couldn't get their user IDs to work

and they would come back and say I tried but I couldn't get in, so a lot of people really objected to it because they said it is asking a level of technological sophistication that we don't have ... You wouldn't hear that now right?

Sam whose uptake of CMS was not due to students requests offered an explanation on why students' interests drive uptake:

Yeah I mean students in general these days are far more connected to computing technologies than most of the faculty are and I count myself I guess as one of the lucky ones in terms of faculty because I grew up with technology as well... I'm not far removed from the ... onset of the Web so I can understand what the students are looking for...

Sometimes students who have taken courses with CMS seem to see the benefits and then demand that of other faculty members sometimes in other departments or schools. As a result they influence uptake in faculty other than their own departments or schools and serve as, what Joe describes, "cross-pollinators":

... Students are now well... I can get my notes whenever I want in my XYZ- 420 class but when I'm in... you know ABC- 330 [course in another department or faculty/school from XYZ-420] ... like if I miss the notes, I miss the notes and I have to copy them from someone and this is a big hassle and why are they not just online? so you start getting that cross-pollination between faculties and I think that will definitely drive it

Students' Interests seems to be an important factor that is driving faculty uptake of CMS. Survey results revealed that a majority of the faculty rate this factor as "high". Faculty have been taking students interests into account and providing increased access to course content and that has influenced uptake to a reasonable extent. However, in recent times students have experienced the value of instructional web technologies and with the strong presence of web in almost every aspect of a student's life they seem to be demanding that faculty use CMS, thus influencing uptake considerably. Students also serve as "cross-pollinators" in the context of uptake as they take courses in multiple faculties or schools. They tend to

want the same access to online materials from all courses thus they might be driving faculty, especially the late majority adopters, into adoption.

4.3.13. Ranking of Top Three Factors

4.3.13.1. Results of Survey

Participants were also asked to identify and rank top three factors from the 12 factors that were listed in the survey (see appendix D) and discussed in preceding sections. There were 41 responses in total from both users and non-users for the number one and number two factor. For the number three factor only 40 responses were received. A majority of faculty surveyed ranked resources, which mainly is time available, as the number one factor. 15 (48%) users and 5 (50%) non-users for a combined majority of 20 (49 %) chose this factor as number one. The number two factor was time taken in preparing and delivering course with CMS. Seven (23%) users and 5 (50%) non-users for a combined majority of 12 (29%) rated this factor as number two. A majority of 10 (25%) respondents again rated time taken in preparing and delivering course as their number three factor. As this factor had already been given the second rank the next factor with the most responses is chosen as number three. Six (20%) users and 2 (20%) non-users for a combined majority of 8 (20%) ranked students' interests as their number three factor. Therefore "students' interests" is ranked as number three. The results are presented in table 24.

Rank		Personal Initiative	Resources(Time Available)	Rewards and Incentives	Policies	IP & Copyright Issues	Time Taken	Development and training	Technical Support	Technology Related Factors	Pedagogical Implications	Departmental Support	Students' Interests	Total Responses
1	User	5 16%	15 48%			1 3%	3 10%	1 3%	1 3%		2 6%		3 10%	31
	Non User	2 20%	5 50%	1 10%			1 10%				1 10%			10
	All	7 17%	20 49%	1 2%		1 2%	4 10%	1 2%	1 2%		3 7%		3 7%	41
2	User		4 13%	2 6%			7 23%	3 10%	4 13%	2 6%	4 13%		5 16%	31
	Non User		2 20%		1 10%		5 50%				1 10%	1 10%		10
	All		6 15%	2 5%	1 2%		12 29%	3 7%	4 10%	2 5%	5 12%	1 2%	5 12%	41
3	User	1 3%					8 27%	2 7%	3 10%	5 17%	4 13%	1 3%	6 20%	30
	Non User					1 10%	2 20%		1 10%	2 20%	2 20%		2 20%	10
	All	1 3%				1 3%	10 25%	2 5%	4 10%	7 18%	6 15%	1 3%	8 20%	40

Table 24: Ranking of top three factors by users and non-users

4.3.13.2. *Discussion and Interview Comments*

The survey results have revealed the three top factors as ranked by respondents. These factors, as discussed in earlier sections, also were rated "high" in terms of their influence on adoption and use of CMS. During interviews faculty and administrators were asked what they thought was the most important factor or factors. Two faculty members said it would be difficult to answer the question. Jack articulated that it ultimately came down to a blend of two factors pedagogical possibilities and students' interests i.e. making information more accessible to students:

I guess the people that I know who have talked about using it or who have done other things related to computers in one thing or the other... it has to do with just trying to find effective ways of getting information to large groups of students more than any of the other things. In terms of you know time like the time saving thing I have found it's just a myth. It may be worth, it may be efficient but you know it's really that people will spend the time it takes because they think that students will ultimately benefit and that either means if you can organize information in a better way or make information more accessible or present information in a way students can access at variable rates... these kinds of things. So ultimately in my experience it's been the pedagogical possibilities that have motivated people to try it.

Bob thought the most important factor was ensuring that students were making good use of the materials that was being presented to them through the course management system tools, a factor that could be viewed as having pedagogical implications:

It's a bit of rethink. Whereas before we had students coming and sitting in class and write down the notes and then they would be like massive home work every two weeks or something like that, then you know that they're doing something you hope they are anyway but with this it's all there and it's just dumped and it's just given to them and to get them to actually work with that...How do you make sure that they are really getting something out of this?

Chris, a non user, declared:

I'll tell you the two factors that would be most influential for me are technical support and pedagogical implications so that if it was strongly pedagogically supported, that it really made a difference and there was support to do it, then it wouldn't matter too much to me if it took more time to prepare. I might be willing to put that in if I thought the payoff was going to be significant ...to my students... to the quality of my course and if I knew that they would be people there who would make sure it ran smoothly, the rest of the stuff would be much less important.

Chris, like Jack, also had pedagogical implications with students' interests in mind in addition to technical support.

The administrators were different in their views of the most important factors.

Dave summarized his factors as:

This is gonna have my lens on it from where I sit... if the faculty member can be introduced to the CMS in a small well thought out incremental way knowing that they have good support behind them and that ultimately their successes will be shared to the large community, I think... those would be the three... and that's what we kind of aim to do.

Joe in his summary of most important factors articulated:

Departmental support... under that I'm thinking that includes the resources, development & training, technical support. Rewards and incentives for sure... which is like I say probably where UBC falls flat on its face. I've heard some wonderful stories of some institutions where it's just like you know there's like formalized release time and stuff like that ... and...that would be so wonderful for our faculty and...let's see.... I would say it is still personal initiative.

The survey results clearly revealed the top three factors namely, resources i.e. time available, time taken in preparation and course delivery and students' interests.

Bearing in mind that only a small number of faculty interviews were conducted and that faculty who participated in these interviews were also part of the survey, it was observed that the aforementioned top three factors were not strongly represented in faculty and administrator interview responses. However, a remarkable observation was that the administrators mentioned technical support in their interview responses in contrast to faculty who had students' interests and pedagogy as top factors that

influenced their uptake. Two faculty members, Jack and Chris even went to the extent of also mentioning that time taken would be secondary to the quality and delivery of the course with the view of enriching students learning experience.

4.3.14. Other Factors

In the survey questionnaire and during interviews, participants were asked if they thought there were other factors that did not appear under categories that were listed in the survey or interview questions. One such anecdotal response received from the survey that could not be tied directly into any one of the factors discussed in previous sections is what Survey Participant (SP) 27 suggested. It can broadly be categorized as the impact of a colleague's decision to adopt or not adopt CMS.

SP27 wrote that sometimes faculty adopt CMS because they inherit courses that have used CMS and are forced into adopting. On the other hand, if a faculty member wants to use a course management system in his course he would have to deal with ramifications of his colleagues' decisions of not to adopt as they would not expend efforts in keeping the online component of the course alive and updated. SP27 wrote:

A significant factor in adopting a CMS is whether others who teach the same course use the CMS. If previous instructors have used a CMS, one may have little choice but to follow because of the difficulty of moving the course material to some other media (whether it be computer-based or not). This is a factor related to 3, 4, 8, and 11 but still distinct. [3: rewards and incentives 4: policies 8: technical support and 11: departmental support as appears in the survey questionnaire] In particular, there is a big difference between institutional technical support (such as provided by IT Services or WebCT itself) and departmental technical support. The former is unlikely to help me with content issues, and the latter is often quick lacking. This issue is NOT a straight policy issue. Regardless of any departmental policy, individual instructors may have adopted a CMS and thus pre-empted other instructors' range of options when those faculty

are assigned to a course that uses a CMS. The flip-side is also an issue: If I as a faculty member want to use a CMS for a course that has not used one before, I may have to deal with my peers who have chosen to not use one. Thus any efforts I put in will be wasted in the sense that after I teach the course the material will be abandoned and I will have to not only update it for my own new material when I next teach the course, I will also have to update the parts that other instructors have changed because they will not have done this on the CMS.

Tom, who had inherited a course that used CMS, was in a situation similar to that described by SP26 above. During the interview he remarked:

...having inherited a course and a culture... I really fought against it... not intentionally I mean, I just realized that it was very difficult to adapt certainly into that since I hadn't really done that before. I was just suddenly in the middle of it.

Tom also added, during the course of the interview, how it was difficult transitioning to the course:

The course had already been set up but my revision was very difficult because the person who taught the course before me had very different teaching style... very different in fact... so it was really difficult transforming that into my own.

SP33 also shares the same view as SP26 and characterises this factor as something relating to "peer-pressure". He wrote: "Another factor is whether other faculty are adopting it. If they are, that places more pressure on other faculty members to adopt it."

Students also contribute to this pressure, as Joe observed in the previous section, students requests to use CMS is a significant factor that influences uptake.

Therefore if a faculty member adopts and uses WebCT in his course, his students would then tend to expect the same from another colleague in the same or another department and could pressure the faculty member to adopt CMS by what Joe describes as "cross-pollination". This might be seen to be the result of pressure from

the students but in fact also might be viewed as pressure indirectly from a “peer-adopter”.

In summary, a colleague’s decision to adopt or not adopt CMS is a factor that influences uptake in an interesting way. For instance, if faculty members inherit a course that uses CMS then they become adopters as they have limited choices and might be forced into adoption. On the other hand, if they want to adopt CMS while their peers do not support adoption then they might be discouraged into adopting as they would have to invest more time in updating the online component of the course when they return to teaching the same course in the future. A colleague’s decision to use CMS might also have an affect on continued use of CMS. Faculty members who inherit courses might not continue to use CMS because the experience of transitioning might have been unpleasant. This is certainly an interesting factor that faculty have expressed as being influential in their uptake and use of CMS.

4.3.15. Reasons behind first using CMS

Aside from rating and ranking of factors, users of CMS were asked in the survey to identify reasons that triggered their first use of CMS. This question listed specific reasons that would be part of the factors that are discussed above. The reasons were listed in section VII (refer appendix D) of the survey and respondents were asked to check one or two of the chief reasons.

4.3.15.1. Results of Survey

Results of this question are presented in the form of a graph in figure 9. There were 33 users who responded to this section of the survey. Class management and opportunity to apply new teaching techniques were two reasons that had the highest

number of responses i.e. 12 each, followed by peer recommendation with nine responses, students' requests with eight, other reasons with seven, personal challenge with six, ease in conducting online discussions with four, head or dean's recommendation with three and rewards and incentives with one response.

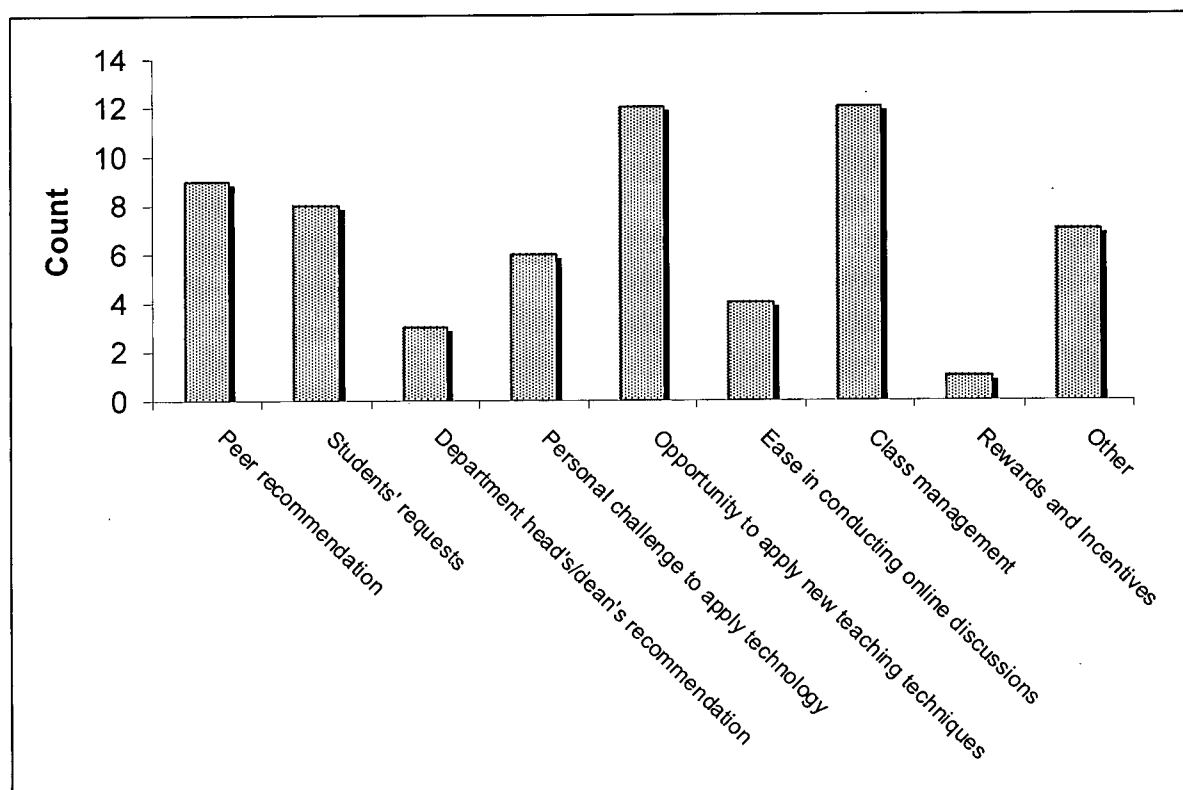


Figure 9 : Different reasons for starting to use CMS

The open-ended responses to the "other" question are presented in table 25.

Other Listed Reasons
Student's ability to communicate with each other
Free use of web space
Ease of making class materials available to students
Ability to allow students off-campus access
Courses had been planned by a retired faculty member and I inherited the courses.
Previous experience with course blackboard
Ease in getting course materials to the students.

Table 25 : Other reasons listed by participants

4.3.15.2. *Discussion and Interview Comments*

The results are somewhat reflective of the responses on the factors. "Class management" for instance, is related to saving in time and therefore corresponds to the availability of time and the time-taken in course delivery factor which were both rated as "high" and were the top two factors of the survey. Bob had commented that he used WebCT in his class of around 400 students basically for ease in class management and in turn to save time in course delivery. He articulated:" ...if I didn't have this I would have taken a lot more time... it was a major timesaver in that sense". The "opportunity to apply new teaching techniques" reason is related to pedagogical implications and that was also rated as a factor that influences uptake to a "high" degree. Darcy avowed that that some faculty are indeed driven to adopt CMS because of a desire to be creative in their teaching methods:

...this might touch on pedagogical implications like creativity... I think I get this when teaching in the WebCT Institute. I think there are faculty interested in doing something a bit different...those are the people who sort of have an appreciation

for pedagogy and improving student learning and so on and even in professional development as well ...yeah I think there are faculty out there that are interested in expanding their creativity of how they teach and so on so...

As Darcy suggests, faculty are looking to apply new teaching techniques and that might be why it is the reason most chosen to first start using CMS. As discussed in the ratings of factors, rewards and incentives is a factor that is rated low. The same is also reflected in this question where it was least chosen as a reason. The "other" category from table 25 has mainly responses that relate to "students' interests" which as discussed in earlier sections is an important factor.

4.3.16. Summary

From analyses of the results under this research question it is clear that not all factors have the same degree of influence. From an institutional point of view there are some factors that are more important than the others. I have decided to broadly categorise the factors just like their ratings in the survey. I have however added a category which I will call "principal" factors. These are factors that have been ranked as being the most important. A category called "other" has been added that was not rated during the survey but has emerged from data as a factor that influences uptake. The five categories therefore are "principal", "high", "medium", "low" and "other".

Resources i.e. availability of time, time taken in preparing and delivering a course and students' interests are "principal" factors. These were rated as "high" through survey responses and also were rated as the top three factors by a majority of the participants. The "principal" factors, as suggested by survey results, are therefore ones that have most influence on the uptake and use of CMS in the

context of this study. Technology related factors, technical support, pedagogical implications and development and training are “high” factors. These were rated “high” by a majority of survey respondents. Factors such as personal initiative and departmental support were rated by a majority of survey respondents as “medium”. They therefore are categorized as influencing uptake to a “medium” degree. Policies, rewards and incentives and IP and copyright issues are “low”. The factor relating to peer-uptake issues is under the “other” category. It should be noted that the first four categories i.e. “principal”, “high”, “medium” and “low”, imply a degree of influence, “principal” being the highest and “low” being the lowest, while “other” is simply a category for a factor that surfaced during the survey and interviews.

Time available to faculty members plays a significant role in the uptake of CMS. Faculty workload affects the time available to dedicate to the uptake of such instructional tools. This factor is further compounded by the other major factor that affects uptake: time taken in preparing and delivering courses. Faculty believe it takes an inordinate amount of time to prepare and deliver a course using CMS. These factors together form two of the three principal factors that have a seemingly negative influence on the uptake and use of CMS. Students appear to play a considerable role in influencing uptake. Faculty either consider using CMS to provide students course flexibility and ease of access to the course materials or students’ demands are driving faculty into adopting. Students’ interests therefore appear to affect uptake to a “high” degree.

Technology related factors of the CMS tool seem to influence faculty members heavily in adopting a course management system. Complexity, reliability

and inflexibility of the tools and features appear to be barriers in adoption.

Technical support has a “high” degree of influence on uptake. Users and non-users both strongly believe it plays an important role in the adoption of CMS. Pedagogical implications affects uptake to a “high” degree. Most faculty members seem to want to apply new teaching techniques and therefore decide on using CMS. Some also believe that they can enhance the learning experience through using tools and features of the course management system. Users consider development and training to be valuable and believe it has a substantial impact on adoption of CMS while non-users regard its affect on uptake as being “medium”.

Personal initiative influences faculty uptake to a “medium” degree and appears to depend on adopter categories. Departmental support mainly includes support from heads, deans and colleagues and it appears to be a factor that influences some faculty uptake in a positive way and others in a negative way. Faculty culture and attitudes toward CMS in some departments might be aiding uptake while in others it might be hurting uptake. Non-users believe it is a factor of “low” to “medium” degree while users believe it is a somewhat influential i.e. “medium” factor. Overall it appears to have a “medium” degree of influence on uptake and use.

Rewards and incentives are factors that influence faculty uptake to a “low” degree. Faculty believe if offered, it might certainly influence uptake but do not believe that this could happen at the institutional level. Policies relating to tenure, promotion and so on is another factor that seems to have little influence on uptake. However, faculty members who have not been tenured appear to be more in

support, than their tenured counterparts, of the view that policies that recognize faculty use of CMS in tenure and promotion would influence uptake. A majority of tenure-track faculty rated this factor as having a “high” degree of influence. IP and copyright issues are not hugely influential in uptake. Largely, faculty are open to sharing their content, while some are more comfortable having some form of authentication to limit access.

Faculty also believe a colleague’s decision to adopt or not adopt CMS has a considerable effect on uptake and use of CMS. One faculty member’s decision to adopt might result in another inheriting a course or feeling the pressure to adopt. On the other hand, sometimes a colleague’s decision not to adopt might also negatively affect uptake because the others will perceive lack of future support if they considered using CMS in courses shared with the colleague.

4.4. Research Question 2

What are faculty perceptions and views of CMS?

The section II (refer appendix D) of the survey was designed to ascertain faculty views and perceptions on CMS. The statements were meant to gauge faculty views and perceptions of both users and non-users. The responses to the assertions were on a four-point Likert scale (Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD)) and are presented and discussed in this section. Section VIII (refer appendix D) of the survey sought responses only from users on their experience of using CMS and it was also meant to ascertain faculty views on CMS. These responses also on the same four-point Likert scale are also presented and discussed in this section. Relevant interview comments are also presented in the

discussion section. The tables present the number of responses and the corresponding percentages to each statement under the four-point Likert scale and not-applicable (NA) options. The number of participants who did not respond (NR) is also shown.

4.4.1. Results of the Survey

To the statement that using CMS provides students easy access to course materials, 17 (52%) users strongly agreed, 12 (36%) agreed and 3 (9%) disagreed. Among non-users, 5 (50%) agreed while only one (10%) disagreed. A fairly large proportion i.e. 3 (30%) of non-users chose the NA option. One user and one non-user did not respond to the statement. The results are in table 26.

	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response	Total
User	0	0	3	12	17	1	33
			9%	36%	52%	3%	
Non User	3	0	1	5	0	1	10
	30%		10%	50%		10%	
All	3	0	4	17	17	2	43
	7%		9%	40%	40%	5%	

Table 26 : Using CMS provides students easy access to course materials.

When asked if student-student collaboration is increased using CMS, 12 (36%) users agreed, 6 (18%) strongly agreed, 9 (27%) disagreed and 2 (6%) strongly disagreed. In the case of non-users, 2 (20%) agreed and 2 (20%) disagreed. A majority of 5 (50%) non-users chose the NA option. Results are presented in table 27.

	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response	Total
User	3	2	9	12	6	1	33
	9%	6%	27%	36%	18%	3%	
Non User	5	0	2	2	0	1	10
	50%		20%	20%		10%	
All	8	2	11	14	6	2	43
	19%	5%	26%	33%	14%	5%	

Table 27: Student-student collaboration is increased in using CMS.

In response to the assertion that CMS are reliable as instructional tools, 17 (52%) users agreed, 7 (21%) strongly agreed, 6 (18%) disagreed and 1 (3%) strongly disagreed. Among non-users, 3 (30%) agreed and only one (10%) strongly disagreed. A majority, of 5 (50%) non-users chose the NA option. Results are presented in table 28.

	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response	Total
User	1	1	6	17	7	1	33
	3%	3%	18%	52%	21%	3%	
Non User	5	1	0	3	0	1	10
	50%	10%		30%		10%	
All	6	2	6	20	7	2	43
	14%	5%	14%	47%	16%	5%	

Table 28 : CMS are reliable as instructional tools

When responding to the statement that using CMS would impede good teaching techniques, 15 (45%) users disagreed, 14 (42%) strongly disagreed, 2 (6%) agreed and one (3%) strongly agreed. In response to the same statement, 3 (30%)

non-users disagreed, one (10%) strongly disagreed, one (10%) agreed and one (10%) strongly agreed. Three (30%) non-users chose the NA option. The results are in table 29.

	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response	Total
User	0	14	15	2	1	1	33
		42%	45%	6%	3%	3%	
Non User	3	1	3	1	1	1	10
	30%	10%	30%	10%	10%	10%	
All	3	15	18	3	2	2	43
	7%	35%	42%	7%	5%	5%	

Table 29: Using CMS would impede good teaching techniques

To the assertion that tools available in CMS help in managing student information, 16 (48%) users agreed, 14 (42%) strongly agreed and 2 (6%) disagreed. Among non-users, one (10%) strongly agreed and 2 (20%) disagreed to the same statement. A majority (6 or 60%) of the non-users chose the NA option. Refer to table 30 for results.

	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response	Total
User	0	0	2	16	14	1	33
			6%	48%	42%	3%	
Non User	6	0	2	0	1	1	10
	60%		20%		10%	10%	
All	6	0	4	16	15	2	43
	14%		9%	37%	35%	5%	

Table 30 : Tools available in CMS help in managing student information

While responding to the assertion that CMS are difficult to use, a majority of 23 (70%) users disagreed, 7 (21%) agreed and 3 (9%) strongly agreed. Two (20%) non-users disagreed, 2 (20%) agreed and 1 (10%) strongly agreed to the same assertion. Five or 50% chose the NA response. Results are presented in table 31.

	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response	Total
User	0	0	23	7	3	0	33
			70%	21%	9%		
Non User	5	0	2	2	1	0	10
	50%		20%	20%	10%		
All	5	0	25	9	4	0	43
	12%		58%	21%	9%		

Table 31 : CMS are difficult to use

Faculty members who are users responded to various statements on their use of CMS and the results are presented below in table 32.

	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response	Total
CMS has helped in reducing my workload.	1	9	14	7	1	1	33
	3%	27%	42%	21%	3%	3%	
Students receive a better learning experience in courses using CMS.	3	1	6	20	2	1	33
	9%	3%	18%	61%	6%	3%	
CMS tools are helpful in enhancing classroom instruction.	1	1	4	21	5	1	33
	3%	3%	12%	64%	15%	3%	
Time required in setting up a course decreased over time.	2	1	10	16	3	1	33
	6%	3%	30%	48%	9%	3%	
Tools available in CMS make it easy to deliver a course online.	7	2	9	11	2	2	33
	21%	6%	27%	33%	6%	6%	

Table 32 : Users and their views on CMS use

4.4.2. Discussion and Interview Comments

As seen in Chapter Two, studies have established the importance of faculty beliefs, views, attitudes and perceptions on adoption and use of instructional technologies. In this section I will discuss the results of the survey on the views and perceptions of users and non-users separately. Interview comments will also be included in the discussion.

4.4.2.1. Users' Perceptions and Views

There appears to be a stronger consensus in the views of users than non-users. As far as students and CMS are concerned, users of CMS think that it provides students easy access to course materials. A clear majority were in agreement on this assertion (12 (36%) agreed and 17 (52%) strongly agreed). Bob confirmed: "yes it did increase the access ...the ease of access to course materials". While Jack commented that students could have access to the course materials even if they missed the class:

The other thing I find in terms of large classes is that I post all the assignments if somebody is sick they can get the assignments any time if there is a change in deadlines for something again I post it so if you do miss class you can still find out what the important dates are.

As far as student-student collaboration is concerned, 12 users (36%) agreed and 6 (18%) strongly agreed. However, 9 (27%) disagreed and 2 (6%) strongly disagreed. While a majority (18 or 54%) are in agreement there does not seem to be a clear consensus on this assertion. Jack found that indeed there was collaboration and interaction between students:

...it's a lot of different kinds of interaction that way. Students I think can get involved and form study groups even using WebCT. I know there's a lot of

discussion on meeting up and things like this so it's put me in touch with students but it is also put students in touch with other students in a very easy way.

Some users believe that student-student collaboration is increased by using CMS, while others probably believe it does not contribute to an increase in such collaboration. It is also possible that some instructors might not have their students collaborating through WebCT due to various reasons and so the extent of use of the collaboration feature also might also play a role in the responses to this statement. Exploring the finer details behind these responses might be the basis of a mini-study.

To the statement that students receive a better learning experience in courses using CMS, 20 (61%) users agreed and 2 (6 %) strongly agreed to make a clear combined majority of 22 (67%) who were in agreement with this statement (refer table 32). Only 6 (18 %) disagreed and one (3%) strongly disagreed. Jack avowed: "I just read my evaluations from last semester and all the students love it" when he was talking about the use of WebCT in a course he just taught. To Bob, how much students benefit from CMS is still a question but he believes a high percentage of students make good use of the online content implying that it might be enriching their experience. He explained:

...we assessed that and we figured that about 60% are getting inside the stuff and really working with it and the rest are talking to their friends or just taking a very cursory look at it and trying to answer by winging it basically so...we don't... that's probably a consideration as to how much they are really getting off of this.

A clear majority of 16 (48%) users agree and 14 (42%) strongly agree that tools available in CMS help in managing student information. Aside from some oddities, Jack asserted that student grades for instance were easy to manage in

WebCT: "...that's excellent because I just think all students have access to their grades as they are recorded. I keep a running total every semester so there are no surprises. People know where they are and again they really like that".

Seventeen (52%) users agreed and 7 (21%) strongly agreed making up a clear majority who believe that CMS are reliable as instructional tools. Users also believe that CMS do not impede good teaching techniques. An overwhelming majority of 15 (45%) disagreed and 14 (42%) strongly disagreed to the statement that using CMS would impede good teaching techniques. Classroom instruction and teaching techniques go hand-in-hand thus the statement is in support to another assertion on users' experiences in using CMS from another section of the survey namely "CMS tools are helpful in enhancing classroom instruction" (refer table 32). This statement also had a substantial majority that were in agreement (21 (64 %) agreed and 5 (15%) strongly agreed). Although users think that CMS are reliable and enhance classroom instruction they are not clearly decided on whether the tools available with CMS make it easy to deliver a course online. Whereas 13 or 39% (11 (33%) agreed and 2 (6%) strongly agreed) were in agreement, 11 or 33% (9 (27%) disagreed and 2 (6%) strongly disagreed) were in disagreement on this assertion. Also, 7 (21%) chose the NA option. CMS have been successfully used to deliver courses online, however some faculty agree tools of CMS aid online delivery while others disagree. From figure 9 only a small number of faculty respondents have delivered courses partially online and smaller number have delivered fully online. Therefore bearing in mind that respondents are faculty members from the professorial ranks who mainly have used CMS to augment face-to-face classroom

instruction this might be more of a faculty perception than a reflection of their experience.

To the statement that CMS are difficult to use a majority of 23 (70%) users disagreed. However 10 or 30% (7 (21%) agreed and 3 (9%) strongly agreed) were in agreement. As these responses were from users of CMS, the results were also compared with the users' skill rating and are presented in table below.

Skill Rating	CMS are difficult to use		
	Disagree	Agree	Strongly Agree
Beginner	2	4	0
Novice	8	1	1
Intermediate	13	2	2
All	23	7	3
	70%	21%	9%

Table 33 : CMS difficulty and Skill rating

About 6 of the 10 respondents (60%) who agreed or strongly agreed to the statement belonged to the "beginner" or "novice" category. This might be an explanation for their agreement with the statement. During interviews faculty complained about certain aspects of WebCT but they generally agreed that it was easy to use. Bob articulated: "it's fairly easy to use".

To the statement that CMS helped in reducing their workload (refer table 32) 14 (42%) users disagreed and 9 (27%) strongly disagreed. As established in the previous section under time taken in using CMS, faculty seem to think that using CMS is time intensive. Jack articulated: "you know time... like the time saving thing, I have found it's just a myth" Implying that using CMS does warrant a greater investment of time and work. However, would the repeated use of CMS for a course

save time? To the statement "time required in setting up a course decreased over time", 16 (48%) users agreed and 3 (9%) strongly agreed while 10 (30%) disagreed and one (3%) strongly disagreed. There seems to be no clear consensus on this statement. One explanation for this wide spread of responses could be the intensity and level of use of CMS in a course. If the content is contingent to getting changed frequently then it would demand more time. Another possible explanation is that this also depends on how many respondents have had the opportunity to reuse a course. More research is probably needed to ascertain details surrounding time required in reuse of courses using CMS.

4.4.2.2. Non-users' Perceptions and Views

At the outset, in the responses from non-users to all statements of section II (refer appendix D) of the survey, two prominent trends were observed: first, a considerable number, 3 to 6 of the 10 (30% to 60 %) non-user participants, chose the not applicable (NA) option. Second, there was none or in some cases only one response in the "strongly agree" category. This offers an interesting insight into the perceptions of CMS among non-users. They are probably not aware of certain aspects of CMS and do not have strong opinions on the subject. Like the users, the non-users also believe that using CMS does provide students easy access to course materials. A majority of 5 (50%) non-users agreed while one (10%) disagreed and 3 (30%) believed it did not apply. There was no consensus on the statement that student-student collaboration was increased in using CMS. Two (20%) agreed while 2 (20%) disagreed with the statement. From the survey results, it might also appear that they don't have an opinion on this statement, as 5 (50%) non-users chose the

NA option. There was no clear majority even among users on this statement. A group of non-users perceive CMS as reliable instructional tools. Three (30%) agreed to this statement while only one (10%) strongly disagreed. However, a majority (5 or 50%) have no clear opinion.

A majority (3 (30%) disagreed and 1 (10%) strongly disagreed) of non-users were in disagreement to the statement that using CMS would impede good teaching techniques. Although the users were clearly in disagreement with this statement, only a small majority of non-users disagreed. A majority of 6 (60%) non-users did not have an opinion on the statement that tools available in CMS help in managing student information in courses. While users clearly disagreed with the statement that CMS was difficult to use, 5 (50%) non-users did not have a view, 2 (20%) disagreed, 2 (20%) agreed and 1 (10%) strongly agreed. This suggests that non users' perceptions of the difficulty of CMS might range from having no opinion to easy to difficult. However, administrators were unanimous in their belief that faculty who are non-users do perceive CMS as difficult and complex. Joe, an administrator, commented when talking about non-users and their views on CMS: "...perceptions of difficulty... I think especially since I consider us in the second wave... so I think now people are like this is quite complicated" implying that non-users perceive CMS to be complicated and difficult to use. Darcy supported Joe's view: "faculty that have never had the exposure to WebCT... they're just intimidated by it".

During interviews administrators and faculty members also voiced other common perceptions that allegedly exist among non-users. Dave, an administrator, articulated two common perceptions non- users have about CMS. While supporting

Joe's comment of non-users' perceptions of difficulty Dave believes that they also view the systems as being unstable and plagued by frequent downtimes and outages:"...there are some issues around the outages... the stability... It's always going down that kind of thing and there's just that one about complexity...". Joe also added that non-users perceive CMS as something that is not naturally part of their instructional tools such as power point or overheads for instance and therefore seek "extra" recognition and credit for its use.

I think for many it would be... that's nice but I don't have time for it and the other would probably be... that's nice but I want to be recognized for it .I want something out of it for me because it's an extra thing or at least its perceived still as an extra thing...

Jack, a faculty member, articulated that non-users believe that using CMS would result in reducing face-to-face student contact while he experienced the opposite in his courses:

Well one thing I found which is something that is not... what I think people especially when they haven't used it... is like... one of the things I have found people say against this kind of thing is that it's very impersonal and that you lose contact ...sort of face-to-face contact with students. I have found the exact opposite.

The other common perception among non users is the perception of time taken in setting-up and maintaining a course using CMS. Chris a non-user remarked:

It strikes me as being very time intensive in setting it up and so I'm not sure if it's worth it in terms of how long it takes you to actually develop your online materials and then maintain them because sites change they close down so every year you have to actually go back and make sure that all your buttons are taking people or linking people to something that's still in existence and you need to have somebody to do it for you ... to start off and someone to maintain it.

4.4.3. Summary

In summary, users view CMS as tools that are easy to use. They believe CMS are reliable as instructional tools that they do not impede good teaching techniques and help in enhancing classroom instruction. They don't believe CMS reduce their workload. Some believe the time required in setting up a course decreased over time while others did not. They are also divided on the view that tools available in CMS make it easy to deliver a course online. Faculty who are users feel that tools available in CMS help manage student information, provide students easy access to course materials, and enhance their learning experience. Some contend that student-student collaboration is increased using CMS while others have an alternate view.

Non-users do not seem to either know much about CMS to offer opinions and when they do they don't appear to strongly support their views and perceptions. Like users, non-users also believe that using CMS would provide students better access to course materials. Most non-users do not have views or perceptions on whether student-student collaboration would be increased using CMS, whether using them would impede good teaching techniques, whether tools available in CMS help in managing student information or on the reliability of CMS as instructional tools. However, from the survey and administrators interviews, there appears to be some evidence that non-users hold the view that CMS are difficult to use; however, more research is needed.

Other perceptions of CMS among non-users, mainly gathered from interviews with administrators, include that there is an instability in such systems i.e. hardware

and software related outages. Non-users also believe that CMS are time intensive in setting up and maintaining a course. What is an interesting observation is that there is a perception among non-users that CMS have a potential of reducing face-to-face contact with students. Non-users tend to view CMS as an "extra" thing i.e. extraneous to everyday instructional tools such as PowerPoint and overheads. Perceptions and views, especially of non-users play an important role in uptake of CMS. Administrators should probably study these perceptions more closely to see how they can raise awareness and present a more realistic representation of CMS among non-users in order to facilitate uptake.

4.5. Research Question 3

Why do faculty, who have access to CMS, choose not to adopt these tools?

Section V of the survey (refer appendix D) was designed to look at why faculty members, in spite of the availability of the infrastructure, have not yet adopted or chosen not to adopt CMS. This section in the survey was meant exclusively for non-users. Responses to this section, like in the previous section, were also on a four-point Likert scale. The results of the survey are first presented under this section, followed by a discussion of the responses which includes interview comments. The results to the statements in this section are presented in the table in a different order than they appear on the survey so that statements that fit a particular theme could be grouped together.

4.5.1. Results of Survey

The detailed results, of the responses from non users to survey questions, along with the statements are listed in table 34.

I do not use CMS in my courses because:	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response	Total
Using a course management tool like WebCT for my course will take a lot of time in course preparation and set-up.	1	0	0	4	5	0	10
	10%			40%	50%		
I do not have enough time to learn WebCT and use it for my course.	0	0	0	5	4	1	10
			0%	50%	40%	10%	
CMS will not help reduce my workload	3	0	0	2	4	1	10
	30%			20%	40%	10%	
Using a course management tool like WebCT for my course will take a lot of time in course delivery.	4	0	1	2	1	2	10
	40%		10%	20%	10%	20%	
I do not have adequate knowledge and training to use the tools.	1	1	1	6	1	0	10
	10%	10%	10%	60%	10%		
I did not know it existed.	1	4	2	0	2	1	10
	10%	40%	20%		20%	10%	
I tried it once and found it difficult to use.	6	1	1	1	0	1	10
	60%	10%	10%	10%		10%	
I find it easier to use the department website for online course materials.	4	0	1	2	2	1	10
	40%		10%	20%	20%	10%	
CMS are just not suitable to the way I teach my courses.	4	0	2	3	0	1	10
	40%		20%	30%	0%	10%	
It does not suit my discipline.	4	1	2	1	1	1	10
	40%	10%	20%	10%	10%	10%	
The tools currently available in CMS do not suit my needs.	6	0	1	2	0	1	10
	60%		10%	20%		10%	
Using CMS would compromise the quality of instruction of my course.	4	0	4	1	0	1	10
	40%		40%	10%		10%	

Table 34: Reasons why faculty do not use CMS

4.5.2. Discussion and Interview Comments

As seen in an earlier section under research question 1, the time available to use CMS and time investment in using such instructional tools were prominent factors that influence uptake. It is becoming increasingly clear from responses to a

few statements in this section that these factors are indeed potential barriers for faculty in adopting and using CMS. To the statement "I do not use CMS in my courses because using a course management tool like WebCT for my course will take a lot of time in course preparation and set-up", a majority of 5 (50%) non-users strongly agreed and 4 (40%) agreed. Nine out of the 10 (90%) faculty members surveyed for this section thus support the assertion that using WebCT in course preparation and set-up is time consuming. This is also evidence of the existence of the perception, as suggested in the previous section under research question 2, that using WebCT involves inordinate amounts of time. During the interview, Chris, a non-user, clearly articulated an example of the perception of the time investment required in CMS: "It strikes me as being very time intensive in setting it up and so I'm not sure if it's worth it in terms of how long it takes you to actually develop your online materials and then maintain them". Chris also added: "I have thought about it but it's just... it's getting past that initial hump of getting the resources to get it set up and going..." implying that time required in preparation and set-up and time available to dedicate to this endeavour were obstacles to adopting. The perception of the time required in setting up a course in CMS is further compounded by the time available to faculty. To the assertion that they do not use CMS because they do not have enough time to learn WebCT and use in the course, again a clear majority of 5 (50%) non-users agreed and 4 (40%) strongly agreed. Lack of time is clearly another reason for choosing not to adopt. Faculty also rated time available as a top factor in the section under research question 1 and the responses to this assertion are in

agreement to that rating. It is also apt to reiterate Chris' remark to highlight how faculty are pressed for time:

There's so little time to muck around learning that stuff. So for instance I want to learn "EndNote" which is this bibliographic program and I went to a course that was offered in the Faculty B... I did that three months ago or two months ago and actually haven't had time to do it, to fiddle around with it.

Faculty believe that using CMS involves time, of which there is a scarcity. What is also remarkable is that this finding is almost identical to the study of CMS carried out at University of Nebraska-Lincoln (UNL) which reported that "the most significant obstacle in preventing faculty for using CMS in teaching was finding time for CMS course preparation" (Ansorge & Bendus, 2004, p.16). A large percentage of the participants of the UNL study also included faculty from professorial ranks.

Faculty workload is related to time. Four (40%) respondents strongly agreed and 2 (20%) agreed that they do not use CMS because it will not help in reducing their workload. There were 3 (30%) respondents who chose the NA response to this question. However, a majority of 6 (60%) respondents were in agreement while there were no responses that disagreed or strongly disagreed with this statement. Faculty believe that CMS will not help reduce their workload and that possibly deters them from adopting these instructional tools. Dave during interviews also articulated "fear of the workload " as one of the reasons for faculty not adopting CMS further supporting the responses to this statement. When asked if they do not use CMS because these instructional tools take a lot of time in course delivery, 4 (40%) chose the NA option, 2 (20%) agreed, 1 (10%) strongly agreed and 1 (10%) disagreed. Respondents to this section were non-users and justifiably have no experience in terms of the time it would take in delivering course using CMS and this might be the

reason behind the wide range of responses, including the majority of respondents choosing the Not Applicable (NA) option. It is not clear if the time it would take in course delivery in particular might be the reason that keeps faculty from adopting CMS.

To the statement "I do not use CMS because I do not have adequate knowledge and training to use the tools", 6 (60%) agreed and 1 (10%) strongly agreed. A clear majority of 7 (70%) non-users supported this statement. Only 1 (10%) disagreed and 1 (10%) strongly disagreed. From survey results, it appears that a majority of faculty believe they do not have adequate knowledge and training to use CMS and this they clearly agree is behind their reason not to adopt. In response to the statement whether they do not use CMS because they did not know it existed, a majority i.e. 6 (60%) of the respondents were in disagreement (4 (40%) strongly disagreed and 2(20%) disagreed). The lack of awareness of the existence of such instructional tools therefore does not appear to be a reason why faculty do not adopt CMS. However, 2 (20%) participants strongly agreed to this statement implying that they were unaware of the existence of CMS. Albeit a small percentage, the fact that even a small number of faculty members are unaware of the existence of such systems given the current pervasiveness of the web in all aspects of an individual's life is an interesting discovery. To the statement whether they tried it once and found it difficult, 6 (60%) non-users responded with the NA option, 1 (10%) disagreed, 1 (10%) strongly disagreed and 1 (10%) agreed. The survey responses indicate that 90% of the respondents have not tried CMS before. Therefore the difficulty experienced on using a course management system once is not a reason

for faculty not adopting CMS. When asked if they do not use CMS because they find it easier to use department websites for online course materials, 4 (40%) chose the NA option, 4 (40%) were in agreement with this statement (2 (20%) agreed and 2 (20%) strongly agreed) and only 1 (10%) disagreed. It is common knowledge that some faculty members use simple to fairly complicated websites, created and mounted on departmental web servers, in place of CMS. Respondents who agreed to this assertion are possibly using such websites to post course materials. The other responses imply that faculty either did not think this statement applied to them or disagreed with the statement. The presence of alternate websites and the ease and convenience of using such websites is possibly a reason behind some faculty not adopting CMS.

To the statement, "I do not use CMS because they are just not suitable to the way I teach my courses", 4 (40%) chose the NA option, 3 (30%) agreed and 2 (20%) disagreed. There is no clear consensus on this being a major reason for not adopting CMS. Faculty have diverse teaching styles and methods and that could be an explanation for the divergence in the responses. Also, from responses on earlier statements, we know that some faculty believe they do not have adequate knowledge and skills and some did not even know it existed therefore the respondents being non-users probably do not have a reasonable understanding of WebCT and how it could help in courses in their discipline. This also could be an explanation for the large percentage of "Not Applicable" (NA) responses. To the assertion, "I do not use CMS because it does not suit my discipline", 4 (40%) respondents chose the NA option, 2 (20%) disagreed, 1 (10%) strongly disagreed, 1

(10%) agreed and 1 (10%) strongly agreed. There is again no large majority among these responses. This again does not appear to be a major reason for not adopting CMS. The variation in these responses might be explained as in the previous statement. Faculty across disciplines possibly have different views on how well CMS would suit their content and materials. Also, as pointed out in the last statement the "Not Applicable" responses might be indicative of lack of knowledge of CMS and the extent to which they can apply these tools to their courses. When asked whether the reason for not using CMS was if the tools available did not suit their needs, 6 (60%) respondents chose the NA option, 2 (20%) agreed and 1 (10%) disagreed. The considerable majority of faculty choosing the NA option for this statement should not be unexpected. This might again be a reflection of the lack of familiarity with the type of features that CMS could offer or faculty feel the statement does not apply to them as they are non-users. This also does not appear to emerge as a clear reason for faculty not adopting CMS. In response to the statement that asked if faculty did not use CMS because they thought using it would compromise the quality of instruction of the course, 4 (40%) participants disagreed, 4 (40%) chose the NA option and 1 (10%) agreed. The notion that CMS might negatively affect the course quality is not a reason for some faculty to adopt these tools. Others might feel they do not know CMS enough to respond to this statement or it does not apply to them as they are non-users. The large number of respondents choosing the NA option as discussed is tied to probably the lack of knowledge of the use of CMS in courses.

It appears that faculty i.e. non-users, might be lacking the knowledge and awareness of how WebCT and the tools therein could be used for the courses in

their discipline or the way they teach their courses and this might be a potential reason for not adopting. Administrators also seem to believe that this indeed is a reason. Dave commented: "I think also we haven't demonstrated worth" implying non-users are not aware of how CMS can benefit their particular area of teaching. This might be the reason why a faculty member commented in the open ended section of the survey "If someone could point out to me a feature of WebCT where it makes me go 'wow, I could really use that!' then I would use it. It hasn't happened yet". Joe articulated the same reason citing also lack of communication of the benefits of using CMS being a reason that keeps faculty from adopting and provided some examples of benefits:

...the internal benefits like their students will have better access to their materials. Students who otherwise wouldn't speak up in class will perhaps engage more in an online setting you know ... these haven't been communicated to them in any kind of believable way ... not to say that people haven't been communicating them but it hasn't sunk in

As we have seen in the discussion under the previous research question, perceptions influence adoption of innovations. Perceptions of technical difficulty aided by an intimidation to the technology also seem to be a reason for faculty not adopting CMS. Darcy declared:

Some of the reasons are frustration with WebCT on the technical side I would say... probably some of it would be frustration with the software itself but I would also say that even faculty that have never even had any exposure to WebCT they're just intimidated by it.

Joe confirmed Darcy's views: "perception of difficulty I think especially since I consider us in the second wave so I think now people are like... this is quite complicated". This suggests that perceptions of the complexity of CMS appear to be a reason.

4.5.3. Summary

In summary, despite the availability of the CMS infrastructure some faculty have not yet adopted or chosen not to adopt for a number of reasons. The view of excessive time taken in course preparation and set-up, availability of time to learn WebCT and faculty workload are prominent reasons behind faculty not adopting CMS. Faculty also believe CMS will not help reduce their workload. Time taken in course delivery is a deterrent only for some faculty. Faculty feel they do not have the knowledge and skills to adopt such online instructional tools and that might contribute to their reasons for not adopting. There are still, albeit a small number, some faculty members who do not know of the existence of CMS. Ease of using department websites for course delivery keeps some faculty from adopting CMS.

Lack of knowledge and awareness of how CMS could help them in their courses is also a fairly important obstacle that keeps faculty from adopting. Administrators believe lack of awareness of how course management system tools could benefit their courses is also a cause for faculty not to consider uptake. In addition, a perception of complexity of course management technology and fear of using technology are also impediments to adoption. While looking at these results, it must also be borne in mind that the sample of non-users was a modest one i.e. 10 participants.

4.6. Research Question 4

What factors influence faculty to continue or increase use of CMS?

Section IX of the survey (refer appendix D) presented statements that were designed to discover what would make faculty members, who are users of CMS,

expand or increase their use. The results of the survey are first presented under this section, followed by a discussion of the responses which includes interview comments. The results are presented in the table in a different order than they appeared on the survey in order to have statements grouped together thematically to facilitate discussion. Other factors cited from interviews with faculty and administrators are also discussed at the end of the discussion section.

4.6.1. Results of the survey

The detailed results, of the responses to survey questions, along with the statements are listed in table 35. This section of the survey was meant to be filled in only by users.

Table 35 : Expansion of CMS use

I would use CMS in more of my courses if:	NA	SD=1	D=2	A=3	SA=4	Total
Technical support was more accessible.	0	4	7	15	7	33
		12%	21%	45%	21%	
Technical support was reliable.	5	4	7	11	6	33
	15%	12%	21%	33%	18%	
The time spent on developing courses reduced.	0	0	4	11	18	33
			12%	33%	55%	
The time spent on administering a course reduced.	0	0	1	14	18	33
			3%	42%	55%	
Tools in CMS were made less complicated and easier to use.	1	1	5	15	11	33
	3%	3%	15%	45%	33%	
The time spent in expanding use of CMS would be considered in my workload computation.	2	4	4	8	15	33
	6%	12%	12%	24%	45%	
The time and effort put into CMS course delivery was considered for tenure or promotion.	4	6	4	8	10	32*
	13%	19%	13%	25%	31%	
The coordination and administration of a course using CMS was made easier at the institutional or departmental level.	1	2	5	14	11	33
	3%	6%	15%	42%	33%	
I had a TA to set up a course and load course material.	1	1	4	9	17	32*
	3%	3%	13%	28%	53%	
I was convinced that the course materials that I use online were protected by copyright laws.	0	5	12	11	5	33
		15%	36%	33%	15%	
I was assured that the course materials I develop for online teaching using CMS were governed by intellectual property rights.	1	4	11	12	5	33
	3%	12%	33%	36%	15%	
Students found it useful in their learning experience.	1	0	1	10	21	33
	3%		3%	30%	64%	
Students were provided with better technical support.	2	2	10	12	7	33
	6%	6%	30%	36%	21%	
I received more training on the product.	0	4	13	10	6	33
		12%	39%	30%	18%	
My level of expertise in using CMS increased.	1	3	5	18	6	33
	3%	9%	15%	55%	18%	
Rewards and incentives were provided for increased use of CMS.	0	4	8	11	10	33
		12%	24%	33%	30%	

NA=Not applicable, SD=Strongly Disagree, D=Disagree, A=Agree, SA=Strongly Agree, NR=No Response.

*No response from one respondent on these questions and therefore total is 32

4.6.2. Discussion and interview comments

Technical support is vital for successful implementation of CMS. Responding to the statement that they would use CMS in more of their courses if technical support was more accessible, 15 (45%) respondents agreed and 7 (21%) strongly agreed while 7 (21%) disagreed and 4 (12%) strongly disagreed to this statement. With a large proportion (22 or 66%) of respondents in agreement with the statement it appears that faculty are looking for increased access to technical support. Increased access in terms of technical support could be support that is more decentralized i.e. at the department level, increased number or support personnel or even longer hours of help-desk support. To the statement that they would expand their use of CMS if the technical support was reliable, 11 (33%) participants responded that they agreed and 6 (18%) strongly agreed while 7 (21%) disagreed, 4 (12%) strongly disagreed and 5 (15%) chose the "Not Applicable" (NA) option. Although most of the faculty who responded expressed agreement (17 or 51%), a fair proportion of the users (11 or 33%) were in disagreement to this statement. One explanation, for a reasonable proportion of faculty members opposing the two above statements, might be the inconsistency of support that exists between faculties and schools and Dave expressed during the interview that this is a potential issue that has a direct bearing to how faculty would adopt or use CMS. He commented that the core technical support, the centralised IT helpdesk, is efficient. However, the departmental support unit, also called the Instructional Support Unit (ISU) that scaffolds faculty members in their use, provides support that varies vastly across

different schools. In some faculties this support unit is completely absent. Dave articulated: "I think the hardest thing is that the variety of support between faculties is quite strange". He also provided concrete examples adding: "Faculty G doesn't even have the support person to Faculty F where they will do everything for you and everything in between...". Depending on which faculty, school or department a faculty member belongs to they will have a different view of the quality, access and reliability of technical and instructional support. This argument is further supported by survey participant SP11, who wrote:

I feel I have strong technical support in my Faculty, so 'disagreed' with a and b [statements on technical support being accessible (a) and reliable (b)]. The technical support is essential, though! If I didn't already have it, I would have strongly agreed with a and b (and probably wouldn't be using WebCT)

This might be an explanation for the polarization of responses to the latter statement and the disagreement with the former. Those who perceive their support to be reliable would not see this as a reason to increase use while those who do not have access to such support might view this as a possible reason to expand use.

As established in earlier sections, time is a major factor that influences the use of CMS. In response to the statement that asked faculty if they would expand use of CMS if time spent on developing courses reduced, an overwhelming proportion (29 or 88%) of responses were in agreement. Eighteen (55%) respondents strongly agreed and 11 (33%) agreed with this statement indicating that time taken in developing web courses, including preparation and set-up, is clearly an obstacle in expansion of CMS use. Course delivery i.e. administering an online course environment also is a time intensive task, especially if the course uses online discussions and content that needs continual maintenance. In response to the

statement that asked faculty if they would increase use if time spent on administering a course reduced, 18 (55%) respondents strongly agreed and 14 (42%) agreed. Almost all respondents (32 or 97%) agreed to this statement clearly suggesting that reduced time in administering a course is a powerful reason to expand CMS use. The response to this statement also confirms that faculty believe that time spent in course delivery using CMS is considerable. Time spent by faculty in administering courses can be reduced in different ways: Providing additional technical and instructional support, making auxiliary assistance available, in the form of TAs for instance, abridging course administrative procedures and simplifying course management tool features. For instance just by improving some rudimentary features that are heavily used by faculty, time in administering courses could be reduced. John cited a few examples of the features of the course management system tool that added disproportionate amounts of time in administering the course and summarised his frustration by asserting:

I spend a lot of time online there are only so many hours a day, there's only so much of time that you can spend teaching. Every minute you're doing that you're not doing something else and so this is a trade-off and that's where the "clunkiness" of WebCT comes in because it takes you three times as long to do something as it should.

Other faculty members like Jack declared "It takes time, WebCT is better than it was but it's still not user friendly" and Bob concurred "WebCT is a bit clunky or clumsy in some cases, it's not complex, it's just I think... I can see the various versions of it improving over time". Therefore, an improvement in the alleged tedious and circuitous routines that are associated with the use of WebCT could alleviate faculty frustration and save time in course delivery. Technology is constantly evolving and

newer versions will hopefully alleviate some of these issues. Studies are being currently carried out in various departments to look at the viability of a newer version of the course management tool. Administrators mentioned about the considerations being given to the "Vista" version of WebCT. When faculty were asked if they would use CMS in more of their courses if tools in CMS were made less complicated and easier to use, 15 (45%) agreed and 11 (33%) strongly agreed. A clear majority of respondents (26 or 78%) supported this statement suggesting that the complexity and difficulty in use of tools and features in the course management tool is indeed a source of woes for faculty and might be keeping them from expanding their use.

Developing new courses involves a substantial investment of time on the part of faculty members. Often, more time than regular courses. Jack opined "in terms of you know time... like the time saving thing...I have found it's just a myth" implying that developing a course or using CMS to deliver a course does not result in time saving. This might be a reason why, when faculty were asked if they would increase use of CMS if time spent in expanding use of CMS would be considered for workload computation, 15 (45%) strongly agreed and 8 (24%) agreed. Success in the case of faculty from professorial ranks is primarily measured by a research yardstick and any excess time taken in teaching will be probably at the cost of research time. Bob articulated: "I spent myself personally a lot of time last summer developing this course, sort of improving the content. I needed help with that but I just did it... my research fell behind as a result". The extra time spent on CMS by faculty does not appear to be adequately acknowledged. If the time spent was recognised for instance in workload computations or even considered for tenure and

promotion faculty would be encouraged to expand use. A majority of 18 (56%) (10 (31%) strongly agreed and 8 (25%) agreed) faculty members supported the statement that they would expand the use of CMS in their courses if it was considered for tenure and promotion. Although only 18 (56 %) respondents supported the statement, the proportion is significant because a closer look at the responses will reveal that this statement might mainly apply to those that have not yet received tenure.

The time and effort put into CMS course delivery was considered for tenure or promotion	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response
Status						
Tenure	4	4	3	1	2	1
Tenure Track	0	2	1	5	7	0
Other	0	0	0	2	1	0

Table 36 : Response to statement on policy for tenure and promotion

From the breakdown of responses with the status as presented in table 36, 11 (11 in 14 or 78.6%) of respondents, who disagreed, strongly disagreed or to whom this statement was not applicable, were tenured whereas 12 (12 in 15 or 80%) of those who agreed were tenure-track faculty. It appears that tenure-track faculty support the statement that they would expand use of CMS if the time and effort spent on learning and using these tools was given consideration in tenure and promotion.

In response to the assertion that asked if faculty would increase use of CMS if the coordination of a course at the departmental or institutional level would be easier, 14 (42%) agreed and 11 (33%) strongly agreed. Support personnel currently

work with faculty members in setting up courses, controlling creation of user accounts and granting access and permissions to courses. For instance, the populating of students in a WebCT course in some departments is accomplished in coordination with the support staff. This might be viewed by some faculty as a tedious process that involves additional time and work. A large proportion of responses (75%) agreed to the statement implying that if these processes were made easier it would encourage them to increase CMS use. In response to whether they would use CMS in more courses if a TA was available to setup and load course material, a solid majority (26 or 81%) of faculty responded in agreement. Seventeen (53%) strongly agreed and 9 (28%) agreed. It has been discussed and established in preceding paragraphs and sections that the paucity of time available to faculty is a prime factor that influences CMS use. It appears from the survey results that the assistance that a TA can provide is greatly appreciated by faculty. Bob averred that this is something he has been considering:

I think I'd need some help with that... just help in developing things I mean... it's actually... content development is probably the biggest issue I have. I've done some, most of it myself and I would need a TA or somebody to work over the summer. I'm hoping to get somebody this summer to work on the stuff and just build it up.

To the statement that faculty would use CMS in more of their courses if they were convinced that the materials were protected by copyright laws, 11 (33%) respondents agreed, 5 (15%) strongly agreed while 12 (36%) disagreed and 5 (15%) strongly disagreed. There does not seem to be a clear consensus. As discussed under the section of research question1 some faculty believe copyright protection of

their online material is fairly important while others feel it is insignificant. Joe remarked:

Some of the faculty put their materials online knowing that their online and not within CMS and so they're freely available to anybody who cares to find them on the web...some of our faculty are fine with that and some of them would rather have it in WebCT where there's a bit more the feeling that they are protected.

From survey results faculty seem to be divided on this point. This is similar to their responses on Intellectual property. To the statement that asked if faculty would increase use of course management systems if they were assured that materials they developed for online teaching with CMS were governed by intellectual property rights, 12 (36%) agreed, 5 (15%) strongly agreed, 11 (33%) disagreed and 4 (12%) strongly disagreed. The clear divergence of responses on this statement reveals that some faculty are concerned about Intellectual property rights in online settings while others are not.

Faculty often strive to enrich the learning experience for students through the use of instructional tools. When asked if faculty would use CMS in more of their courses if students found it useful in their learning experience, a huge majority of faculty members supported the statement. Twenty-one (64%) strongly agreed and 10 (30%) agreed thus strongly acknowledging their support for students' interests. Jack commented "people will spend the time it takes because they think that students will ultimately benefit", suggesting that faculty often overlook large time commitments involved with the use of CMS in order to provide students with better learning experiences. Joe also commented: "one way they have been encouraged is through the 'students' interests' factor". If students found that using instructional tools such as WebCT would enrich their learning experience faculty would be more

likely to expand their use of CMS. When asked if faculty would increase use of CMS if their students were provided with better technical support, 12 (36%) agreed and 7 (21%) strongly agreed while 10 (30%) disagreed and 2 (6%) strongly disagreed.

Responding to this concern, SP5 wrote in the open-ended part of this section:

One major sore point of using CMS (WebCT) is the unacceptable frequency of technical problems (not limited to periods of so called heavy usage), such as inability to login to the system, or extremely slow responses. Much too often, I receive messages from extremely frustrated students who have faced these problems while trying to submit an assignment online or to complete a quiz. This of course also adds to my administrative load in terms of time spent responding to students' problems.

Technical problems that students encounter are transferred to faculty members.

Despite the availability of a support system i.e. the IT services helpdesk¹⁷, students often direct their concerns first to the instructor. This adds to the workload of the faculty member. A large proportion i.e. 19 or 57% of the respondents therefore supported the statement that they would expand the use of CMS if their students were provided with better technical support. An interesting observation is that 12 or 36% (10 (30%) disagreed and 2 (6%) strongly disagreed) of faculty responding to the survey were in disagreement. This is a third of the faculty surveyed. An obvious inference is that these faculty members feel that a student being provided with better technical support is not a good enough reason for them to expand use. However, why some faculty do not support this statement despite unanimously wanting to make students learning experience a useful and enriched one is something that needs to be studied further.

¹⁷ students are asked to contact an helpdesk number or fill out an online request in case they need WebCT help:
https://www.elearning.ubc.ca/home/index.cfm?menuClicked=2/&p=main/dsp_webct_index.cfm

When asked if they would increase use of CMS if they received more training on the CMS product, 10 (30%) respondents agreed and 6 (18%) strongly agreed while 13 (39%) disagreed and 4 (12%) strongly disagreed. With 16 (48%) faculty members supporting and 17 (51%) opposing the statement, faculty are clearly divided on training. As need for training depends on existing skill and knowledge of the product, a closer look at the data and the skill rating of those who responded is presented in table 37.

I would use CMS in more of my courses if I received more training on the product.	Strongly Disagree	Disagree	Agree	Strongly Agree
Skill Rating				
Beginner	1	1	2	2
Novice	1	3	4	2
Intermediate	2	9	4	2

Table 37 : Skill rating and responses to increased use of CMS from training 11 (11 in 17 or 64.7%) of respondents who either disagreed or strongly disagreed rated themselves as being of intermediate skill level. Also, incidentally, 11 (11 in 17 or 64.7%) of the "intermediates" opposed the statement. As the "intermediate" level is the highest skill level that faculty members rated themselves, it follows that these are the most proficient of the users in the sample. This also suggests that training might not be high on the list for such faculty. However, for those with lower skill levels training appears to be important in expanding use. When responding to the statement if they would use CMS in more of their courses if their level of expertise in using CMS increased, 18 (55%) respondents agreed and 6 (18%) strongly agreed while 5 (15%) disagreed and 3 (9%) strongly disagreed. The survey results to this statement suggest that a clear majority (24 or 73%) of faculty members support the

statement that they would expand use if their level of expertise was increased. Again comparing the responses with the skill rating will provide some insight into the survey results.

I would use CMS in more of my courses if my level of expertise in using CMS increased.	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree
Skill Rating					
Beginner	0	1	0	4	1
Novice	0	1	1	5	3
Intermediate	1	1	4	9	2

Table 38 : Skill rating and responses to level of expertise

From the results in table 38, it is clear that a majority of faculty support the statement that they would expand use of CMS if their level of expertise increased. The results show that most of the respondents who supported this statement (11 in 24 or 45.8 %) were from of the intermediate level. Also, 11(11 in 17 or 64.7%) of those rated “intermediate” supported the statement. These results are in contrast to those just discussed in table 33. The results from the two tables above might suggest that faculty who are skilled do want to raise their level of expertise but do not necessarily view training on the product, possibly conventional training, as a means of raising the level of expertise. Some faculty value training. SP24 wrote “I received excellent training from Ben¹⁸ from Faculty J”. While others who value cannot make it to training “I always think it's a great idea but have never gone to one”. Jack articulated: “I would expand it a lot if I had some more sophisticated or access to more sophisticated programming skills. What I need is... things where its relatively specific” suggesting that he is not looking for regular training but a way by which he

¹⁸ pseudonym to mask identity

could receive skills that would help him build online content and activities specific to his area of study. Some faculty would increase use if training was provided others possibly either believe they have no time to attend training and therefore feel it might be futile or do not feel just regular training is enough to make them increase use. Generally, faculty do believe that if their expertise was increased so would their use.

In response to the statement that asked if they would increase CMS use if rewards and incentives were provided for increased use of CMS, 11 (33%) respondents agreed, 10 (30%) strongly agreed, 8 (24%) disagreed and 4 (12%) strongly disagreed. Although a majority (21 or 63%) are in agreement, a fair number (12 or 36%) oppose the statement. SP33 wrote "It takes a lot of time to set this up and not receiving any sort of reward for that is less than encouraging". Some faculty believe rewards and incentives would encourage them to increase use, some do not believe it is a way to go. To explain the results the discussion of rewards and incentives under research question 1 is relevant. Quotes from interviews as presented under research question1 and the survey results in table 35 suggest that a moderately good majority of faculty believe they would increase use if rewards and incentives were provided while others cannot envision the institution rewarding faculty for increased use and therefore do not see it as a viable option.

Another way by which faculty could be encouraged into expanding their use as suggested by administrators during interviews is by showcasing faculty work.

Dave commented:

...showcase, white paper whatever... you know that possibility of... have you ever considered doing this with this tool? These are the implications for how your courses look, how your students would perceive, your workload....those kinds of things... I think we can get them to use more and more of the technology.

Joe supported Dave's suggestion:

the other I think is modeling ...just demonstrating like literally...we have a series of lectures in our faculty that are show and tell where we provide lunch and we have people come in that are doing things with technology. Sometimes it is CMS, a lot of times it is with CMS with WebCT, sometimes it is other technological tools that they're using and we are like... this is what you can do with it and that has people thinking.

Showcasing faculty successes is a good way to demonstrate to faculty the potential of the tools in CMS through concrete examples that have been tried and tested by their department peers.

4.6.3. Summary

Two main reasons that faculty believe will encourage them to expand use of CMS are the reduction in time spent on developing and administering a course using CMS. They strongly support the availability of a teaching assistant (TA) to help in course setup and maintenance. Faculty also strongly believe that they would expand use if students found that using CMS was useful in their learning experience. Other significant factors that would make faculty increase CMS use are: the simplification of tools in CMS and if coordination and administration of a course management system course was made easier. Faculty members who responded to the survey strongly suggested that increasing their expertise in using CMS would increase use. However, training on the product was mainly seen as a factor that would drive those with modest user skills to expand use. Faculty who have higher user skills might not be looking for regular product training but training that addresses their specific needs in increasing their level of expertise.

Technical support is an important factor and most faculty members believe they would increase use if technical support was more accessible or reliable. To some, these aspects of technical support do not appear to be a driving factor in increasing use. Faculty might have a different view of accessibility and reliability of technical support depending on the department or school they are in. On a similar note, some faculty believe better technical support to students would encourage them to increase use while others do not agree this is a factor. If time spent in expanding CMS use would be considered in their workload computation faculty members believe they would be encouraged in using CMS in more of their courses. Mainly untenured faculty believe that if the time and effort invested into CMS courses were considered for tenure and promotion it would encourage them to expand CMS use. Faculty are divided on IP and copyright laws and do not support these factors strongly in terms of increase of CMS use. However, a fair majority believe rewards and incentives will encourage them to adopt use. Administrators suggest that showcasing faculty work is a powerful way of influencing faculty to expand their CMS use.

4.7. Research Question 5

How can uptake rates of CMS among faculty be increased?

Sections VI and XI of the survey (refer appendix D) were designed to collect responses from faculty on how institution-wide uptake rates can be increased.

Section VI only for non-users, was a series of statements that asked what would make them consider using CMS in their courses, responses were on the four-point

Likert scale. Section XI was for both users and non-users and was an open-ended question that solicited comments and suggestions on how faculty members could be encouraged to adopt CMS. The results of section VI of the survey are first presented in tabular form under this section, followed by a discussion of the responses which includes the results of section VI of the survey, the anecdotal responses of section XI of the survey and interview comments from faculty and administrator interviews related to the question of increasing uptake. The survey results are presented in the table below in a different order than they appeared on the survey in order to have statements that fit a particular theme to be grouped together. The discussion follows the order as seen in the table.

4.7.1. Results of the survey

The results of the survey questions from section VI are presented in table 39.

I would consider using CMS in my courses if:	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response	Total
The technical support available is effective.	1 10%	0	1 10%	7 70%	1 10%	0	10
The technical support available is reliable.	1 10%	0	1 10%	6 60%	1 10%	1 10%	10
I was convinced that the course materials that I use online were protected by copyright laws.	2 20%	0	3 30%	2 20%	2 20%	1 10%	10
I was assured that the course materials I develop for online teaching using CMS were governed by intellectual property rights.	2 20%	0	3 30%	2 20%	2 20%	1 10%	10
My students had access to effective and reliable technical support.	1 10%	0	2 20%	3 30%	3 30%	1 10%	10
I had student requests to use CMS.	1 10%	1 10%	1 10%	7 70%	0	0	10
Sufficient training was provided.	1 10%	0	1 10%	6 60%	1 10%	1 10%	10
It helped enhance my teaching.	1 10%	0	2 20%	4 40%	3 30%	0	10
Merit pay and salary increases were offered as incentives to integrate CMS into my courses.	1 10%	0	3 30%	2 20%	3 30%	1 10%	10
Time spent for course development and online teaching was considered as part of my course workload.	1 10%	0	2 20%	2 20%	4 40%	1 10%	10
The time and effort invested into learning and using these tools were given consideration in tenure and promotion.	1 10%	0	2 20%	3 30%	3 30%	1 10%	10

Table 39 : Faculty responses from non-users on adopting CMS

4.7.2. Discussion and Interview Comments

Faculty responded to two sets of questions; one open-ended (Section XI) and the other Likert scale (section VI). Section VI was for non-users only and Section XI was for both users and non-users. The responses, of non-users, to the Likert scale questions are discussed in the following paragraphs and follow results presented in table 39. The open-ended comments of both users and non-users and interview comments are also presented in these paragraphs.

Faculty members, non-users, who were asked if they would consider using CMS if the technical support available was effective, supported the statement. Seven (70%) non-users agreed and 1 (10%) strongly agreed while only 1 (10%) disagreed. Technical support can sometimes be effective but for several reasons not always available and thus be unreliable. Responding to the statement whether they would consider using a CMS if the technical support was reliable, 6 (60%) respondents agreed and 1 (10%) strongly agreed while only 1 (10%) disagreed. Technical support is a fundamental part of CMS implementation and survey results of responses from non-users appears to indicate that it is an important one. SP18, a user, wrote "provide technical support that makes it easy for faculty to use CMS. The technical support should be easy to access and reliable". Another respondent, SP11, a user, wrote: "good onsite support". Suggesting good support that is easily accessible is valuable. It is clear that faculty find technical support to be essential and Chris, a non-user, articulated that it is certainly crucial for adoption.

Technical support is clearly important I don't think I would want to do it unless it's clear there is ongoing technical support or there would be money to hire research assistants who had the expertise and would work round the year on troubleshooting because I can expect problems would come up.

Chris' suggestion also alludes to other forms of support that are also useful. SP1 concurred with Chris and wrote "The time release to develop courses and additional TA support would be excellent" suggesting that auxiliary support in the form of Teaching Assistants (TAs) is advantageous. Another form of support suggested by faculty is providing access to expert users. SP28, a user wrote "I think the ready availability of and accessibility to experts who use CMS would increase use (e.g. WebCT)" suggesting that this might increase adoption. Assuming participant SP28 was referring to users i.e. peers who use CMS, this kind of support also received a mention of criticism "additional support needs to be for TA's not for peer mentors and training programs for faculty. Faculty members are already overloaded and it is not appropriate to ask them to do more!" wrote SP7, further supporting the need for TAs. Support in course development was also recommended in order to increase uptake rates. SP24 wrote "provide development support and show how CMS use can save faculty time in course delivery and management". Faculty find technical support to be important and also suggest the need for supplemental support in the form of TAs or research assistants, peer experts and course development support personnel.

When asked if non-users would consider using CMS if they were convinced that their online course materials were protected by copyright laws, 3 (30%) disagreed, 2 (20%) agreed, 2 (20%) strongly agreed, 2 (20%) chose the "Not Applicable" (NA) option and 1 (10%) failed to respond. The exact same proportion and spread of responses were received for the statement that asked if they would consider using CMS if the course materials they developed were governed by IP rights. There is a wide divergence in the responses with no clear consensus. 4

(40%) respondents were in agreement while 3 (30%) were in disagreement. In interview questions on the topic of increasing uptake and responses to open-ended questions and comments these issues did not surface. Copyright and IP issues do not appear to strongly affect increase in uptake. Some faculty members feel it would aid adoption and others feel otherwise.

When non-users were asked if students having access to effective and reliable technical support would make faculty consider using CMS, 3 (30%) agreed and 3 (30%) strongly agreed. Only 2 (20%) participants disagreed. In response to the statement whether student requests to use CMS would prompt faculty to consider adopting CMS, 7 (70%) agreed while 1 (10%) disagreed and 1 (10%) strongly disagreed. Faculty, from their responses, suggest that students' requests and concerns are fairly significant in decisions to adopt CMS. SP32, a user, wrote "If students ask for it, faculty will have to use it. I was asked by a student to give a WebCT manual to another professor which suggests to me there is a lack of training on it". SP8 wrote as an open-ended response "convince me how its more valuable than what I already do. Show me the benefits to me and my students" and added "If my students felt it would be useful to them, it would make a HUGE difference. They have never asked about it or left any comments whatsoever even though I'm probably one of the only profs who doesn't use it." SP36, a non-user, wrote "I personally am not interested in on-line teaching--I do not think it is suitable for the kind of educational experience students should have at university". Although it is not clear if students' requests would influence SP36 to use CMS, students' interests are probably behind this faculty member's reasons for not using CMS. Thus, faculty

value students' concerns and would consider adoption if they had requests.

Administrators report that undeniably students seem to be driving faculty into adopting, Darcy remarked, "... students push the system, they really push the system..." implying students now want most of their course materials online and this is getting faculty to use CMS. It appears that indeed faculty would be more comfortable adopting when they know students are provided with adequate technical support. Students' requests and interests could also trigger an increase in uptake among faculty.

Faculty who were non-users were asked to respond to the statement that solicited responses on whether they would consider using CMS if sufficient training was provided. Six (60%) agreed, 1(10%) strongly agreed and only 1(10%) disagreed. SP32 a user of CMS declared in his response in the survey and wrote "in Faculty J, Ben [pseudonym], a faculty member, runs a training workshop for us. That support really encouraged me to adopt CMS as a means of course delivery". Faculty expect training as they embark on adopting and using technologies such as CMS. Some faculties and schools are equipped to provide training and support development. Darcy an administrator alluded to how they support faculty and promote uptake of CMS referred to and described their "outreach model":

it's a real outreach model and we've developed training sessions to help them...we do a lot of work for them ... we don't put a lot of the onus on them to do things, we convert the materials, we upload them, we manage them, send them back to them if they need to update them. So... we've tried to take as much responsibility out of their hands as possible to make it as easy as possible so they will adopt it.

Training is a crucial part of uptake and faculty seem to believe it is essential in increasing uptake.

In response to the statement that asked faculty members if they would consider using CMS if it helped enhance their teaching, 4 (40%) agreed and 3 (30%) strongly agreed while 2 (20%) disagreed. A majority of the respondents (7 or 70%) agreed that they would use CMS if it enhanced their teaching. In response to the open-ended question of how adoption rates could be increased several respondents wrote comments implying that if convinced that pedagogically there was an enhancement or advantage they might adopt CMS. SP36, a non-user, wrote "convince us that it is a sufficient improvement over our present approaches to warrant the effort required to learn the system (probably a minor component for many of us) and prepare the necessary on-line materials". SP10 concurred with SP36 and wrote "why should faculty members be encouraged? The only legitimate reason for using CMS is that it can provide content in a better and more efficient way than by utilizing traditional (face to face) teaching methods". SP8 wrote "convince me how its more valuable than what I already do. Show me the benefits to me and my students." SP39, a non-user, wrote "in particular, could it help me design a course that is more student-centered in character than the traditional course based on formal lecturing? If the answer to this question is yes, it will incite me to adapt my courses to CMS". Chris, a non-user, in response to the interview question of how faculty uptake rates could be increased articulated:

...I mean they need to tell us why we would want to do it pedagogically they need to build a convincing case why it's better for students and a case that is based on other than just mumbo-jumbo about globalisation, use of technology ,distance education all those buzzwords that are in fact very politically regressive.

Jack, a user of CMS from its inception, also supported Chris' argument of building a convincing case and commented "Cause I think if there was real evidence to show

that you are creating a better learning environment for students by doing some of the things, then probably more people would be interested in taking the time to do it".

The question that is raised is whether it is something that faculty need and could use to their advantage. Tom claimed "well it's a case again of whether or not a faculty needs it" and elaborated on the fact that technology, contrary to contemporary popular belief, is not the answer to all educational challenges. Sam concurred with Tom about using these tools to suit specific needs saying:

I don't know if there's an easy solution to that in terms of trying to get everybody to adopt those types of technologies. I almost feel like it's one of these types of things that if someone wants to do it then they should have those tools available to them but people should not be forced to do it.

Faculty are clearly stating that they would consider adopting CMS if they were convinced it helped in enhancing their teaching. However, CMS would possibly not be advantageous in every situation. It therefore follows that an important means of increasing uptake rates is assessing and understanding faculty needs and building a convincing case to substantiate teaching and learning benefits to both faculty and students.

Rewards and incentives also serve as means to increase uptake. In response to the open-ended question of how faculty could be encouraged to use CMS, SP23, a user, was succinct and wrote: "\$", suggesting money, possibly in the form of merit pay, salary increases and so on could help increase uptake. SP11, a user, wrote "Rewards/incentives (even bookstore gift certificates are appreciated)". In response to the statement that asked if non-users would consider using CMS if merit pay and salary increases were offered as incentives, 3 (30%) strongly agreed, 2 (20%) agreed and 3 (30%) disagreed. Although 5 (50%) participants were in agreement, 3

(30%) disagreed and 1(10%) thought it was not applicable. There does not seem to be a clear consensus. Some faculty believe rewards and incentives will help increase adoption but it does not appear to strongly affect increase in uptake.

Time spent in setting-up and administering a course has already been discussed as being significant in the uptake and use of CMS. In response to the questions about how to increase uptake rates, faculty reiterated some of the time related concerns suggesting that they might play a role in uptake rates. SP31 clearly articulated these concerns and wrote:

The main concern is the inordinate amount of time invested to 'get on board' CMS, time to learn and revise the course, and time to respond to students when they expect you to be 'on call' all hours. Some of the suggestions above [in other sections of the survey questionnaire] such as extra TA support at multiple levels of the course design and delivery would address this in a meaningful way.

SP21, a user, also supported the fact that using these tools was time intensive and wrote: "If the systems become very easy to use and less time consuming to set-up, then more faculty will use them". Another respondent, SP10, compared CMS with regular websites and wrote "When building a web site is faster than using CMS (which is the case for WebCT) then this option should be supported as well".

Faculty also seemed to have an alternate view of the time spent with CMS. SP12 wrote "I think if they were made aware of how much less time was involved in course administration, and how much more organized they would be as a result, they would take it up faster" suggesting that there could be time saving benefits using CMS and this should be conveyed to non-users in order to get them to adopt. Some faculty members, as discussed in previous sections derive benefits from certain aspects of CMS, for instance in management of large classes and that might be the reason

behind this comment. SP24 supported SP12 and wrote: "show how CMS use can save faculty time in course delivery and management". Some faculty believe that the inordinate investment of time that comes with the use of CMS needs to be dealt with before uptake rates increase while others feel that convincing faculty about time benefits with CMS is a means of increasing uptake.

When asked if time spent for course development and online teaching was considered as part of a faculty member's workload would they consider adopting CMS, 6 (60%) of the non-users surveyed supported the statement, 2 (20%) disagreed while 1 (10%) chose the NA option and 1 (10%) did not respond. The investment of time required on the part of the faculty member is related to their existing workload. The gravity of faculty workload and its possible affect on uptake was clearly articulated in SP38, a non user's statement, who in response to the open-ended question of how faculty uptake rates can be increased, wrote:

The only way to 'encourage' it is to require it of new faculty, if it is really believed that it improves anything. Many of us will never get interested because we just don't want to make the enormous effort involved when so many other things are being demanded of us. All these demands will drive reasonable people out of the academic professions unless a thoughtful division of labour is instituted.

When responding to the same question, SP 27 wrote "if I were teaching a lighter load, fewer classes and fewer students, I would use CMS more often". SP17 also wrote in response to the open-ended question:

The amount of time spent developing CMS for my course is not considered as part of my teaching load. It is often a timely endeavour to ensure a website is properly running and files are accessible. In addition, the close of the DET department at UBC means that I would be extremely hesitant to take on a new distance course and manage a website without support. I do not have the skills, such as HTML, to set up an entire course and deal with difficulties that arise. I cannot imagine how current distance teachers are managing.

SP38's suggestion of requiring uptake of new faculty is a thought that Sam shared during his interview in response to increasing uptake:

to get them [senior faculty] to migrate all of their years worth of information that they put in to a course and migrate that to a computing platform it's a lot to ask and so in that respect I think it's very hard to get people who are at a senior level in their career to really come in ...really be happy to try to do something. It's a different story with young faculty because you haven't invested as much time into the courses up until now so when you're first preparing a course and you know you want to put it on some form of CMS structure you put in the work and time and you're done. You can use the fruits of that in the future.

Also, SP38, in open-ended comments on section VI wrote: "at this stage of my career it would be a bad use of my time and energy to get involved with course management on the WEB. I don't believe the benefits would be sufficient to justify the enormous extra workload". These responses suggest that workload is a factor that concerns faculty and if effectively managed at the institution level could possibly increase uptake. These suggestions of incorporating time spent with CMS into faculty workload, including the requirement of new faculty adopting CMS, obviously mandate some policy changes. These issues need to be examined in finer detail possibly through more surveys and studies.

Another issue related to policies is tenure and promotion. In response to the assertion that asked faculty if they would consider using CMS if the time and effort invested in learning and using these tools was given consideration in tenure and promotion, 3 (30%) non-users agreed, 3 (30%) strongly agreed and 2 (20%) disagreed. SP2 wrote "Have it weighted in the tenure/promotion decisions". SP1 among other suggestions wrote "Recognition of this effort" as one way of increasing uptake. SP28 wrote: "gaining merit for attending workshops and adopting use of the technologies may also motivate people to adopt use of CMS." Administrators, Joe

and Dave also stressed the importance of recognising time invested by faculty in use of CMS. In response to the question of how uptake rates can be increased Joe remarked:

...non-users? I would say...if you adopt CMS we will do this for you... it will contribute to you know... your promotion your tenure... we will recognize that you know... when you're developing online materials that it's going to take you a bit longer that there's an understanding that you know... that your prep time is going to be longer.

Joe's comment suggests that recognising faculty time would be a good way to increase adoption. However, on an earlier section SP10 also wrote "...No Teacher should ever be forced to use CMS" implying that tenure, promotion, rewards and incentives linked to CMS use would force faculty to adopt these tools. The responses to the survey and interview indicate that faculty and administrators believe that time spent on CMS if recognised might help non-users adopt. One way of doing that is in tenure and promotion considerations. However, there is also a concern that such policies might put pressure on non-users and force them to adopt.

The user-friendliness of the course management tool also plays a role in increasing uptake. As seen in preceding paragraphs, faculty have criticized the unreasonable amounts of time that is sometimes required to set-up and administer courses with CMS. The time spent might be connected to the user related features and routines in the course management tool i.e. WebCT. SP26 provided concrete examples of features in the tool that lacked "user-friendliness" and wrote:

There are many, many examples where WebCT simply does not follow a model appropriate for what faculty need. But one example is the inability in WebCT to login as if one were a student. The 'student view' mode does not accomplish this (it shows what students will see if material is released, not what they actually see right now). The only way to accomplish this is to add a 'guest' account with a separate password and then switch back and forth between the two. This requires

logging in and out multiple times (unless you use the numeric IP address hack -- and even that fails if one wants to also see the view that TAs have). This is error prone and very time consuming. A really major problem is that WebCT does not support multiple instructors. One instructor only can be the 'designer'. This flies in the face of team-teaching and other pedagogical innovations introduced in the last century. WebCT does not 'give back' material in a useful format. This means you need to keep two copies -- one on WebCT and one that is the 'real' material. This does not facilitate other faculty taking over the course in subsequent terms. The UBC administration has made this even worse by putting in draconian policies that limit what faculty can do on WebCT in terms of adding students to the course.

SP31, who also alludes to inflexibilities in the tool, wrote "the WebCT interface and flexibility is about two-years behind the IT industry standard. If it looked better and worked faster and more smoothly, I would be more comfortable promoting it to my colleagues" implying that the tool leaves more to be desired and improvement in usability related aspects could attract more users. SP21 concurred with SP31 adding "if the systems become very easy to use and less time consuming to set up, then more faculty will use them". The features and routines in the course management tool indeed appear to be the source of frustration to several faculty members and they feel that if the tool was made easier to use, that in itself might contribute to increasing uptake. SP19 echoed the concerns of other faculty members and suggested some ways to fix these problems and wrote:

Make it easier to use. Hire experts in usability and have them cooperate with WebCT to make it better. Management of large courses is important. WebCT system is often slow to access/update large class lists. Improve funding for the WebCT servers.

Further SP26, among other comments wrote "The CMS needs to have a proper user-centered evaluation done during its development and its deployment. WebCT and all of UBC's support systems (such as the Faculty Service Centre) have not been designed by looking at the needs of faculty". There probably have been

consultations with the tool developer i.e. WebCT and as discussed earlier, administrators mentioned that a newer version of the product namely "Vista" is being considered for campus-wide use. Therefore, as highlighted by SP19, this indeed might be an issue and the improvement in the user-friendly aspect of the tool that comes with the newer version might help increase uptake.

Showcasing faculty work and promoting visibility of CMS were other prominent aspects that surfaced during both surveys and interviews. SP29 wrote in response to the open-ended question:

CMS is typically presented as a solution to all teaching problems - a 'one size fits all'. There needs to be a showcase of specific examples of how it can be used by people who know what it is to teach the subject, not CMS advocates.

This is a strong statement from faculty who are looking for their peers to showcase successes and demonstrate how CMS could be applied to their courses. Moreover, they are looking for examples specific to their department or discipline. Bob concurred by saying:

I think more examples of how it could be used would be... and... like examples that really relate to the discipline ... and that's gonna take somebody to come out of the WebCT mould and look at what really happens inside a class, take some time and figure out—okay, I got the solution here how can we adapt it to this problem or we got this problem here how can we use this solution technique and then show examples like that... and[the administrator or technical support person in the department] is trying to do that in some respects but he is swamped for time as well so I think show examples of how it's used and it would really...oh I see now OK...

Suggesting that showcasing faculty members' work and demonstrating how it could be applied to provide solutions would get faculty thinking and then considering about using CMS.

Dave supported Bob's view indicating that they are carrying out such demos and hope to increase them as they are an important aspect of promoting uptake. He stated:

we do more orientations and more showcases that we did two years ago realizing it's an important way to plant that seed in the back of someone's mind that maybe someday... and the other idea of if you can show instructional challenges and solutions even if the person doesn't adopt it at the moment they sort of may come back to that...

Other survey participants also mentioned this as a means of increasing adoption.

SP1 wrote "continue to showcase examples of how CMS has been used in courses" and

SP24 wrote "show how CMS use can save faculty time in course delivery and management". Faculty and administrators are suggesting that showcasing faculty work is an effective way of making a case that use of CMS could add value and help solve a pedagogical challenge. When it is clearly demonstrated by successful use by a peer, especially from the same discipline, it would carry more credibility. Besides, as seen in table 3 in Chapter 2 of this document, the ARCS model as suggested by Surry and Land (2000) also suggests that showcasing practical uses of the technology as a means of gaining attention.

Showcasing of faculty work is a powerful way of increasing visibility of CMS. However, other ways were also suggested to influence uptake, for instance, workshops and demos on CMS features. SP39, a non-user, wrote "It would be helpful to publicize CMS: what it is and what it has to offer to faculty". SP25 added writing "demonstrations - show us what it can do". SP9 also wrote "Word of mouth and demos will probably work best "suggesting demos as a means of increasing

CMS visibility. SP28 wrote "Workshops held during reading break or during the summer would also help. Gaining merit for attending such workshops and adopting use of the technologies may also motivate people to adopt use of CMS". SP28's comment suggests that holding workshops at a suitable time when faculty are available to attend and recognising the time spent by faculty members in training could be useful. Demos of CMS probably would work best in increasing awareness of CMS among non-users. Those interested could then sign up for workshops to get a better idea of how they could use these tools in their courses. However, as indicated by several faculty members, given their workload and schedules, faculty usually do not find time to attend these workshops and therefore they need to be scheduled strategically at times of the year when faculty are typically available to attend.

4.7.3. Summary

Increase in uptake rates can be achieved by a number of ways. Technical support is vital to successful uptake and is instrumental in increasing uptake. Non-users believe effective and reliable technical support will prompt them to adopt CMS. Auxiliary support in the form of TA's is also important. Other kinds of assistance suggested are developmental support and support from peer-experts. While some faculty members feel they save time using CMS, most feel it involves inordinate amounts of time. However, they clearly believe that time spent in using CMS should be recognized. If for instance, time spent was considered in workload computation or tenure and promotion it might increase uptake rates in faculty. Connected to time issues is also the usability factor of the course management tool and faculty feel that

a simplification or improvement in the usage of the tool will increase uptake rates. Another suggestion to increase uptake rates is by promoting its use to new faculty members as they join the institution.

Students are an important link to CMS for faculty. The support provided to students, and their requests and concerns will influence uptake and in turn uptake rates. Faculty believe that sufficient training will make them consider using CMS. It is important to increase CMS visibility in order to increase uptake rates. Apart from workshops and regular demos, which are strategically scheduled to suit faculty teaching schedules, faculty and administrators emphasize the need to showcase faculty work specific to a school or discipline. This is seen as a powerful means of increasing uptake rates. Besides increasing visibility, in order to increase uptake, change facilitators such as administrators should make a convincing case of how adopting CMS would be pedagogically advantageous and serve the specific need of a faculty member. IP and copyright issues are not influential in increasing uptake rates. While some faculty would like rewards and incentives it does not appear to be a powerful motivator in increasing uptake rates.

4.8. Research Question 6

How can faculty be helped and supported so that they could use or continue to use these tools effectively to deliver courses?

Section X of the survey (refer appendix D) was designed to collect responses on how the administration or institution i.e. UBC, can provide assistance or support to faculty members in their use of CMS. The responses to the survey were again on a Likert scale. The section also provided respondents an opportunity to make open-

ended comments. Both users and non-users responded to this section of the survey. During interviews, faculty who were users and administrators were asked how the institution can support faculty members. This section presents and discusses the responses to the survey and Interview questions. The anecdotal responses to the survey are also discussed. The survey results are first presented in tabular form in a different order from how they appeared in the survey in order to allow statements that fit a particular theme to be grouped together. The discussion follows the order in which they are presented in the table.

4.8.1. Results of the survey

The results of the survey questions under section X are presented in the tables that follow. The statements pertaining to support through workshops and demos and the responses from both users and non-users are listed in table 40.

	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response	Total
Make Ongoing training workshops available.							
User	0	2	2	19	9	1	33
		6%	6%	58%	27%	3%	
Non User	0	0	1	7	1	1	10
			10%	70%	10%	10%	
All	0	2	3	26	10	2	43
		5%	7%	60%	23%	5%	
Develop training workshops that target specific needs of faculty members.							
User	0	3	4	12	12	2	33
		9%	12%	36%	36%	6%	
Non User	0	0	0	7	2	1	10
				70%	20%	10%	
All	0	3	4	19	14	3	43
		7%	9%	44%	33%	7%	
Offer faculty members adequate release time to develop and train.							
User	0	3	2	11	15	2	33
		9%	6%	33%	45%	6%	
Non User	0	0	2	3	4	1	10
			20%	30%	40%	10%	
All	0	3	4	14	19	3	43
		7%	9%	33%	44%	7%	
Showcase faculty use of CMS by holding regular peer demonstrations.							
User	0	3	9	13	7	1	33
		9%	27%	39%	21%	3%	
Non User	2	1	2	2	2	1	10
	20%	10%	20%	20%	20%	10%	
All	2	4	11	15	9	2	43
	5%	9%	26%	35%	21%	5%	

Table 40 : Responses for support through training and workshops

Responses to the statements about faculty supporting faculty by means of peer-experts, peer-tutoring and mentoring are presented in the table 41.

	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response	Total
Provide a designated peer-expert in my department who I can turn to when I have difficulty.							
User	0	4	5	12	11	1	33
		12%	15%	36%	33%	3%	
Non User	0	1	0	6	2	1	10
		10%	0%	60%	20%	10%	
All	0	5	5	18	13	2	43
		12%	12%	42%	30%	5%	
Develop a peer-tutoring support system among faculty members.							
User	0	3	11	14	3	2	33
		9%	33%	42%	9%	6%	
Non User	2	1	1	4	1	1	10
	20%	10%	10%	40%	10%	10%	
All	2	4	12	18	4	3	43
	5%	9%	28%	42%	9%	7%	
Enlist experienced faculty members as trainers and mentors.							
User	0	5	6	15	4	3	33
		15%	18%	45%	12%	9%	
Non User	0	1	0	6	2	1	10
		10%		60%	20%	10%	
All	0	6	6	21	6	4	43
		14%	14%	49%	14%	9%	

Table 41: Support from peers

Users and non-users were also asked about how they felt about support provided by Technical Assistants (TAs). This TA support would be for both course set-up and delivery and the responses are presented in table 42.

	Not Applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response	Total
Provide funding for TAs to support course set-up.							
User	1	1	2	9	19	1	33
	3%	3%	6%	27%	58%	3%	
Non User	1	0	0	6	3	0	10
	10%			60%	30%		
All	2	1	2	15	22	1	43
	5%	2%	5%	35%	51%	2%	
Provide funding for TAs to support course delivery.							
User	0	1	4	9	18	1	33
		3%	12%	27%	55%	3%	
Non User	1	0	2	6	1	0	10
	10%		20%	60%	10%	0%	
All	1	1	6	15	19	1	43
	2%	2%	14%	35%	44%	2%	

Table 42 : Support from TAs

Statements relating to technical and departmental administrative support and their responses from both users and non-users are presented in table 43. The support includes equipment, help-desk support, onsite departmental technical support and onsite departmental administrative support.

	Not applicable	Strongly Disagree	Disagree	Agree	Strongly Agree	No Response	Total
Equip faculty members with up-to-date computer systems.							
User	0	2	4	10	15	2	33
	0%	6%	12%	30%	45%	6%	
Non User	1	0	0	5	3	1	10
	10%			50%	30%	10%	
All	1	2	4	15	18	3	43
	2%	5%	9%	35%	42%	7%	
Provide extended access to technical support (help-desk) so that I can get timely help when I encounter a problem.							
User	0	3	1	14	14	1	33
		9%	3%	42%	42%	3%	
Non User	0	0	1	4	4	1	10
			10%	40%	40%	10%	
All	0	3	2	18	18	2	43
		7%	5%	42%	42%	5%	
Provide onsite departmental technical support.							
User	0	3	7	10	12	1	33
		9%	21%	30%	36%	3%	
Non User	0	0	0	6	4	0	10
				60%	40%		
All	0	3	7	16	16	1	43
		7%	16%	37%	37%	2%	
Provide onsite departmental administrative support.							
User	0	2	7	9	12	3	33
		6%	21%	27%	36%	9%	
Non User	1	0	1	6	2	0	10
	10%		10%	60%	20%		
All	1	2	8	15	14	3	43
	2%	5%	19%	35%	33%	7%	

Table 43 : Technical and Equipment Support

4.8.2. Discussion and Interview Results

Users of CMS need diverse kinds of support ranging from help-desk, to sort out technical issues, to the institutional level that deals with policies that support the use of such instructional tools. When asked to respond to different statements on

how workshops and demos could help support faculty, both users and non-users send a clear message that this is an important aspect of support. To the statement that asked if assistance should be provided by making ongoing training workshops available, 19 (58%) users agreed and 9 (27%) strongly agreed. On a similar note, 7 (70%) non-users agreed and 1 (10%) strongly agreed with the same statement. When asked if training workshops that target specific needs of faculty members should be developed, 24 (72%) (12 (36%) agreed and 12 (36%) strongly agreed) users and 9 (90%) (7 (70%) agreed and 2 (20%) strongly agreed) non-users supported this statement clearly indicating that both users and non-users support ongoing training workshops that address faculty specific needs. From discussions in previous sections, issues that faculty complained about were the lack of time to attend, unsuitable scheduling and content covered by these workshops being unhelpful as they were more general than specific. John expressed his disappointment in the only advanced course in WebCT that he attended and remarked "what you're getting is straight out of the manual of how to do things" suggesting that the course, albeit an advanced one, was largely unhelpful because it did not address any of the specific issues that he was dealing with. Scheduling these courses to suit faculty is important as well. However, some faculty expressed that regardless of how good the workshops are they are unable to attend them due to workload constraints. John articulated:

I would like to say more workshops tutorials and things that actually show ...but the downside to that is that it's extremely difficult to get faculty to go to those things, they just don't have the time... they get scheduled into one when you're teaching... how can I go to a class on how to teach better when I'm lecturing... right?...

Conflicting schedules is indeed a reason that prevents faculty members from attending. However, not finding time due to workload is another factor that makes it difficult for faculty to attend. In response to the statement that asked if assistance could be provided by offering adequate release time to develop and train, 26 (78%) (15 (45%) strongly agreed and 11 (33%) agreed) users and 7 (70%) (4 (40%) strongly agreed and 3 (30%) agreed) non-users were in agreement suggesting that they felt that release time to train would be a viable way to attend workshops and receive training and development. These results seem to be in tune with other studies, for instance, 58.1% faculty at the Illinois state university, a "Carnegie classified intensive doctoral/research university", supported a similar statement that asked if the greatest impediment to seeking training in instructional technology is lack of release time (Chizmar & Williams, 2001). Results strongly indicate that faculty are looking for motivation to attend training and release time could motivate them to take advantage of training opportunities offered within or outside the institution.

Showcasing faculty use of CMS by holding peer-demonstrations is another way of supporting faculty members' use of CMS. Through such peer-demonstrations faculty probably get ideas to expand or enhance their use of features and tools of CMS. In response to the statement that asked whether showcasing faculty work through peer-demonstrations as a way for administration to provide assistance to users of CMS, 13 (39%) users agreed and 7 (21%) strongly agreed while 9 (27%) disagreed and 3 (9%) strongly disagreed. Among non-users, 2 (20%) agreed and 2 (20%) strongly agreed while 2 (20%) disagreed, 1 (10%) strongly disagreed and 2

(20%) chose the "Not Applicable" (NA) option. Although a majority of users (20 or 60%) and non-users (4 or 40%) seem to support the statement, a fair proportion of users (12 or 36%) and non-users (3 or 30%) also seemed to oppose the statement.

Bob suggested:

I think a lot of the problem really is instructor's time... the faculty's time... they work 18 hour days and how can you fit all the stuff in. It is really hard and so the incentive I think... if you tease them sort of speak with them with... here is what somebody did and isn't that neat then they would see that ... this could work for me. I think that's the way to do it.

Bob felt showcasing faculty work through peer-demonstrations helped faculty grasp new ideas that they could employ in their courses to save time and therefore is a good means of providing support. A survey respondent, SP9, a faculty member who is a user, who disagreed with this statement offered a reason why peer-demonstrations might not be a great idea. In his anecdotal comment in the open-ended part of this section he wrote "don't want to burden other faculty or be burdened myself...we have enough to do already (f, l, m) [f, l and m are references to the statements in the survey, f being the reference to this statement of showcasing faculty use of CMS]". This suggests that faculty are concerned about workload and that might be behind their reluctance to favour this kind of support initiative. During interviews with faculty and administrators, showcasing faculty work was repeatedly suggested as a powerful way of increasing visibility of CMS in the school or department and improving uptake rates. From survey results, a majority also seem to agree it is a means of supporting users. However some faculty members are concerned about the workload it might add to an already busy work schedule. This does seem to be a viable means of providing support. However

workload might be a reason for faculty to shy away from taking up peer-demonstrations. A clear majority of respondents in the Illinois state university study also disagreed with a statement that demonstrations of faculty projects is a waste of time, an outcome that is in agreement with results obtained in this study (Chizmar & Williams, 2001, p.20).

Beside peer-demonstrations there are other ways that faculty can help their peers in the CMS user community. In response to assistance in the form of a designated peer-expert in the department who a user can turn to in difficulty, 12 (36%) users agreed and 11 (33%) strongly agreed making a majority of 23 (69%) that support this kind of assistance. Also 6 (60%) non-users agreed and 2 (20%) strongly agreed indicating a clear majority of non-users also support the concept of a peer-expert. Although designated peer-experts probably do not exist at UBC, faculty, when in difficulty, generally consult with their peers in the department who have used technologies for a longer period of time. Jack, a long-time user declared "I think I'm probably one of the people that has used it the longest and so a number of people come to me with questions..." implying that he is seen as an "expert" in his department. Sam also remarked that peers who are users of CMS are valuable resources:"...it just kind of makes it easier when you have people to talk to who have similar experiences..." This suggests that the kind of support suggested by "peer-experts" might already be taking place in an informal manner within departments. Faculty seem to strongly support the designation of a peer-expert that they could turn to when in difficulty. Responding to whether developing a peer-tutoring support system among faculty members would be a good form of support, 14 (42%) users

agreed and 3 (9%) strongly agreed while 11 (33%) disagreed and 3 (9%) strongly disagreed. Four (40%) non-users agreed and 1 (10%) strongly agreed while 1 (10%) disagreed, 1 (10%) strongly disagreed and 2 (20%) believed it was not applicable. Faculty, especially users, seem to be divided on this issue. Also, in response to providing assistance by enlisting faculty members as trainers and mentors, 15 (45%) users agreed and 4 (12 %) strongly agreed while 6 (18%) disagreed and 5 (15%) strongly disagreed. Again, users seem to be somewhat divided on this concept. However, non-users, strongly support this idea. 6 (60%) non-users agreed and 2 (20%) strongly agreed while only 1 (10%) strongly disagreed. Using faculty as part of a peer-tutoring system and enlisting them as trainers and mentors seems to be better received by non-users. Although there is a majority that supports these concepts, there appears to be a fair amount of dissention to the notion of adding extra responsibilities to the perceivably overloaded faculty member. SP10 wrote "faculty members already have enough on our plates. We don't need added mentoring demands." In addition, SP9's comment on burdening faculty members in preceding paragraphs also refers to survey statements "l" and "m" which are the ones being discussed here. This concept of using faculty members as mentors, trainers and peer-tutors, albeit supported by some faculty, needs to be looked at closely as it might need to address faculty concerns and issues relating to resources, faculty workload and recognition of faculty time.

When asked whether providing funding for Teaching Assistants (TAs) to support course set-up was a meaningful way of providing assistance to users, a

clear majority of 19 (58%) users strongly agreed and 9 (27%) agreed when only 2 (6%) disagreed and 1 (3%) strongly disagreed. Among non-users, 6 (60%) agreed and 3 (30%) strongly agreed while nobody disagreed or strongly disagreed.

Providing funding for TAs to support course delivery also received a similar response. A clear majority of 18 (55%) users strongly agreed and 9 (27%) agreed when only 3 (12%) disagreed and 1 (3%) strongly disagreed. Among non-users, 6 (60%) agreed and 1 (10%) strongly agreed while 2 (20%) disagreed. Faculty seem to strongly support the notion of providing funding for TAs to support course set-up and delivery. Both among users and non-users, a slightly greater proportion supported TA assistance in course set-up when compared to course delivery. An explanation for that might be that faculty feel that TAs are probably better equipped to provide help during course set-up. SP26 appears to believe that help is needed but suggests that TAs might not be the right choice and provides reasons to support his comments writing:

In (h) and (i) [references to TA related statements in survey questionnaire] I would prefer full-time professional teaching support staff. These are not functions that TAs can or should do. (For example, course set-up has to be done prior to the term in which the course is taught, which makes it difficult for a TA to do the work and then be involved during the term). There is also work after the term is over to consolidate changes and update the course for future terms. One also wants this amortized over multiple courses within a department, with some shared material. This is very unlikely to be well handled by a TA because of the limits on the amount of time a TA is allowed to work under the union contract.

SP26 suggests that full-time teaching support staff would be better suited for this support due to limitations of time and commitment that a Teaching Assistant (TA) can offer. Bob on the other hand articulated "I would need a TA or somebody to work over the summer I'm hoping to get somebody this summer to work on the stuff and

just build it up” implying he is looking for some support staff, possibly a TA, to help him in his course set-up for the next term. The details of the duration and kind of support a TA is to offer to CMS users needs to be further studied but it is clear that faculty strongly support the need for auxiliary assistance to help them in their course set-up and delivery. As mentioned by a participant, auxiliary support could also be provided through support personnel other than TA's. “Alternative staffing”, for instance, was one of the characteristics of successful projects in the Pew Charitable Trust program (Twigg, 2003).

When faculty members were asked if providing up-to-date computer systems would be a means of assisting CMS users, a substantial majority of 25 (75%) users (15 (45%) strongly agreed and 10 (30%) agreed) and 8 (80%) non-users (5 (50%) agreed and 3 (30%) strongly agreed) supported the assertion clearly indicating that providing up-to-date systems is an important support that the institution can provide to users. Chris, a non-user for instance during the interview listed good equipment as one of the required resources in the use CMS “...those things seem to be dependent upon the resources being put into help , good equipment with proper... like you need... I think you need a good computer to do it”, implying that running a course with WebCT would be dependent on assistance and proper equipment i.e. an up-to-date computer system.

Technical support is one of the crucial kinds of support for CMS users. When asked if providing extended access to help-desk technical support so that they would get timely help when they encounter a problem, would be a way to provide good assistance to users of CMS, 28 (84%) (14 (42%) agreed and 14 (42%) strongly

agreed) users and 8 (80%) (4 (40%) agreed and 4 (40%) strongly agreed) non-users supported the idea. Extended access might mean longer hours with possibly more personnel at the help-desk so that the faculty member can have issues sorted out in a timely fashion. This as expressed by users is most needed towards the beginning and end of terms when there is a lot of activity with set-up or maintenance and wrap-up of a course. Tom articulated:

...it's just having enough people there all the time is what I would say... now we look at our e-mail late at night sometimes so who's going to be there at the other end if I'm in the middle of some big crisis and something is crashed or technology isn't perfect that's the other side of it.

Tom, like a few other faculty members, mentioned that a lot of activity on the course websites occurred late at night or in the wee hours of the morning. Also, faculty sometimes work on their course websites after regular hours and if there was a crisis timely help would save valuable time.

In response to providing onsite departmental technical support, 12 (66%) (12 (36%) strongly agreed and 10 (30%) agreed) users supported the assertion and 3 (30%) (7 (21%) disagreed and 3 (9%) strongly disagreed) were in disagreement. All 10 (100%) (6 (60%) agreed and 4 (40%) strongly agreed) non-users seemed be supportive of the idea. In response to providing onsite departmental administrative support 21 (63 %) (12 (36%) strongly agreed and 9 (27%) agreed) users were in agreement with the assertion and 9 (27%) (7 (21%) disagreed and 2 (6%) strongly disagreed) were in disagreement. 8 (80%) (6 (60%) agreed and 2 (20%) strongly agreed) non-users supported the idea while only 1 (10%) disagreed. Onsite departmental technical and administrative support seems to be strongly supported by a majority of faculty members. SP10 wrote "TA and departmental technical/admin

support would be great" in support again of TAs but highlighting that departmental technical and administrative support would also be appreciated as assistance.

Help-desk is an integral part of technical support; however, technical support encompasses much more. It could be for instance assistance provided to faculty in the form of troubleshooting or even scaffolding faculty with the use of CMS tools. SP25, from Faculty A, wrote "all support activities are not to be discouraged - but I feel that Faculty A has a pretty good - although overworked Instructional Support section which provides good and reliable support" Indicating that the Instructional Support Unit (ISU) in their school has a positive influence on users. Bob, also from Faculty A, when asked, about how faculty should be supported declared: "I think provide the resources like the Instructional Support Center" He also added: "Yes very helpful that's very useful and ...[the technical support person] is running a lot of... I was quite amazed it is about a hundred courses ... a large number of courses are using WebCT in Faculty A now" suggesting that the center provides useful support and caters to a large number of courses confirming SP25's comment that the centre might have a substantial workload and therefore be overloaded. Faculty seemed to be generally satisfied with the kind of support that departmental units provide. However, SP1 from Faculty K, who disagreed with the assertions on the departmental support, wrote: "the burden of providing support for CMS should not be downloaded to the department level, but provided by the University in general" suggesting that a more centralised support structure is preferable. In talking to the administrators or change facilitators, from units it seemed that the support they provide is powerful and comprehensive. Darcy, an administrator, articulated:

We do a lot of that work for them; we try not to push them to the help desk. None of our students go to the help desk; we help them with all of that stuff. Unless they're having problems with the interchange¹⁹ or their own e-mail or CWL²⁰ really, they come to us with any technical support problems with WebCT.

Suggesting that the support unit in Darcy's faculty takes care of all CMS related problems of not only their faculty members but also their students. Dave, an administrator, in description of the support his unit provides explained:

when I do my training and my orientations to CMS this is the one thing I say that the center does is that in a timely way we can rescue you and make you look good because the last thing we want to do is have them [faculty members] undertake these kind of changes and find themselves unsupported at a critical moment and I think... so the most important thing I think the center does is stand by that faculty member and make sure that everything goes well.

This suggests that the facilitators and administrators such as Dave assure the faculty member of reliable and constant support in their use of CMS. Joe like Dave instills in faculty confidence of the support he provides, he articulated:

What I say to all faculty members that I deal with is that...if I've shown them how to do something ... given them some training or they've been to a workshop, I say, this isn't it, I don't cut you loose now you can come back to me, send me an e-mail, call me or drop into my office and you know we'll get over it and stuff... and I think that's very key. I haven't talked to the faculty themselves but I'll be very surprised if they did not find that was key, the feeling that if something goes awry they have people to turn to...

From Joe's comment it is clear that he perceives that faculty members value the kind of support his unit provides. From earlier comments of SP10, from Faculty K, SP25 and Bob from Faculty A it is clear that faculty indeed value this support. The survey results also reveal that faculty feel that departmental technical support is salient.

The level of support at the departmental level as described in the preceding paragraphs however does not seem to be available at all schools and faculties.

¹⁹ The email server at UBC

²⁰ CWL or Campus Wide Login is an account ID that students and faculty are that enables them access to a number of different online systems including email.

John, from Faculty C, for instance, remarked: "we don't have the kind of support that most places have so my understanding is that Faculty B for instance there are staff members who have developed tools to help you manage WebCT". This irregular level of support means that some faculty members in some schools are frustrated users when compared to those in other departments that have more substantial support. A reiteration of Dave's comments, already discussed before in a similar context, is warranted here:

I think the hardest thing is that the variety of support between faculties is quite strange and one of the troubles with that is that you know if the instructional support units had a little bit more consistency across units I think it would make it easier at institutional level to have the right message whereas some people you know they're so different that I think at institutional level it makes it quite difficult to have that service that addressesFaculty G who doesn't even have the support person to Faculty H will do everything for you and everything in between...

Dave suggests that the inconsistency of support across different faculties is difficult as it fails to address effective support of all faculty members across the institution.

Related to the discussion of departmental and institutional support is the issue of the infrastructure of CMS. This includes the technology and the human resource components of the system. There has been a growth in the number of users and the institution now is at a point where there appears to be a dire need to transition to a newer version of WebCT. Joe articulated:

this technology was developed in 96 this technology is pretty much the same as it's been in 96 and this is our increase in usage which they do gather the statistics of ..this system will eventually break down it doesn't matter how many processors we throw at it... it doesn't matter how much you know... how fast a network we have or whatever. The way the product is designed it's going to fall apart soon so we need to move to something else.

Joe's comment, which is a viewpoint he believes is also shared by other colleagues in his position, spells the urgent need to migrate to a course management system

that would support the growth in number of users and courses. There also appears to be a need to strengthen other parts of the support system, Darcy declared:

the system right now is not sustainable because we have so many users that are interested in and I don't mean the technical system... that is a piece of it but the support system right now is not up to par...or enough to support all those faculty that are increasing their interest in getting stuff online. Right now we just don't have enough people to support all of those people. I really see that there's a gap of service in Faculty F... we have two people solely supporting the undergrad program but the rest of the Faculty F doesn't have anybody and there really needs to be somebody that is supporting them as well.

With both the technical and human resource aspects of the system needing a boost the pressure it appears is to arrive at decisions that will aid in moving the institution seamlessly to the next level in the use of CMS. These decisions to move to a new version of CMS, to allocate resources and provide support structures for faculty have to be made at the institutional level and needs to come from higher management. John opined "actually the administration at a high level just needs to make a decision and say this is what we're using and because we're using that, these are the resources we are going to put ...that will make it successful". John's comment was not referring to the decision to move to a newer version of CMS but does convey the view that there is need for more resources and support structures to assist faculty and those decisions need to be made. On the topic of resources and their influence on uptake, John articulated "typically the administration doesn't support this... they say they do but they don't" thus suggesting that the lack of resources to support the use of WebCT is attributed to the lack of support at the institutional level. Joe shared John's view and had strong views on the lack of support at the institutional level, he concurred:

I think that the administration gives lip service to it in that it talks about how wonderful it would be to have eLearning this and eLearning that and they don't provide any resources or very few and we have to... we the campus community, the institutional support community ... have to literally beg and plead and steal money essentially is what it comes down to... to just support different... like machines sometimes and stuff like that...to be able to do the things that we want to do that we know will increase the use or increase the effectiveness.

From talking to John and Joe it appeared that they perceived lack of support at the institutional level where the "decisions" are made while they felt that the institution certainly wanted to present the image of being at the vanguard of eLearning. Joe declared:

I don't think we are in a lot of ways a world class institution when it comes to eLearning I think we sound like one but the reality of the situation is that there needs to be more recognition that this as an enterprise class system and that you know there are 20,000 unique students using it ...you know daily and weekly what ever and stuff like that...if you're serious about it you have to show us the money.

Again, John, a faculty member, also shared a similar view "I think this campus in particular wants to be seen as being at the leading edge of using technology so there's a push to adopt something ...WebCT seems to be the current choice"

Apart from administrative and technical support which he believes exists to an extent, the kind of support which John is interested in is that of content creation. He remarked "there is effectively no real support for content creation". Connected to content creation is also the need for content that is instructionally effective. Darcy, an administrator, remarked:

I have to every year fight for us to keep my instructional designer because the administration is like why... why do we need this person? We have technical people and we have ... educators why do we need somebody who can talk to both groups we'll just talk to each other and cut off the middle man, so I think that that's one area that really needs to be expanded.

Decision makers, according to Darcy, did not see the value in what instructional designers could contribute to online content and courses. Administrators such as Darcy, who work in close proximity with faculty members, are aware of their needs and feel that instructional designers provide valuable input in the creation of online courses. Jack for instance, had a very specific kind of support requirement that might need assistance from both an instructional designer and a WebCT expert. He expressed in clear terms what kind of support would appeal to his needs.

if there was some way of tailoring some of the things that are available to WebCT to a specific kind of function then spend some time on that particular thing both in developing some but also in training someone like me so that I could then maintain it and add new things to do that sort of shelf.. I would love it, I would take advantage of that immediately but that's what I would need...something more specialized.

Jack's requirement is specific content-related items that he would like to incorporate in his courses. He articulated with examples:

We're are not talking about generic problems at all we're talking about problems with representing say International Phonetic Alphabet, tailoring it to a particular language's data set looking at ways of controlling the types of responses someone can have to a particular type of problem solving situation and so on.

To incorporate these discipline-specific items, Jack would primarily need the help of someone who is technically well-versed with the tool. However, an instructional designer would also provide valuable input. Undoubtedly, this type of assistance would need focused attention from the support staff. Jack commented:

I guess the ideal thing for me to really take advantage of some of these possibilities would be someone who can spend an intensive period of time with me. Some finite period of time and I don't know exactly how long that would take because I don't know how difficult the problems are and then once that's happened to have preferably the same person or otherwise someone similar who is ... who I can touch base with.

Jack felt that he needed someone to work in close proximity with him over a prolonged period of time. He mentioned this kind of help would probably be rendered by someone who had software programming skills and advanced knowledge of the features of the tool. Someone who he could have access to even after the course was developed. Jack's needs suggest that he is looking for individualised support. Faculty, during interviews mentioned that they had specific issues they needed help with and this was not something they could acquire at a workshop or training session. It appears that the type of support that Jack and the others need can be best achieved by the instructional support units at the faculty or department level. This appears to be a logical way of providing personalised support.

With the different issues that abound the support of course management system users at all levels, what are their implications on the future of uptake and use of CMS? Administrators say they are positive about the future, Darcy expressed optimistically "I have faith that although academic institutions are slow to adopt I feel like we'll get there and we'll implement the appropriate system that answers the broader user needs of the entire faculty". Dave was unable to comment from an institutional perspective due to the decentralised nature of UBC in the context of CMS. He declared "There could be some really interesting uses of CMS beyond courses at the program level...rather than the course level which I think will offer some interesting things in the future" alluding to possible enhancements if the institution migrated to the "vista" version of WebCT. Joe, like Dave felt that the migration to the new version will result in an increase in uptake and enhancement in resources to support faculty use of CMS. He opined:

I think if we go to vista it will hopefully improve the uptake and the adoption of CMS perhaps just because the university like I said the administration will have to commit more resources and will begin to take it a little bit more seriously and the lip service will transform into perhaps resources as well.

Joe also felt that the ISUs that provide faculty support as a decentralised unit should stay as it renders a personalised service to faculty that a more centralised unit would fail to deliver. He also was optimistic about the future:

Where do I see it going? Well I see... I do seeing it going in a relatively good direction... we have the Office of Learning Technology (OLT) now which is great because it provides the collaboration piece to the decentralisation that we did not have. Before we just had decentralisation and we had no collaboration like no official collaborative unit and that's what the OLT has sort of provided, a bit of coordination between the various different decentralized sort of responsibilities.

The administrators appear to be positive about moving forward with the new version and feel it would benefit the faculty in terms of support and use. They also believe there is a possibility of an increase in uptake after the new course management system is in place. It should be noted that interview questions were not directed towards finding out details about the course management tool. The comments made by administrators were purely voluntary and in response to the questions of support, uptake and the future of uptake at UBC. Discussions surrounding the viability of a newer version of the course management tool are beyond the scope of this study. Further studies are recommended to examine how uptake, use and support of CMS would be affected with an updated or newer version of the course management tool.

4.8.3. Summary

In summary, faculty believe that they could be supported by providing ongoing workshops that address specific issues and needs. These workshops

should be strategically scheduled to enable more faculty members to attend. Faculty also strongly support being given adequate release time to develop and train.

Showcasing faculty work is a powerful way of supporting users of CMS. These are opportunities for faculty to see how their peers are using the tool and learn effective ways to expand their use. Faculty support the concept of having a designated peer-expert in the department who they can turn to for help. They are however, less supportive of a peer-tutoring and mentoring system. The concern about having faculty involved in such activities is the potential to increase workload of an already busy faculty member.

Faculty overwhelmingly backed the concept of support provided by funding for TAs to assist in course set-up and delivery. Technical support and equipment also play an important role in assisting faculty in the use of CMS. Having up-to-date equipment is helpful. However, access to timely help-desk support is highly valued.

Onsite departmental technical and administrative support is an asset that faculty members find useful. Technical support that is offered by instructional units at the department, faculty or school level seems to provide invaluable assistance in developing and running courses. This decentralised approach of having instructional support units at a school or department level appears to be a good model in order to cater to faculty needs. Some faculty need individualised attention which can be provided by such units. There are a few issues that are affecting the support system. One is the inconsistency of such support across different schools in the institution. Also some faculty and administrators perceive a lack of support from higher

management. These issues need to be studied in greater detail and addressed in order to strengthen and unify the existing support network.

Chapter 5 : Conclusions and Implications

This study was designed to uncover factors that influence faculty uptake and use of CMS. The study was guided by research questions that were intended to also explore reasons for non-adoption, examine ways in which faculty can be encouraged into expanding use and investigate different means by which faculty can be supported in their use of CMS. This chapter first presents an overview of the main results of the study, then lists a few recommendations as a result of the findings and concludes by discussing limitations of the study.

In all, 43 faculty members from professorial ranks at UBC were the principal informants. Three administrators, who are primarily responsible for WebCT support, were also included as participants. The study was limited to faculty from the professorial ranks, in order to study how such faculty, who are mainly researchers and hold positions that commit them on a longer term basis to the advancement of teaching and learning in the institution, view, adopt and use learning technologies such as CMS.

Both users and non-users were first surveyed and a few volunteers subsequently interviewed. The administrators were only interviewed.

5.1. Main Findings and Recommendations

The principal factors that influence faculty uptake and use of CMS at UBC seem to be, first, resources or mainly time available to undertake teaching with course management system tools and second, the time involved in using CMS in course preparation and delivery. These factors appear to be barriers in uptake. Students and their interests are the next most influential factor. These findings are

not really unique and should not come as a complete surprise. Chizmar & Williams (2004) found that a majority (84%) of faculty members at the Illinois State University, a Carnegie-classified intensive doctoral/research university, felt that lack of time was the most critical barrier in experimenting with technology (p.24).

Time is related to faculty workload and faculty face a lack of time available to invest in learning and applying such instructional tools, especially when time devoted to CMS receives little or no recognition. WebCT does provide faculty with assistance in some areas of course delivery and also its use, especially in large classes, does result in saving time. However, if the choice is made to use WebCT, for instance, then it generally involves spending large amounts of time in navigating through the system, setting up the content and administering the course. This is valuable time that comes probably at the cost of other projects. The time involved in setting-up and administering the course, as expressed by faculty, is related mainly to features of the tool. A study to see what features are bottlenecks to faculty and how these reportedly circuitous routines can be simplified would be valuable in alleviating faculty frustration. It appears that such studies are currently being carried out in various faculties across UBC. Administrators mentioned during interviews that there is also a plan to move to a newer version of WebCT, namely "Vista", which might, to an extent, result in reducing faculty woes. This new version is expected to be equipped with up-to-date features which assumedly will be more user-friendly. The move to the newer version is also expected to mandate replacement of the current moribund servers thereby reducing possibility of system downtimes and outages. These are however speculations that only results of studies, like those suggested

earlier, will be able to confirm. Such studies therefore might provide valuable input that is required in this transition. Faculty uptake and use might probably prove to be more critical to UBC now than ever before as the newer enterprise level of WebCT involves considerable fiscal investments and allocation of resources. Therefore, how time spent by faculty on CMS could be recognised and compensated is an issue that certainly merits further study.

Students' interests or the drive to provide students with a better learning experience and offer them ease of access to course materials, seem to motivate faculty into adopting CMS. On the other hand, students' requests also appear to pressure faculty into using these instructional tools. Students are an important component of eLearning and their attitudes and expectations needs to be studied and conveyed to faculty. The Office of Learning Technology (OLT) is currently engaged in studying students' views on CMS and will therefore have valuable information that will complement findings of this study.

The other important factors that influence uptake are technical support, technology related factors, pedagogical implications and development and training. Personal initiative as a factor has a reasonable degree of influence on uptake. Departmental support in the form of support from colleagues, heads and deans also has a moderate influence. IP & copyright laws, and rewards and incentives seem to have a very modest influence on uptake.

Faculty also believe a colleague's decision to adopt or not adopt CMS has a considerable affect on uptake and use of CMS in interesting ways. Faculty sometimes inherit courses from colleagues, feel pressured by another's adoption

and might also feel discouraged into adopting because of a colleague's decision to not adopt. This factor, probably affected by other factors such as departmental support, prevalent policies in the department and technical support, is unique. Studying how faculty view adoption by colleagues is an area worth pursuing.

It should be remembered that the findings of this study reflect only faculty from the professorial ranks. There are instructors, lecturers and other teaching staff at UBC, who also use CMS. A similar study, using possibly the identical design and instruments, would be worthwhile in enhancing knowledge in uptake and use of CMS at the institution level. It would help fill holes that this study leaves as a result of aiming to study only a specific group of users. This study also did not look at gender of the participants. A study that looks at gender of faculty members and the issues of uptake might also be interesting.

Faculty perceptions and views influence the adoption and use of CMS considerably. Users, for instance, believe that CMS has not helped in reducing their workload. Views such as this might prevent faculty from expanding use of the course management tool. Such views also get transferred to non-users, often resulting in them harbouring disapproving perceptions of CMS. Most non-users basically do not seem to have much knowledge or opinions on CMS. However, they do believe CMS are time consuming and difficult to use. Administrators also report that non-users perceive these systems to be unstable or prone to frequent outages. Dave, an administrator rightly remarked "all that floats around in the hallways is everything that went wrong". Non-users' input is vital and therefore a detailed study of non-users' perceptions and views on technology and CMS would provide valuable

insights that will aid in building strategies to promote uptake rates. However, as experienced with this study, it is indeed a challenge to engage non-users in conversations about such technologies. Such a study might therefore warrant an alternative type of research approach.

Findings indicate that faculty perceptions might indeed be behind their reason not to adopt CMS. One of the reasons, most non-users asserted, that they do not use course management technologies is because of time required in preparation and set-up. Administrators also reported that their view that the technology is complex might also be another reason. This is in agreement with Cope & Ward (2002), who reported in their study, that teachers with “inappropriate” perceptions of learning technology failed to integrate technology in their classroom (p.72).

Other prominent reasons for not adopting are availability of time and workload. From their responses, faculty indicated that they lacked knowledge and awareness of CMS and how these tools could be applied to their courses and discipline. Moreover, a small number of faculty members did not even know that CMS exist. Administrators should channel more efforts into the area of raising the level of knowledge of CMS and demonstrating its use. This might dispel any undesirable perceptions while raising much-needed awareness. Some faculty still prefer using regular websites for courses in place of CMS and do not appear to be prepared to be proselytised into using CMS. A closer look at the reasons behind this preference might be useful in understanding their needs and possibly determining if those needs are met in a more efficient way by the newer versions of the course management system features. There might be several other reasons behind faculty

non-adoption, some probably more compelling than the ones revealed through this study. However, without having input from a larger number of non-users even speculating on those reasons is difficult. As mentioned before, further study with non-users is certainly desirable.

Encouraging users into increasing their use of CMS is important if the organisational mandate is to provide more students with unique and enriched learning experiences through eLearning. Faculty seem to be indeed dedicated to providing students with better learning experiences and maintain they would increase use of CMS if students found it useful in their learning experience. They also believe they would increase use if students were provided with better technical support. As discussed in preceding paragraphs, an institution-wide study on students' experiences of using CMS might have already been carried out. If not, such a study will certainly be useful. If a study has indeed been carried out the results should be made available to faculty members. Faculty, yet again, believe that reduction in time spent on developing and administering courses through CMS would strongly motivate them to expand use. They also feel that increasing their expertise in CMS would drive them to increase use. This might be achieved by product training sessions, however, some faculty believe that specific training and development initiatives, catering to their disciplines would need to be in place in order to provide that kind of expertise.

Following the discussion and results of this study, a summary would be best captured in the form of a few suggestions or recommendations that are essentially

points of convergence of the different aspects and issues that surround the uptake and use of CMS in this study:

1) Maintain the model of having decentralised Instructional Support Units (ISUs) and strengthen the units with added resources, particularly human resources, which would strengthen existing support structures that provide faculty with valuable assistance. Faculty members have strongly expressed their appreciation of the support received from such units. Additional resources might aid in providing faculty with a more individualised support that caters to their specific needs. Support, that some claim, is currently lacking. Efforts should be also directed into eliminating the inconsistency of support across different faculties. Administrators think that a central body such as the OLT provides the necessary glue between the units.

2) Provide funding for additional support in the form of TAs or adjunct support staff that could help in course set-up and delivery. This might be a plan that merits serious consideration. Faculty overwhelmingly backed this concept of support and also indicated it would not only motivate them to increase use but would contribute in increasing uptake rates. The details of how this scheme might be implemented given the current state-of-affairs of TAs and adjunct staff at the institution might need to be considered through a study.

3) Showcase faculty projects, particularly from the same discipline, that have used CMS successfully in various situations. This might present other users with new

ideas and reassure non-users of the options available through use of such instructional technologies.

4) Create opportunities for faculty to come together in forums where they can exchange ideas on their use of CMS. This might be a function of the instructional support units. Faculty support the scheme of having designated peer-experts who can be approached for assistance. They are however less supportive of enlisting faculty as trainers and mentors hence user-groups where faculty could help each other might be a possible scheme.

5) Explore avenues to simplify use of the course management tool. Faculty believe this will result in considerable time saving thereby improving uptake. It will also motivate them to expand use.

6) Increase visibility and awareness of CMS among non-users. Presentations and demos are conventional ways of promoting use of CMS. These, according to faculty, are instrumental in increasing uptake. However, faculty, mainly non-users, believe administrators should make a convincing case of how adopting CMS would be pedagogically advantageous and serve the specific needs of a faculty member as well as contribute to enriching a student's learning experience. Also, concrete examples of application of the tools should also be part of such demos. Efforts should therefore be concentrated into making such kinds of information available through these presentations.

7) Maintain the level of technical support and improve access to it. Faculty believe increased accessibility to technical support would motivate them to increase use. Non-users believe effective and reliable technical support will prompt them to adopt CMS.

8) Explore possibilities by which time spent by faculty members in using CMS is recognised. Suggestions included providing release time for training, including time invested in course setup as well as delivery in instructors' workload computation and consideration of the time spent teaching with CMS during tenure and promotion.

5.2. Limitations of the Study

One of the limitations of the study, as commented earlier, is that it was restricted to studying responses of users and non-users of WebCT from only the professorial ranks in the institution. Other teaching staffs such as instructors and lecturers also form part of the organisation and their input would probably fill the gaps left by this study. The survey and interview instruments are however designed for all faculty types. This study therefore lends itself to replication with different set of participants i.e. other faculty types at UBC.

This study also uses UBC as a case for exploring the factors that influence faculty uptake and use of CMS. This should be borne in mind when making generalisations, as these responses might have commonalities with responses from faculty from other similar institutions in Canada and North America; however, they

are basically the reflection of the experience and views of a specific category of faculty at UBC.

The other limitation of the study is the number of respondents in the case of non-users. There were only 10 non-users of WebCT, who responded to the survey. Further, only one of those faculty members volunteered to be interviewed. Together, the number of non-user respondents is fairly low and this figure should be borne in mind when reading the results in the case of non-users. However, when added with the users, the total number of respondents is fairly large and rather representative of the different faculties and schools at the institution.

The scope of the study was limited to only exploring the factors that influence adoption of CMS. The experience and views of faculty about the features and functions of the course management tool i.e. WebCT was beyond the scope of this study. However, the information gathered from a study about the functional aspects of the tool might complement these findings.

The research tools used in a study also pose some restrictions. The primary research tool used was a survey that incorporated questions and statements that were a result of the review of literature and other relevant studies. Although there were sections that provided opportunities for open-ended responses, the survey might have introduced a controlled flow of information. Moreover, the responses were written and anonymous and could not be clarified. Some survey items also might introduce ambiguity. A lesson learned is to first build a survey and test it on a focus group before its final launch. In contrast, during semi-structured interviews, in my experience, it appeared that more information was volunteered. Therefore,

having more interviews than those planned might have helped enrich the information. This is another useful lesson learned.

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Appendix A: Consent Letter for Faculty Survey

THE UNIVERSITY OF BRITISH COLUMBIA



Department of Language and Literacy Education
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January 31, 2005

Research Study: Factors that Influence Faculty Uptake and Continued Use of Course Management Systems (CMS).

Dear UBC Faculty Member,

My name is Reginald D'Silva and I am a student in the Language and Literacy Education Department (LLED) in the Faculty of Education at UBC. I am currently doing my M.A. and as part of my thesis I am conducting a study to identify factors that influence faculty uptake and use of Course Management Systems (CMS). The principal investigator of this study is my advisor Dr. Kenneth Reeder. Course Management Systems, as you probably know, are a set of Web based tools that help an instructor in delivering online courses or supporting regular classroom courses. In UBC, the course management system used is WebCT. Therefore, for the purposes of this study I would like you to think of CMS as synonymous to WebCT.

CMS are increasingly becoming a part of higher education and several factors influence the decision for faculty to adopt and use these tools. This study seeks to identify these factors and in turn provide valuable information that will help administrators provide faculty with effective support in the use of CMS. The results of this study will provide UBC's e-Learning initiative, which is part of its overall organizational goals, with valuable input. This input will aid those involved in this initiative in making it more effective. Michelle Lamberson, the Director of the Office of Learning Technology at UBC and member of my supervisory committee has therefore taken a keen interest in this study. Whether you are a user or a non-user of WebCT your input is valuable to this study.

You have been randomly selected from a list of names of UBC faculty members to participate in an online survey. The link to the survey is provided at the end of this letter. The survey will take 15-20 minutes. Your participation is entirely voluntary. The responses and data from the survey is password protected and will remain confidential. Only my advisor and I will have access to this information. During the survey you will also be requested to indicate if you would like to participate in a ½ hour interview on similar topics. It is an opportunity for you to expand on the topics of the survey and provide detailed input. Participation in the interview is also entirely voluntary. Only those who have indicated that they consent to take part in the interview will be contacted. The interview will be held at your convenience at a location of your choice on the UBC campus. I will conduct the interviews and they are semi-structured by nature. The interviews will only be audio taped. Please note that you may refuse or withdraw from the study at any time without any jeopardy to your service or employment. Your participation will help the study immensely.

The survey is completely anonymous and your responses will remain confidential. Please remember not to identify yourself in any way in the survey. Also, you will not be identified in the document that will be published as a result of this study. The survey and interview data will be kept in a secure location in the Department of Language and Literacy Education. Only Dr. Ken Reeder and Reginald D'Silva will have access to the raw data.

If you have any concerns about your treatment or rights as a research subject, you may contact the Research Subject Information Line in the UBC Office of Research Services at 604-822-8598.

I appreciate your support and thank you for taking the time to participate in this study.

Yours sincerely,

Reginald D'Silva

Principal Investigator: Dr. Kenneth Reeder
Department of Language and Literacy Education
The University of British Columbia
Vancouver BC

Co-Investigator: Reginald D'Silva
Department of Language and Literacy Education
The University of British Columbia
Vancouver BC

Consent Form

Your signature below indicates that you have received a copy of this consent form for your own records and that you consent to participate in this study.

Participant Signature

Date

Printed Name of the Participant

I appreciate your support and thank you for taking the time to participate in this study.

Yours sincerely,

Reginald D'Silva

Principal Investigator: Dr. Kenneth Reeder
Department of Language and Literacy Education
The University of British Columbia
Vancouver BC

Co-Investigator: Reginald D'Silva
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The University of British Columbia
Vancouver BC

Consent Form

Your signature below indicates that you have received a copy of this consent form for your own records and that you consent to participate in this study.

Participant Signature	Date
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Printed Name of the Participant

Appendix D: Survey Questionnaire

Please note: This is a Microsoft word representation of the online survey. The text is exactly the same, however the presentation of the text and form elements such as checkboxes etc. are different from what appeared on the webpage.

Factors that influence Faculty Uptake and Continued Use of Course Management Systems

My name is Reginald D'Silva and I am a M.A. student in the Language and Literacy Education Department (LLED) in the Faculty of Education at UBC. This survey is part of my Master of Arts thesis study and is designed to identify factors that influence faculty adoption and use of Course Management Systems (CMS). The survey is anonymous and all responses will remain strictly confidential therefore please do not identify yourself in any way in the survey. Also, access to the responses and data is password protected and will be available only to my advisor and me.

For the purposes of this study I have used the term "CMS" as a generic term for online tools that enable course delivery through the medium of the Internet. WebCT is the course management system product that is used at UBC. Therefore, in the context of this survey, please consider WebCT to be synonymous to the term "course management system" or "CMS". These terms are used interchangeably.

Not all sections of the survey are to be filled out. Depending on whether you are a user or non-user of CMS you will be filling out different sections of the survey. Some sections, such as the first three for example, are common. Instructions are provided where required.

Whether you are a user or non-user of CMS (i.e. WebCT) your input will help this study immensely.

Section I: Demographic Information

1. Title: ☐ Professor
☐ Associate Professor
☐ Assistant Professor
☐ Instructor
☐ lecturer
☐ Other (please specify)

2. Status: ☐ Tenured
☐ Tenure Track
☐ Continuing (contract)
☐ Sessional
☐ Other (please specify)

3. Department:
(For e.g. LLED or Language and Literacy)

4. Associated School or Faculty:
(For e.g. Faculty of Education)

5. Please choose one of the following statements that would best describe you in terms of adopting new technologies:

- ☐ I am venturesome, like the challenge that new technologies offer and I am the first among my peers to try out new technologies.
- ☐ I am open to new technologies, I evaluate them judiciously and adopt them as they are made available.
- ☐ I am willing to adopt new technologies and usually deliberate before making a decision. I don't want to be the first nor the last to adopt.
- ☐ I am sceptical about new technologies and would like to first confirm there are no uncertainties before adopting them.
- ☐ I have traditional views, look at past experiences as a reference and am hesitant about adopting new technologies.

Section II: Your views on CMS

6. Your views on CMS

- a) Using CMS provides students easy access to course materials.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A
- b) Student-student collaboration is increased in using CMS.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A
- c) CMS are reliable as instructional tools.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A
- d) Using CMS would impede good teaching techniques.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A
- e) Tools available in CMS help in managing student information in courses.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A
- f) CMS are difficult to use.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

Section III: Ranking of Factors that Influence CMS Uptake

7. The following are some factors that are known to influence faculty in the adoption and use of CMS. For each factor please indicate to what degree (High, Medium or Low) you think this factor affects or would affect your uptake and use of CMS.

1) Personal Initiative (intellectual challenge, motivation to use technology)

☐ Low ☐ Medium ☐ High

2) Resources (time available to undertake online teaching, etc.)

☐ Low ☐ Medium ☐ High

3) Rewards and Incentives (Merit pay, stipend, salary increase)

☐ Low ☐ Medium ☐ High

4) Policies (consideration for tenure/promotion)

☐ Low ☐ Medium ☐ High

5) Intellectual property and copyright issues (ownership of content, fairness of use)

☐ Low ☐ Medium ☐ High

6) Time taken in preparing and delivering course (course set-up, course delivery)

☐ Low ☐ Medium ☐ High

7) Development and training (workshops, demos)

☐ Low ☐ Medium ☐ High

8) Technical Support (helpdesk, troubleshooting etc)

☐ Low ☐ Medium ☐ High

9) Technology related factors (complexity of product, inflexibility etc)

☐ Low ☐ Medium ☐ High

10) Pedagogical implications (quality of course, teaching methods)

☐ Low ☐ Medium ☐ High

11) Departmental support (encouragement of colleagues, head or dean's recommendation)

☐ Low ☐ Medium ☐ High

12) Students' Interests (increased access to courses, ease of access to course materials, course flexibility)

☐ Low ☐ Medium ☐ High

8. From the 12 factors in the question above, Please identify any THREE that you think are the top three factors that impacted or would impact on your decision to adopt CMS in your teaching. Please add the number of the factors in the space provided here. (For example, if you think factors 3, 5 and 6 are your top three factors in that order then only type 3, 5, 6).

9. If you would like to add any comments or any additional details relevant to this section please do so in this space.

Section IV: CMS Usage Information

10. Do you use or have you used a Course Management System?

☐ Yes

☐ No

If No, please proceed to Section V If yes; continue with next question in this section

11. How long have you been using CMS?

☐ Less than a year

☐ 1 to 2 years

☐ 2 to five years

☐ Five years or more

12. How would you rate your expertise or skill in using a course management system?

☐ Beginner ☐ Novice ☐ Intermediate ☐ Expert

13. Prior to using the course management system you currently use or you last used, have you used any other CMS?

☐ Blackboard ☐ eCollege

☐ Others (please specify)

14. Have you built or maintained your own course website?

☐ Yes

☐ No

15. If you chose "YES" to the question above, please provide details

You use CMS in: (please check all that apply)

☐ Regular face-to-face classroom courses enhanced with some online content

- ☐ "Hybrid" courses where some classes are conducted online and some classes are in the classroom.
- ☐ Primarily online courses with very minimal offline support.
- ☐ Fully online courses
- ☐ For courses that do not fit any of the above categories or if you have used CMS tools for any other functions (please provide details below)

17. If you chose "Other" in the question above please enter details here

Please proceed to section VII

Section V

18. I do not use CMS in my courses because

a) Using a course management tool like WebCT for my course will take a lot of time in course preparation and set-up.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

b) Using a course management tool like WebCT for my course will take a lot of time in course delivery.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

c) I do not have enough time to learn WebCT and use it for my course.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

d) CMS are just not suitable to the way I teach my courses.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

e) CMS will not help reduce my workload

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

f) I tried it once and found it difficult to use.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

g) Using CMS would compromise the quality of instruction of my course.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

h) I find it easier to use the department website for online course materials.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

i) The tools currently available in CMS do not suit my needs.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

j) It does not suit my discipline.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

k) I did not know it existed.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

l) I do not have adequate knowledge and training to use the tools.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

19. Please add your comments on any of the questions above and also fill in any additional details relevant to this section in this space if needed.

Section VI

20. I would consider using CMS in my courses if:

a) The technical support available is effective.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

b) The technical support available is reliable.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

c) Time spent for course development and online teaching was considered as part of my course workload.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

d) I was convinced that the course materials that I use online were protected by copyright laws.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

e) I was assured that the course materials I develop for online teaching using CMS were governed by intellectual property rights.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

f) The time and effort invested into learning and using these tools were given consideration in tenure and promotion.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

g) Merit pay and salary increases were offered as incentives to integrate CMS into my courses.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

h) My students had access to effective and reliable technical support.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

i) I had student requests to use CMS.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

j) Sufficient training was provided.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

k) It helped enhance my teaching.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

21. Please add your comments on any of the questions above and also fill in any additional details relevant to this section in this space if needed.

Please proceed to section X

Section VII:

Your decision to start using CMS was influenced by: (please check one or two of the chief reasons)

☐ Peer recommendation

☐ Students' requests

☐ Department head's or dean's recommendation

☐ Personal challenge to apply technology

☐ Opportunity to apply new teaching techniques

☐ Ease in conducting online discussions

☐ Class management (ease in managing student grades, assignment submissions etc.)

☐ Rewards and Incentives such as merit pay

☐ Other (please specify)

Section VIII:

23. Your experience in using CMS

a) CMS has helped in reducing my workload.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

b) Students receive a better learning experience in courses using CMS.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

c) CMS tools are helpful in enhancing classroom instruction.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

d) Time required in setting up a course decreased over time

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

e) Tools available in CMS make it easy to deliver a course online.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

24. Please add your comments on any of the questions above and also fill in any additional details relevant to this section in this space.

Section IX

25. I would use CMS in more of my courses if:

a) Technical support was more accessible.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

b) Technical support was reliable.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

c) The time spent in expanding use of CMS would be considered in my workload computation.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

d) The time and effort put into CMS course delivery was considered for tenure or promotion.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

e) Students were provided with better technical support.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

f) I was convinced that the course materials that I use online were protected by copyright laws.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

g) I was assured that the course materials I develop for online teaching using CMS were governed by intellectual property rights.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

h) Students found it useful in their learning experience.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

i) I received more training on the product.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

j) The coordination and administration of a course using CMS was made easier at the institutional or departmental level.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

k) The time spent on developing courses reduced.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

l) The time spent on administering a course reduced.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

m) I had a TA to set up a course and load course material.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

n) Rewards and incentives were provided for increased use of CMS.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

o) Tools in CMS were made less complicated and easier to use.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

p) My level of expertise in using CMS increased.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

26. Please add your comments on any of the questions above and also fill in any additional details relevant to this section in this space.

Section X

27. This section is intended to gather input on ways in which the administration can provide assistance to faculty members in their use of CMS. If you are a non-user, please imagine you were using an instructional technology such as CMS i.e. WebCT and fill in this section.

a) Make ongoing training workshops available.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

b) Provide a designated peer-expert in my department who I can turn to when I have difficulty.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

c) Provide extended access to technical support (help-desk) so that I can get timely help when I encounter a problem.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

d) Provide onsite departmental technical support.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

e) Provide onsite departmental administrative support.
☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

f) Showcase faculty use of CMS by holding regular peer demonstrations.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

g) Develop training workshops that target specific needs of faculty members.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

h) Provide funding for TAs to support course set-up.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

i) Provide funding for TAs to support course delivery.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

j) Offer faculty members adequate release time to develop and train.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

k) Equip faculty members with up-to-date computer systems.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

l) Develop a peer-tutoring support system among faculty members.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

m) Enlist experienced faculty members as trainers and mentors.

☐ strongly disagree ☐ disagree ☐ agree ☐ strongly agree ☐ N/A

28. Please add your comments on any of the questions above and also fill in any additional details relevant to this section in this space if needed.

Section XI: Increasing Uptake of CMS

29. How could more faculty members be encouraged to use CMS? As a user or a non-user of CMS you have valuable input on this topic and therefore in this section we would like to ask you to include your comments/suggestions on how UBC can encourage more faculty members to adopt CMS

30. I appreciate your taking the time to complete this survey. I would like to conduct interviews on the topics covered in this survey. The interview will be semi-structured in nature and will take approximately 30 minutes. It is an opportunity to provide a detailed response on some of the topics of this

survey. Your participation in the interview is voluntary. If you would like to participate in the interview please indicate in the space provided below. Only those who have volunteered to participate in the interview will be contacted by email.

☐ Yes

☐ No

31. If you indicated "yes" for the interview please enter your email address here

Click on the "Done" button below to complete and submit the survey. Please note that clicking on "Done" will close the browser window. Submitting the survey is also an indication of your consent to participate in the survey. Thank you again for participating in this survey.

Done >>

Appendix E: Faculty Interview

Factors that influence Faculty Uptake and Continued Use of Course Management Systems

Instructions: The interview questions are designed to include both users and non-users of CMS therefore at any time feel free to pass on a question or sub-question that does not apply to you.

1. Do you use CMS in any courses you teach?

If YES

a) How do you use them for example as a “hybrid” environment, purely online or to enhance classroom content?

b) What do you think of CMS and how has it affected your teaching?

If NO

c) Please could you describe what you know (perceive) about CMS?

d) Do you think a course management system might be able to help you in your courses? If yes how, if no why not?

e) Why have you not considered using CMS in your courses?

2. If you are a user or have used CMS could you list reasons why you decided to use CMS in your teaching?

3. I will read out one-by-one a set of factors that have typically played a role in the adoption and use of CMS, for each factor please offer brief comments on how it has influenced or would influence your decision to adopt and use the course management software?

Personal Initiative (intellectual challenge, motivation to use technology)

Resources (time available to undertake online teaching, workload)

Rewards and Incentives (Merit pay, stipend, salary increase)

Policies (consideration for tenure/promotion)

Intellectual property and copyright issues (ownership of content, fairness of use)

Time taken in preparing and delivering course (course set-up, course delivery)

Development and training (workshops, demos)

Technical Support (Helpdesk, troubleshooting etc)

Technology related factors (complexity of product, inflexibility etc)

Pedagogical implications (quality of course, teaching methods)

Departmental support (encouragement of colleagues, head or dean's recommendation)

Students' Interests (increased access to courses, ease of access to course materials, course flexibility)

4. Would you like to add any factors that might have been left out from the list we just read?

5. What in your experience or in your opinion is the most important factor that affects faculty adoption and use of CMS?

6. You are a user of CMS, how do you suggest you could be encouraged to expand use of CMS in your teaching? (I.e. in more courses or in more sections etc)

7. (imagine you are a user and.: in case of non-user) if you were asked to suggest ways in which UBC can increase the campus-wide rates of adoption of CMS, what would your two most prominent suggestions be and why?

8. (imagine you are a user and.: in case of non-user) if you were asked to suggest ways by which UBC can support faculty members who use CMS? What would your two most prominent suggestions be and why?

9. Do you have any further comments to add on this topic?

Appendix F: Administrator Interview

Factors that influence Faculty Uptake and Continued Use of Course Management Systems

1. What is your experience are the perceptions of faculty members at UBC of CMS?

2. I will read out one-by-one a set of factors that have typically played a role in the adoption and use of CMS, for each factor please offer comments on how important each factor is or how it affects the adoption and use of CMS in the context of UBC faculty?

Personal Initiative (intellectual challenge, motivation to use technology)

Resources (time available to undertake online teaching, workload)

Rewards and Incentives (Merit pay, stipend, salary increase)

Policies (consideration for tenure/promotion)

Intellectual property and copyright issues (ownership of content, fairness of use)

Time taken in preparing and delivering course (course set-up, course delivery)

Development and training (workshops, demos)

Technical Support (Helpdesk, troubleshooting etc)

Technology related factors (complexity of product, inflexibility etc)

Pedagogical implications (quality of course, teaching methods)

Departmental support (encouragement of colleagues, head or dean's recommendation)

Students' Interests (increased access to courses, ease of access to course materials, course flexibility)

3. Would you like to add any factors that might have been left out from the list we just read?

4.

a) What in your experience is the most important factor that affects faculty adoption and use of CMS generally in higher education institutions in Canada/North America?

b) Are those the same factors that affect faculty at UBC?

5. The infrastructure for CMS is already available at UBC, yet not all faculty members have chosen to adopt CMS, please could you give us some reasons why?

6. How can users of CMS be encouraged into expanding their use of CMS?

7.

a) Do you believe the faculty support (technical and institutional) for CMS is adequate in UBC?

b) Is it effective?

c) Is there any additional support that could be provided?

8. How could more faculty members at UBC be convinced into adopting and using CMS?

9. What does the future hold for UBC in terms of faculty uptake and use of CMS?

10. Do you have any further comments/ suggestions/concerns to add on this topic?