Factors Affecting Faculty Members' Decision to Teach or Not to Teach Online in Higher Education

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Abstract

This study identified the important factors influencing faculty members' decision to use or not to use any form of online course management applications (OCMA) in higher education. A polynomial logistic analysis led to a statistical-artifact hypothesis: factors did exist that correlated faculty members' technology adoption decisions. Motivational factors such as Self-efficacy or Philosophy had a strong impact on the probability of using OCMA relative to the reference category of the non-use of OCMA; Teaching experience or Peer-pressure or Class-innovation had no impact; Time was shown not to be a factor. Additionally, this study suggested specific ways in which administrators might play an important role in supporting faculty members' decisions toward online education. This study was guided by four research questions. It examined six hypothesized independent factors. A random sample of four hundred teaching faculty members in the University of Maine was invited to participate via print surveys.

Introduction

The rapid growth of the Internet in the past decade has led to an explosion of web-based instruction in American higher education. It is as basic to teaching and learning "as libraries, books, and pencils, and as essential to communication as telephones" (Brown, Burg, & Dominick, 1998, p.1). There is also rapid growth in the number of higher educational institutions that list online courses and full programs. Although many universities still offer primarily traditional courses and programs, there are design strategies and essential procedures used to integrate general technology into traditional curriculum (Carroll-Barefield, Smith, & Campbell, 2005). Today, many faculty members are aware of the value and effectiveness of online education (Elaine & Seaman, 2006). There is the potential to convert some traditional courses and programs to an online format in order to reach students and working adults who cannot come to the regular classrooms or who prefer online learning (Carroll-Barefield, et. al., 2005). With training and support, many faculty members use web-oriented technology in their teaching (Cavanaugh, 2005). However, some faculty members are not using any technologies in their teaching (Maguire, 2006).

Purpose of the Study

With the growth of OCMA, the demands of online learning, and the growth of online courses and programs, there is a need to understand faculty members' attitudes about online education. If providing resources and training does not influence faculty members to use OCMA, an investigation on how they make their decisions to use or not to use OCMA would be beneficial to an administration. Online policies and procedures are not only used to improve student achievement from online learning but are also used to motivate and support faculty about online teaching. If administrators misunderstand the faculty perception of motivation and barriers, they will not be able to offer appropriate resources or policies to spread the power of educational technology.

To explore the motivating factors and inhibiting factors affecting faculty members who use or do not use OCMA, this study learned more about how the relationship between these factors and faculty online perspectives develops. Moreover, this research examined the effects among these factors and the potential causality of each factor on faculty members' decision to teach online by examining a posited analytical discrete model. The four research questions driving this study were as follows:

- What perceptions do faculty members have about teaching online using OCMA?
- What is the level of faculty use of OCMA as an enhancement to online instruction or distance instruction?
- What are the primary factors that influence the faculty members' decision process in the use of OCMA?
- What relationships can be found among these factors?

Literature Review

Faculty members' adoption of *online course management applications (OCMA)* in higher education today presents a challenge to their lives because they believe it means more time and effort (Cavanaugh, 2005; Jacobsen, 2000). OCMA includes the use of *formal* and *informal online course management systems* to organize and support student learning online with dynamic flexible communication and interaction. Formal course management systems refer to online applications such as FirstClass folders, BlackBoard, WebCT, Moodle, CourseCompass, etc. Informal course management systems refer to user-defined course web pages (i.e., personal web pages) or learning and teaching using email systems (i.e., FirstClass, Outlook), class specific listservs (i.e., class or group), instant messages (i.e., Instant Message, iChat), blogs, and library systems (i.e., e-reserves). OCMA can be used to distribute course content (i.e., posting of syllabus or posting assignments), and to create problem solving opportunities with faculty and students (i.e., online discussions or conversations).

Theoretical frameworks

Traditional forms of distance education in higher education have existed since the middle of the 1880s. Leading scholars in this field attempted to define the environment, individual roles, and the patterns of behaviors of online education. A theory is needed to describe and define the field, and to identify the various forms of online teaching and learning (Simonson, et. al., 2006). Literature on traditional teaching and learning theories often refers to basic pedagogical theories such as behaviorism, cognitivism, and constructivism. Online education theories are often hybridizations of traditional pedagogy and theoretical perspectives online and adult education. In the past decades, online teaching and learning has increasingly been used by adult learners and students in postsecondary education. Now,

the literature on online education theories relevantly refers to *andragogy* or adult learning in higher education in the United States.

Construction and cooperation

Doolittle's theory (1999) of *Constructivism and Cooperative Learning* presented a core of constructive pedagogy. He discussed a list of eight principles to show that learners actively construct their own knowledge and meaning from their experiences in the process of knowledge-creation through teaching and learning. Then he concluded that online education has the potential to provide the resources needed for students to become self-regulatory and allows them to engage in an actualized constructive educational environment to inform their future learning experiences. The knowledge created will vary based on how learning takes place in the environment, content and skills understood within the framework of the learner's previous knowledge, students' autonomy, and how communication takes place. McConnell's *Cooperative Learning* (1994) presented the idea of computer supported cooperative learning. Cooperative learning itself is not a new theory but McConnell introduced students to a way of thinking about online learning and how to effectively conduct learning processes in an online environment. In the term of "cooperative learning", McConnell emphasized the importance of thinking about the learning process as part of a social process, planning cooperative learning in working with others to achieve individual learning goals, and formalizing online instruction as a construction of interpersonal interaction in cognitive developments.

The adoption rate

Faculty adoption of technology (referred to as "an innovation") takes time and requires faculty to develop new skills and understandings through social communication channels. According to Rogers (1995), getting technological innovations adopted requires participants to create and share information with each other through activities and practices in order to achieve certain effects in a social system. Rogers provided a theory of "the diffusion of innovations" to analyze patterns of faculty adoption of technology. He defined "an innovation as an idea, practice or object that is perceived as new by the individual, and "diffusion" as the process by which an innovation makes its way through a social system" (p.12).

Rogers found that the innovation rate of adoption whether relatively slow or rapid is determined by many factors such as the individuals' perceptions of and experiences with the advantages of the innovations, the difficulties and limitations for potential uses, and the need for social understanding. Today, with training and support, the number of faculty members who use web-oriented technology in their teaching is increasing (Cavanaugh, 2005). However, some faculty members do not use technology in their teaching (Maguire, 2006). Even with the growth of online education offerings and enrollments, many faculty members are still hesitant or simply avoid teaching online (Maguire, 2006). Because the potential success and effectiveness of online education courses and programs depends on a strong faculty commitment (Husmann & Miller, 2001), I am interested in exploring faculty members' decision process regarding adoption of OCMA in their teaching.

The adoption stages

Russell (1995) presented six stages of technology adoption for naïve adults who are

learning new technology: 1) becoming aware, 2) learning the process, 3) understanding the process, 4) feeling confident, 5) using and adapting, and 6) creatively using. Based on the study of one adult learner using an email system, Russell suggested that learners could learn new technology starting at any stage of the six stages and progressing to a higher stage at their own rate of adoption. Russell's six stages of technology adoption could be viewed as a specific instance and was consistent with Rogers' theory of "the diffusion of innovations". Both Rogers and Russell indicated a positively correlated connection between technology use and attitude toward technology. A rate of technology adoption could be influenced by many factors such as personal attitude, knowledge and skills, and the process of communication in a social context. According to Rogers and Russell, the comfortable level of technology use could be increased through a channel of communication such as the increased access to technology and information sharing and discussions in the social system.

Lack of time

Research has shown that faculty members' major concerns about teaching online were lack of time (Cavanaugh, 2005; Elaine, et. al., 2006; Jacobsen, 2000; O'Quinn & Corry, 2002), lack of technological and institutional support (Ansah & Johnson, 2003; Carroll-Barefield, et. al., 2005), a lack of standards for online courses (Cavanaugh, 2005), lack of scholarly respect in the areas of promotion and tenure (O'Quinn, et. al., 2002), and lack of training and programs in teaching online (Betts, 1998; Carroll-Barefield, et. al., 2005; Galusha, 1997; Maguire, 2006). Jacobsen (2000) found the following similar five barriers: 1) faculty lack enough time to develop instruction that uses computers, 2) faculty lack enough scheduling time for different classes, 3) faculty lack financial support for computer integration from administration, 4) there are too few computers for the number of students, and 5) there is inadequate financial support for the development of instructional uses of computers.

The "lack of time" identified by Jacobsen can be interpreted in various ways depending on a specific research purpose. Cavanaugh (2005) conducted a case study to investigate time-consuming issues that an experienced teacher faced for preparing and teaching a traditional course compared to the same course which was the first time presented in an online format. The time spent on four categories: "course preparation time", "time spent teaching", "office hours", and "final tasks" including grading were recorded in time logs. Cavanugh found that the teacher spent 150% more time in the online environment compared to the in-class format. The longest amount of time spent teaching in an online format was the individualized communication and interaction that the instructor provided to each student. This specialized study should be roughly viewed as an indication of the need for an extraordinary time commitment that one instructor faced for each specific activity in a specific situation. The required time would be different for different instructors or different courses if other categories of time were included. However, due to the construct of the research formats (i.e., Cavanaugh believed that online education is moving toward a more student-centered focus while more traditional classrooms tend to be more teacher-centered), this study reported here may provide an understanding of time differences between teaching online and in-classroom.

Need for the study

The success of educational technological use has been evaluated based on how well "early adopters" have succeeded (Brooks, 2003). These results often indicated that once faculty

succeeded in effectively adopting technology, both faculty and students were satisfied with the outcomes. These results often linked the adoption of a specific application to a positive attitude toward more educational technology adoption in general. In fact, the interactive communication between faculty and students in online situations were the main factors influencing the quality of online education. In other words, when faculty members reduced the transactional distance (the amount of pedagogical separations between faculty and students) or increased the amount of interactive pedagogical relationships with students, the amount of previous faculty online experience was not a factor influencing both the students and the faculty members' satisfaction with online teaching and learning (Brooks, 2003).

This conclusion brought attention to faculty attitudes about teaching online. However, there is a gap in the literature in understanding and addressing the non-adopters' inhibiting behavior. For example, some research indicates that motivating and inhibiting factors can differ based on the academic structure, educational goals, and the culture of an institution (Maguire, 2006). These extrinsic motivating and inhibiting factors could be directly affected by administrators (Berge, 1998; Maguire, 2006). The nature of this complex decision making process calls for additional research focusing on the meaning of these categories (i.e., what "Time" means for faculty in an institution).

Method

Participants

This study site was a large public university and the only land- and sea-grant institution in the Northeast. This study sample was 400 randomly selected faculty participants of the 641 faculty members who were teaching at least one lecture, lab, or seminar in the study site in the fall semester of 2007. Faculty members were considered part of the population even if their primary positions were in administration or research if they taught at least one course in the university.

Hypothesized variables

A quantitative approach was used to explore major factors influencing faculty members' decisions to teach online using OCMA. Six factors were determined as potential important independent variables on influencing the dependent variable *Faculty Members' Decisions* (Decision): *Faculty Teaching Philosophy* (Philosophy), *Previous Teaching Experience* (Experience), *Time-Related Challenges* (Time), *Faculty Peer- Pressure* (Peer-Pressure), *Faculty Self-Efficacy* (Self-Efficacy), and *Classroom-Based Innovations* (Class-Innovation). These variables were hypothesized based on our review of the literature. Faculty perceptions of, and experiences with, teaching online, faculty attitudes and major factors influencing their decisions to teach or not to teach online were extensively studied through a local-designed random sample survey.

The dependent variable Decision is a categorical variable with seven truly independent questionnaires (G0, G1… G6). It was measured from the survey item 1 (see Appendix A). Experience is a continuous variable representing each faculty respondents' total teaching years. It was measured from the survey item 19. Philosophy is an ordinal variable representing faculty respondents' answers to eleven posited truly independent questionnaires. It is defined as the foundational beliefs about teaching that faculty members have constructed over time. Time is an ordinal variable representing faculty respondents'

answers to nine truly independent questionnaires. It is defined as time- and knowledge-related challenges regarding faculty members use OCMA. Peer-Pressure is an ordinal variable representing faculty respondents' answers to three truly independent questionnaires. It is defined as faculty perceptions about how their colleagues' use of online technology.

Self-Efficacy is an ordinal variable representing faculty respondents' answers to six truly independent questionnaires. It is defined as faculty beliefs about their capabilities to use OCMA and effective instructional strategies in specific tasks. Class-Innovation is an ordinal variable representing faculty respondents' answers to fourteen truly independent questionnaires. It is defined as faculty motivations, values, and personal experience with OCMA to expend time and effort in constructing classroom-based innovations and personal persistence in working with students. Philosophy, Time,Peer-Pressure,Self-Efficacy, and Class-Innovation were measured from the survey item 8.

Analytical approach

A discrete model, also known as polychromous logit model (Cramer, 1991), was used to assess the influences of Philosophy, Experiences Time, Peer-Pressure, Self-Efficacy, and Class-Innovation on Decision. The model for the observed Decision is based on the following:

G (Decision *j* for individual *i*) = Gij = $\beta j0 + \beta j1$X j 1+ $\beta j2$X j 2 +….+ βjkXjk + εij . (1)

where,

Gij is the value of the *jth* unobserved continuous variable for the ith individual respondent;
βjk is the *jth* corresponding coefficient for the *kth* unobserved variable;
Xjk is the *kth* predictor or independent variable for *jth* Decision;
j is the number of Decisions (1, 2, 3, 4, 5, 6, 7 in this study);
k is the number of predictors (1, 2, 3, 4, 5, 6 independent variables in this study)
εij is individual specific error terms (εi1, εi2, εi3, εi4, εi5, εi6) assumed to be independently distributed.

Assume the Decisions of the dependent variable are coded 0, 1, 2, …, *j*-1. The observed dependent variables representing individual *i* Decision of a level *j* are defined as:

Y*i* = 1 if G*ij* = Maximum likelihood (G*i1*, G*i2*, ….G*i(j-1)*); (2)
Y*i* = 0 otherwise

The assumption is that an individual faculty makes a specific Decision to maximize the value of a function. Thus, the group coded Y = 0 will serve as the reference or default value. In other words, a *j* category model will have *j*-1 logit functions of Y = 1 versus Y = 0.

The discrete decision model

For this study, the explicitly specified model can be written in the list of Xij and β as:

$$Gij = logit \text{ (probability of } j\text{th Decision using OCMA versus non-use)}$$
$$= \beta 0 + \beta 1 Philosophyj + \beta 2 Experiencej + \beta 3 Timej + \beta 4 Peer\text{-}Pressurej + \beta 5 Self\text{-}Efficacyj + \beta 6 Class\text{-}Innovationj + \varepsilon ij \,, \quad (3)$$

where,

j = 1, 2, …, 6, corresponding to the six upper Decision in the local-designed survey item 1 that each respondent faculty evaluated;
Philosophy$j$ = Philosophy for *jth* Decision;
Experience$j$ = Experience for *jth* Decision;
Time$j$ = Time for *jth* Decision;
Peer-Pressure$j$ = Peer-Pressure for *jth* Decision;
Self-Efficacy$j$ = Self-Efficacy for *jth* Decision;
Class-Innovation$j$ = Class-Innovation for *jth* Decision.

The estimated result of functional equation (3) that can be used to find the conditional probabilities of each individual i to choose j decision is given by the following equation:

$$P \text{ (yij=1)} = \exp(Gi1 + Gi2 + \ldots + Gij) / (1 + \exp(Gi1 + Gi2 + \ldots + Gij)) \quad (4)$$

As the value of corresponding coefficients is specified and estimated in the equation (4), it does not have a direct interpretation as it does in the linear regression model (Menard, 2005). However, going beyond the general descriptive information, the estimation results of the discrete decision model in the equation (3) provides information about the effects and relative importance of the six hypothesized factors in terms of probabilities of faculty members' decisions to teach or not to teach online using OCMA. In other words, the sign and magnitude of the estimated coefficient can indicate the direction and degree of the effect of these specified independent variables on the Decision of using OCMA.

Data collection

A local-designed survey (see Appendix A) was created to obtain quantitative data from teaching faculty members on their perspective and experiences in teaching online using OCMA. This survey was used to measure the variables and it contained 29 items. Each survey item contained a question or a statement with a related rating scale. The following relationships were examined: (1) faculty decisions and demographics; (2) faculty decisions and approach factors; (3) faculty decisions and avoidance factors; (4) faculty decisions and obstacle factors; (5) major factors and faculty members online teaching decisions.

At the research site, 400 randomly selected faculty members were recruited by following procedures consistent with ethnical concerns in conducting quantitative research and the recommendations of the University's Institutional Review Board. Data was collected through two rounds of surveying and follow-ups in the early fall semester of 2007. The response rate of the two rounds of surveying was 55%.

Instrument Reliability Analysis

Based on the understanding of the forty-four statements in item 8 and their face-validity

grounds, Philosophywasmeasured and composed from items 8.15 to 8.21 & 8.30 to 8.34 (a mean of these items). Timewas measured and composed from items 8.22, 8.23, 8.24, 8.25, 8.26, 8.27, 8.28 and 8.29. Peer-Pressurewas measured and composed from items 8.42 to 8.44. Self-Efficacy was measured and composed from items 8.1 to 8.6. Class-Innovationwas measured and composed from items 8.7 to 8.14 & 8.35 to 8.41. Before a reliability analysis was conducted, item 8.18, 8.22, 8.27, 8.28, 8.30, 8.32, 8.33, 8.34, 8.36, and 8.37 were recoded (1<->4, 2<->3).

Table 1 presents the survey reliability statistics for this study. The reliability statistics showed that each independent in the model is a reliable variable and statistically coheres to its general construct structure. According to Cronbach's Alpha (α), the most reliable independent variable is Class-Innovations(.836) and the lowest one is Philosophy(.704). These results suggest that the local-designed instrument has a statistically high reliability.

Table 1

The Instrument Reliability Statistics for Independent Variables

Variable	***α***	***α* (Based on Standardized items)**	***df***		***F***	***p***
			Between Items	**Within Items**		
Philosophy	.704	.703	217	11	51.491	.000
Time	.711	.731	217	8	17.595	.000
Peer-Pressure	.803	.806	217	2	28.794	.000
Self-Efficacy	.769	.740	217	5	158.262	.000
Class-Innovation	.836	.834	217	13	31.719	.000

Data analysis

In this study, the collected data from surveys were analyzed using the statistical software program Advanced Statistical Package for the Social Sciences (SPSS 15.0). The output from Polynomial Logistic Regression presents Decision as a dependent variable with higher OCMA using levels 1, 2, 3, 4, 5, 6, compared to a reference level of 0 for non-OCMA using level. By identifying each probability of the six relatively higher levels of using OCMA versus the level of non-use OCMA, polynomial logistic regressions were performed to determine which of these six independent variables or predictors are important and how they affect the dependent variable. The *log likelihood* LL (SPSS 15.0 presents not the log likelihood itself, but the log likelihood multiplied by -2 as -2LL positive value) was the selecting criterion and used to present how important each of the independent variables was if the overall model worked well. Thus, smaller values indicated better prediction of the dependent variable. These results were generated to investigate the primary factors that influence the faculty members' decision process in the use of OCMA.

Results

Table 2 presents the descriptive statistical summary of the characteristics of print-survey respondents. It is worth noting that there are differences in the characteristics among respondents. Slightly over half of the respondents (57.8%) were male compared to 37.6%

female. The remainder (4.6%) did not answer this question. The respondents tended to be "young-old"; only 16.5% were under age of 40, compared to half over 50 years old. The respondents tended to have a few years of online teaching experience. Only 1.8% had over 10 years of total online teaching experience.

Table 2

The characteristics of survey respondents (n = 218)

Characteristics		Percent (%)
Gender	Male	57.8
	Female	37.6
	Missing	4.6
AgeGroup	Under 30	2.3
	31 to 40	13.8
	41 to 50	23.9
	Over 50	50
	Missing	10.0
Online Teaching	Never	34.7
	1 to 5 years	42.5
	6 to 10 years	20.4
	12 to 15 years	1.8
	Over 16 years	0.6
	Missing	0.0

Table 3 presents the estimation results of discrete decision model for each decision options 1-6. As shown in Table 3, a high perception among faculty respondents in Self-Efficacy for a particular Decision option had a positive impact on the probability of using OCMA relative to the reference category---non-use of OCMA (decision option 0). The Self-Efficacy effect is statistically significant in each OCMA use level (p=.058, .000, .004, .000, .000, .000, .000, respectively). Self-Efficacy appeared to be the most important factor affecting faculty members' Decision to use or not to use OCMA in their courses, as indicated by its corresponding coefficients estimated for each item 1 (2.246, 4.862, 3.268, 4.392, 3.966, 6.789, respectively). Respondents who had high Self-Efficacy were more likely to use OCMA in courses than respondents had low Self-Efficacy (see Table 3).

For each different Decision of the dependent variable, the estimation results indicated a variety of effects for the other five independent variables. In comparison, a positive philosophical view had a positive impact on the probability of creatively using OCMA in courses but a negative impact on the probability of trying to learn OCMA basics over non-use of OCMA. The Philosophy effect is statistically significant in understanding the process of OCMA and in using their basics. However, it has no statistical significance in learning the basics of OCMA, in using them for specific tasks, in using them as instructional tools, and in using them in many course applications. In general, the probabilities associated with the Philosophy indicated different effects in each Decision to use or not to use OCMA in courses.

The last four factors investigated in this study were Experience, Time, Peer-Pressure, and Class-Innovation. The probabilities and corresponding coefficients associated with each of

the four factors indicated different but not statistically significant impact on each Decision option. Experience, Time, Peer-Pressure, and Class-Innovation had no significant effects on the probability of making Decision in each Decision option. These results suggested that among these respondents, other variables overshadowed the importance of the four factors.

Table 3

Estimation results of discrete decision model for each decision option 1-6

Decision number (Ya)	Var.	Description	Coefficient
I am currently trying to learn the basics of OCMA but I do not use them in my courses (1)	β0	Intercept	-3.633
	X1	Philosophy	-2.176*
	X2	Experience	.080
	X3	Time	.414
	X4	Peer-Pressure	.847
	X5	Self-Efficacy	2.246*
	X6	Class-Innovation	-.499
I am beginning to understand the process of OCMA and think about specific tasks (2)	β0	Intercept	-6.396
	X1	Philosophy	-2.993*
	X2	Experience	.009
	X3	Time	.019
	X4	Peer-Pressure	.458
	X5	Self-Efficacy	4.862*
	X6	Class-Innovation	-.156
I am trying to use the basics of OCMA but I am sometimes frustrated and lack confidence (3)	β0	Intercept	-2.447
	X1	Philosophy	-2.390*
	X2	Experience	.051
	X3	Time	.087
	X4	Peer-Pressure	-.239
	X5	Self-Efficacy	3.268*
	X6	Class-Innovation	-.135
I am gaining confidence in using OCMA for specific tasks and I am starting to feel comfortable using OCMA. (4)	β0	Intercept	-10.931
	X1	Philosophy	-.774
	X2	Experience	.050
	X3	Time	.039
	X4	Peer-Pressure	.635
	X5	Self-Efficacy	4.392*
	X6	Class-Innovation	-.128
I have used OCMA as a tool to help me as instructional aids. (5)	β0	Intercept	-10.869
	X1	Philosophy	1.082*
	X2	Experience	.049
	X3	Time	.493
	X4	Peer-Pressure	-.836
	X5	Self-Efficacy	3.966*
	X6	Class-Innovation	-.576
I can apply what I know about	β0	Intercept	-20.840

OCMA and can use them in many course applications. (6)	X1	Philosophy	2.155*
	X2	Experience	.095
	X3	Time	-.743
	X4	Peer-Pressure	-.322
	X5	Self-Efficacy	6.789*
	X6	Class-Innovation	-.950

*$p < .01$. a the reference category is: I am aware that OCMA exist, but I have not used any to support my teaching---non-use OCMA.

Discussion

The likelihood test results indicated that among the six given independent variables, only Self-Efficacy, and Philosophy each had a statistically significant effect in the likelihood of using verses non-using OCMA in courses, as indicated by the values of chi-square and its associated probabilities at a significant level of .01. Other factors Experience, Time, Peer-Pressure, and Class-Innovation were not statistically significant. In other words, the best predictors for Decision on the probability of using relative to non-using OCMA in courses were Self-Efficacy and Philosophy.

Important motivational factors

The results suggested that Self-Efficacy's effects on Decision were the most important. Self-Efficacy influences Decision by influencing faculty Decisions to focus on course applications using OCMA. Faculty who have high self-beliefs about efficacy regarding the use of online tools will most likely invests time and applies their knowledge to post course materials online, design course web pages, or create online tests. Philosophy's effects on Decision were important. Time's effects on Decision were not important. This makes sense: If faculty believe that online learning is a useful option and the students could learn as well as in a face-to-face classroom, they will most likely overcome time constraints and are motivated to use technology effectively in many course applications compared to faculty who disbelieved the quality of online teach.

The literature review for this research generated six factors that may potentially influence faculty members' decision to use or not to use online course management applications (OCMA) in their teaching. Previous research showed that these factors, such as a personal motivation to use technology and the perception of online teaching as an intellectual challenge, had been shown to often influence faculty attitudes to teach online. The investigation and analysis results of this study supported this hypothesis. If faculty believed they had the knowledge and skills to teach online, they most likely invested time and effort to use OCMA in their courses. If faculty believed that students could learn as well online as in a face-to-face classroom when similar course materials and teaching methodologies were used, they were more likely to teach or facilitate online teaching.

Time shown not to be a factor

This study's results show that many faculty members at the study site do use OCMA in their teaching, but some faculty members do not. Faculty respondents in this study confirmed that Self-Efficacy and Philosophy are important factors influencing faculty members' decisions toward online teaching. However, Time or time-related challenges have

only a correlation but no causal relationship on Decision. This new finding refines the common hypothesis related to Time in this field. In this study, Time or time-related challenges are not factors influencing faculty members' decisions to use or not to use OCMA. In other words, faculty members who have the preference and motivation to use OCMA often overcome these time-related barriers. On the other hand, it appears that OCMA non-users always yield to these barriers. Faculty members think Time is the challenge, but that response conceals deeper reasons.

Role of administrator

These results point to the value of administrational supported- and controlled-strategies in terms of reducing time and pressures toward online teaching and learning. This point supports DeSieno's (1995) suggestion that higher education institutions must encourage and support faculty to adopt technology in the process of teaching and learning. At the university level, technological professional help and monetary support should be emphasized, particularly computer resources should be provided to all faculty members, especially for departments that do not have discretionary budgets. Classrooms should have the basic Internet connections. Among the available online course management applications, individual faculty member were in a favor of specific OCMA options. As faculty respondents suggested the university should consider greater bandwidth and more storage space for faculty members' favor system.

The findings suggested that the university or colleges should provide appropriately scheduled faculty-centered workshops and training programs. The university or colleges should ask faculty members to have more input into what days and times would be good for them before scheduling training or workshops. This idea is consistent with Parker's finding (2003) that some faculty prefer opportunities to work with colleagues when using technology-enhanced instruction. In addition to more one-to-one support, the university could provide an online application demonstration center. In this online center, each optional application would be demonstrated by simple clicks. Relevant information should be available for faculty's further development. Thus, faculty could learn which option would be more useful for their purposes and, subsequently, they could decide which specific workshops to attend. The findings also suggested that institution should give credits toward promotion and tenure, recognition and rewards, and funding or merit pay based on how effectively faculty use or integrate technology in learning and teaching practices.

Implications for research

Further research on how time affects faculty members' decisions to teach or not to teach online could provide insight in understanding this correlation and explore whether or not a cause and effect relationship exists. Detailed research on this topic could contribute to making effective strategies and procedures that might reduce time-related challenges toward online learning and teaching. In this study, time is not a factor in the influence of faculty decisions toward online teaching verses non-using OCMA in courses according to the shi-square tests. This particularly finding was unanticipated. Because the literature review for this research indicated that time was a big barrier affecting faculty members' decisions. Faculty members' philosophical view on time-related challenges may have been subjectively perceived as motivational factors. Thus, the preference of spending professional time is a subjective matter. In this spirit, future research on how Time influences Decision would be encouraged and informative. Based on the discovered time-related categories in this study, what and how much time faculty spend in each of these

categories toward online learning and teaching assure further investigation in understanding the time influence and in exploring administrational support.

Conclusion

The decision to teach online was investigated and analyzed based on a detailed discrete decision model. According to the mean effects, the statistical differences in faculty members' online-teaching decisions were strongly based on the key variables of faculty general philosophical views and faculty-belief of efficacy. Faculty who have strong beliefs about self-efficacy using online tools were more likely to invest time and apply knowledge to post course materials online, design course web-pages, or create online tests. If faculty members believe that teaching online is a useful option and the students could learn as well or better than in a face-to-face situation, they will most likely overcome time constraints and be motivated to use OCMA effectively compared to faculty who disbelieve the effectiveness of online teaching.

Appendix A

A local-designed survey

1. Please read each statement and choose only one that best describes yourself:

> (6) I can apply what I know about OCMA and can use them in many course applications (i.e., creating of online tests or quizzes, creating of database for the course).
>
> (5) I have used OCMA as a tool to help me as instruction aids (i.e., online discussion over course related to content, ideas, and issues, evaluating online).
>
> (4) I am gaining confidence in using OCMA for specific tasks and I am starting to feel comfortable using OCMA (i.e., posting of assignments, turning in of assignments online, posting of grades online).
>
> (3) I am trying to use the basics of OCMA but I am sometimes frustrated and lack confidence when using them (i.e., posting/sharing of syllabus, posting/sharing of course documents, posting/sharing of useful links).
>
> (2) I am beginning to understand the process of OCMA and think about specific tasks where OCMA might be useful in our courses (i.e., posting, online Discussion Boards, Chat Room, Grading, and Assessments).
>
> (1) I am currently trying to learn the basics of OCMA but I do not use them in our course (i.e., receiving of training, attending of workshops, learning from others).
>
> (0) I am aware that OCMA exist, but I have not used any to support our teaching.

If the statements above do not fit, please describe yourself here:

2. Please give an example to support your choice to question 1:

3. Have you ever received any type of training or attended workshops for OCMA?

(1) Yes
(2) No (If you answer "No", please skip to question 5)

4. How did you receive your training or workshops for OCMA? (choose all that apply)

(1) College or department IT staff
(2) Faculty Development Center
(3) Fogler Library Workshops
(4) Colleagues
(5) Students
(6) Family members
(7) Friends
(8) Self-taught
(9) Other (be specific)

5. Indicate which of the following OCMA that you have heard about but have never learned to use in your courses (choose all that apply)

(1) FirstClass folders
(2) BlackBoard
(3) WebCT
(4) Moodle
(5) CourseCompass
(6) Personal web page
(7) FirstClass email
(8) Folger library E-reserves
(9) IM or iChat
(10) Blogs
(11)Class/group listserv
(12)Other (be specific)_____

6. Indicate which of the following OCMA that you have some working knowledge but have not used in your courses (choose all that apply)

(1) FirstClass folders
(2) BlackBoard
(3) WebCT
(4) Moodle
(5) CourseCompass
(6) Personal web page
(7) FirstClass email
(8) Folger library E-reserves
(9) IM or iChat
(10) Blogs
(11)Class/group listserv
(12)Other (be specific)

7. Indicate which of the following OCMA that you have used in your courses (choose all that apply)

(1) FirstClass folders
(2) BlackBoard
(3) WebCT
(4) Moodle
(5) CourseCompass
(6) Personal web page

(7) FirstClass email
(8) Folger library E-reserves
(9) IM or iChat
(10) Blogs
(11)Class/group listserv
(12)Other (be specific)_____

8. Please indicate your level of agreement with each view stated below. Please read each statement and indicate your opinion for each by checking the answer which best describes your attitude:

1 Strongly Disagree 2 Disagree 3 Agree 4 Strongly Agree

Self-Efficacy	1	2	3	4
(1) I am able to use e-mail as a communication tool to students and colleagues.				
(2) I am able to use FirstClass folders or e-reserves as course supporting systems.				
(3) I am able to use WebCT/Blackboard/Moodle or other web-based Discussion Boards, Grading, and Assessments.				
(4) I am able to use OCMA in the classroom based on what I know about technology.				
(5) I know about changing the curriculum to better incorporate OCMA.				
(6) I know effective instructional strategies that integrate OCMA to ensure communication and interaction to students.				
Intrinsic Motivation				
(7) I would like to try OCMA though I am not required to.				
(8) I gain a sense of confidence when I use OCMA for specific tasks.				
(9) I feel good about myself when I use OCMA in many applications.				
(10) I am anxious about using OCMA or technology.				
Value				
(11) I believe that I am a better teacher with OCMA.				
(12) I believe that our students will have a more active learning experience with OCMA in our courses.				
(13) I believe online tools allow me to focus more on important topics by posting the syllabus, assignments and discussions online in advance.				
(14) I believe that I am able to establish a better professional relationship with my students individually using OCMA (i.e., emails or chat options).				
General Teaching Philosophical Views				
(15) I prefer to communicate with my students in person rather than electronically.				
(16) I feel anxious about teaching online.				
(17) I think that my students could learn as well online as they could in a face-to-face classroom when similar course materials and teaching methodology were used.				

(18) I do not want to change my preferred teaching style to teach online.				
(19) I believe that the most important part of instruction is the content of the curriculum.				
(20) I believe that students must learn the basic skills before they can master complex content.				
(21) I mainly see my role as a facilitator.				
Time-related challenges				
(22) I do not have time to learn/use OCMA because I have other important professional responsibilities (i.e., heavy course load, research, administration).				
(23) It takes too much time and effort to plan and convert materials online.				
(24) It takes too much time and effort to respond to students' questions, and encourage students' engagements and feedback online.				
(25) It takes too much time and effort to communicate and interact with students online.				
(26) It takes too much time and effort to do final tasks including grading (i.e., evaluate students' online responses and discussions).				
(27) The university does not give any credit for my extra time and effort.				
(28) I do not know how much time is needed to make it work effectively.				
(29) It takes too much time to help students to learn and use OCMA.				
Knowledge-related challenges				
(30) I do not think I have sufficient expertise without assistance				
(31) I am too old to learn new technology.				
(32) I do not have experience successfully using OCMA or teach online.				
(33) I do not know how to start without assistance.				
(34) I do not know how I can get assistance.				
Personal experience with OCMA				
(35) My students complained about using OCMA.				
(36) My students did not take advantage of using OCMA.				
(37) I rarely require students to use technology to complete assignments.				
(38) My students are satisfied with our teaching without technology.				
(39) My students are anxious about using OCMA or technology.				
(40) I am satisfied with salary increases compared to my time and effort to use OCMA or to teach online.				
(41) OCMA provides flexible scheduling for both students and faculty.				

Peers' experience with OCMA				
(42) My colleagues felt too much frustration when they tried to use OCMA.				
(43) My colleagues who used OCMA did not get credit toward promotion and tenure, recognition and rewards, funding or merit pay.				
(44) My colleagues successfully used OCMA for some similar tasks.				

9. How often do you use the following OCMA to support teaching?

	daily	weekly	monthly	never
FirstClass folders				
BlackBoard				
WebCT				
Moodle				
CourseCompass				
Personal web page				
FirstClass email				
Folger library e-reserves				
IM or iChat				
Blogs				
Class/group listserv				
Other (be specific)_____				

10. Rate your level of satisfaction with the following types of support for OCMA:

	Not at all satisfied	Somewhat satisfied	Very satisfied
Monetary support from the University			
Monetary support from the Department			
Technological help from the University			
Training and workshops from the University			
Technological help from the Department			
Training and workshops from the Department			
Royalties on copyrighted materials			
Opportunities to work with colleagues to become more proficient with using OCMA			

11. What types of OCMA would you like to use in your courses in the future?

(1) FirstClass folders
(2) BlackBoard
(3) WebCT
(4) Moodle
(5) CourseCompass
(6) Personal web page
(7) FirstClass email
(8) Folger library E-reserves
(9) IM or iChat
(10) Blogs

(11)Class/group listserv (12)Other (be specific)_____

12. What type of support would you like to receive in the future?

1. one-to-one
2. small group
3. online
4. other (be specific)_____

13. How often would you like to receive your training or workshops?

1. once a month
2. once a semester
3. other (be specific)_____

14. Have you ever received a grant to enhance your teaching with any OCMA?

1. No
2. Yes

15. What types of grants have you received to enhance your teaching with any OCMA?

1. Faculty Laptop Incentive
2. IT faculty Technology Stipends
3. Bird and Bird Instructional Grant
4. Center for Teaching Excellence
5. Other (be specific)_____

16. My department_____

17. My gender:

(1) male (2) female

18. How old are you_____

19. How long have you been teaching _____

20. How long have you been teaching at the University of Maine _____

21. How long have you been teaching online at the University of Maine _____

22. Are you a part time____ or full time ____ teaching faculty?

23. How many courses you have taught at the University of Maine_____

24. What is your primary responsibility at the University of Maine:

(1) Teaching (2) Research

(3) Administration (4) Other (be specific)_____

25. Percentage time for research_____; Percentage time for teaching_____

26. Students taught:

(1) undergraduates only (2) both undergraduates and graduates
(3) graduates only (4) other (be specific)_____

27. What are the specific reasons for your use or non-use of instructional technology such as OCMA in your courses?

28. Examples, comments or suggestions related to using OCMA or teaching online:

29. If there anything else you would like me to know about:

Thank you so much for completing the survey.

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