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Abstract

The course management system, as an evolving tool, is increasingly used to promote the quality, efficiency and flexibility of teaching and learning in higher education. However, the ways that course management systems can support and enhance the quality of teaching and learning needs further investigation. This paper describes findings of an exploratory study into undergraduate and postgraduate students' experiences, and aims to provide insights into issues concerning the implementation of such systems in Hong Kong. The exploration focuses on: perceived usefulness of technologies for study; usage patterns; students' perceptions; user support preferences; and self-reported experiences. Significant differences between academic levels of students are evident. Findings of the study shed light on issues concerning technology, pedagogy, and implementation strategies of course management systems within an institution

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Student experiences of course management systems in a Hong Kong institution

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Abstract:

The course management system, as an evolving tool, is increasingly used to promote the quality, efficiency and flexibility of teaching and learning in higher education. However, the ways that course management systems can support and enhance the quality of teaching and learning needs further investigation. This paper describes findings of an exploratory study into undergraduate and postgraduate students' experiences, and aims to provide insights into issues concerning the implementation of such systems in Hong Kong. The exploration focuses on: perceived usefulness of technologies for study; usage patterns; students' perceptions; user support preferences; and self-reported experiences. Significant differences between academic levels of students are evident. Findings of the study shed light on issues concerning technology, pedagogy, and implementation strategies of course management systems within an institution

Introduction

Course Management Systems or CMS have become an integral part of the infrastructure in higher education. According to the survey conducted by Harrington and associates (2004), more than 80 percent of higher education institutions in the US use CMS. CMS is not simply a tool for teaching and learning, but a central component of the education infrastructure in higher education (Katz, 2003). Educause Center for Applied Research (ECAR) have conducted serial studies of undergraduate students' experience with technology and reported that with CMS, students' engagement level increased significantly over the past three years (Salaway, Caruso, Nelson, & Dede, 2007).

Much of the literature on e-learning has focused on teachers' experience and perceptions while students' voices are largely unheard and their experiences less well undocumented (Alexander, 2001; D'Angelo & Woosley, 2007). Löfström and Nevgi (2007) observed a considerable discrepancy between teachers' and students' perceptions regarding online learning. Teachers had a much more positive assessment of students' learning than did students. Cook-Sather (2002) advocated foregrounding students' voice in educational research, policy and practice. In addition, research has largely focused on specific technology tools in specific discipline areas. A holistic approach that looks into the use of multiple tools across disciplines in higher education has rarely been employed (D'Angelo & Woosley, 2007). To address these research gaps, this study explored the use of CMS amongst undergraduate and postgraduate students across subject disciplines in one institution in Hong Kong.

With consideration of previous studies (eg Surry, Ensminger & Haab, 2005), we stressed the following aspects in the present study: perceived usefulness of technologies (Davis, 1989); usage patterns; student perceptions; user support preferences; and self-reported experiences of CMS.

The study

The institution in the study is a decentralised research-led university where the power and key decision making rests with each of ten

faculties. Funding to the institution is primarily faculty-based with each faculty controlling the bulk of the university funds. The university is aspiring to be a "Harvard-in-the-East" and sees the need to focus almost exclusively on supporting faculty-led research initiatives in order to improve on its research record. In the most recent world university rankings (O'Leary, Quacquarelli, & Ince, 2007), the University increased its ranking order by 55% from the previous year and sees the primary reason for this increase to be due to its improved research output. Though the institution does have central computing facilities and a computer centre, much of the technology infrastructure is managed and planned in a decentralised manner. The University has no centralised policy regarding technology in education, no IT in education plan and no teaching and learning plan. Networking for the University is centralised but is unreliable and tends to managed on an ad hoc basis. When faculty requires high quality reliable networking, staff need to negotiate with the computing centre to ensure adequate support.

The use of technology in teaching and learning varies widely from faculty of faculty and from department to department. There is no single CMS in operation across the University. Instead, individuals, groups and departments elect to use their own choice of system. The result is that over ten CMS (eg WebCT, BlackBoard, Moodle, ILN, SOUL, etc) are in use on a regular basis.

Within this environment, a campus-wide survey was conducted in both electronic and paper-based formats. The construction of the questionnaire consisted of five parts: perceived usefulness of technologies for study, usage pattern of CMS, student perceptions, user support preference, and self-reported experiences. The first four sections were closed-ended or scaled questions, whereas the fifth section was an open-ended question (Liao, Lu & Yi, 2007) to elicit students' experience in using CMS.

Table 1 Demographic information of the participants

Gender	
Female	456 (50.4%)
Male	435 (48.1%)
Missing	13 (1.4%)
Level of Study	
Undergraduate	719 (79.5%)
Postgraduate	185 (20.5%)

N=904

Data was collected from March to April 2007. Students were able to access the survey either through the online platform or through paper based survey distributed around the campus. Students were checked against their computer IP address and unique student number to avoid either repetitive or fraudulent entries. We received 926 survey responses of which 904 were valid and used in the data analysis. The respondents were from all ten faculties that include undergraduate and postgraduate students with either full-time or part-time status. There were a total of 456 female respondents and 435 male respondents (Table 1). We received the highest number of responses from the Faculty of Science, Arts and Engineering, the larger faculties of the university in terms of student population.

Results

The major findings of the study are described in six sections as follows.

Perceived usefulness of technologies for study

We believe that CMS should not be studied in isolation, and therefore we also took into consideration students' general experiences with other information technologies. Firstly, we asked students to specify the online technologies they used and indicate their usefulness for study purposes. Generally students rated as more useful those technologies they used more often. Email, Instant Messenger (IM) and Wiki were among the technologies most used by students. Students also rated these as the three most useful technologies for their studies (Table 2). Particularly, email received the highest use and students found it the most valuable technology.

Table 2 Technologies that students have used and their perceived usefulness for study

Technologies	% of student use	Perceived usefulness	
		Mean	*SD*
Email	95.0%	3.49	0.59
Instant Messenger	75.7%	3.04	0.70
Wiki	63.9%	3.43	0.62
Blog	62.1%	2.44	0.77
Voice Over IP (VoIP)	26.1%	2.44	0.74
RSS	17.0%	2.52	0.76
Social-Bookmarking	11.5%	2.56	0.79

N=904; Perceived usefulness scale: 1= strongly disagree, 2= disagree, 3= agree, 4= strongly agree

Although Wiki was less used than IM, it was perceived as more useful with mean scores 3.43 and 3.04 respectively. One reading of this would be that Wiki is helpful in doing assignments and research for information retrieval. Blog was also one of the frequently used technologies with 62.1% of students having used it. However, students did not think it useful in their studies. Generally, blogging seemed to be less used for teaching and learning purposes, and as a result, students might not have seen any use for blogging in their studies.

Students at different levels of study also had usage preferences in Wiki, Blog and IM technologies (Table 3). More undergraduates used IM, Blog and Wiki than the postgraduates. Such technologies are mainly for information retrieval and communication purposes. In comparison, more postgraduates had used RSS and social bookmarking than had undergraduates. Though gender difference is not a focus of the present study, the findings show significant gender difference in using Wiki. More male than female students used Wiki (χ^2=14.47, *df*=1, *p*<.001). However, the reason for the gender difference is not clear.

Table 3 Technologies used by students from different level of study

Technologies	χ^2
More undergraduates have used	
IM	22.12**
Blog	12.01*
Wiki	21.40**
More postgraduates have used	
RSS	9.39*
Social Bookmarking	8.03*

N=889, *df*=1; *p<.01, **p<.001

Independent sample t-test reveals that undergraduate students perceived Wiki as more useful in their studies than did postgraduate students. Wiki is probably a good source for undergraduates seeking quick definitions and information in general. On the other hand, postgraduates perceived email, blog, RSS, social book-marking and VoIP as more useful in their studies than did undergraduates (Table 4).

Table 4 Perceived usefulness of the technologies by students from different level of study

Technologies		Mean	SD	N	t
Undergraduates rated more useful in their studies					
Wiki	Undergraduates	3.46	0.74	524	2.61**
	Postgraduates	3.29	0.77	108	
Postgraduates rated more useful in their studies					
Email	Undergraduates	3.47	0.59	703	-3.07**
	Postgraduates	3.62	0.57	182	
Blog	Undergraduates	2.41	0.77	513	-2.63**
	Postgraduates	2.62	0.79	109	
RSS	Undergraduates	2.44	0.79	180	-2.74**
	Postgraduates	2.74	0.67	65	
Social Bookmarking	Undergraduates	2.49	0.75	136	-2.44*
	Postgraduates	2.79	0.86	53	
VoIP	Undergraduates	2.38	0.72	245	-2.94**
	Postgraduates	2.66	0.79	77	

*p<.05, **p<.01

Usage pattern of Course Management Systems

Seven hundred and sixty-nine students responded "yes" to the question of whether they had ever used a course management system or learning management system. Among these students, WebCT was the one most used (Table 5). Students also perceived WebCT as the most 'comfortable' CMS.

Table 5 Types of CMS students have used and their perceived comfort level of use

Types of CMS	Number of responses	Perceived comfort level	
		Mean	SD
WebCT	740	3.00	0.68
ILN	202	2.90	0.73
Moodle	104	2.56	0.69

Perceived comfort level: 1= strongly disagree, 2= disagree, 3= agree and 4 = strongly agree (more than one response was allowed in this question); ILN (Interactive Learning Network) is a homegrown CMS

Apart from the above popular CMSs, some students indicated they used other CMSs including: departmental or course websites maintained by individual departments, Blackboard, FirstClass, eClass, Knowledge Forum, Classman, Sakai, IVLE and ITaCS. Student experience of CMS usage varied, as shown in Table 6, which depicts students' CMS usage.

Table 6 CMS Usage

How long have you been using a CMS?	
Less than 1 year	40.4%
1-2 year	36.7%
3 years or more	22.9%
How often do you use a CMS?	
Daily	25.2%
Weekly	52.9%
Several times a year	21.9%

N=769

CMS functions are similar across different systems. Students were asked to check the CMS functions that they had used. Most of the students had used CMS to access course materials such as downloading lecture notes or references. Table 7 shows the percentages of students using different CMS functions.

Table 7 CMS functions used by students

CMS functions used	Percent
Access to course materials	91.4
Course announcement	80.3
Submitting assignments and receiving online feedback	64.7
Class email to communicate with peers and instructors	45.9
Quiz/test	41.1
Discussion forum to exchange ideas with peers and instructors	34.2
Course evaluation	18.4

N=769; More than one answer was allowed in this question

Significant differences were evident between undergraduate and postgraduate students over the use of CMS functions. It seems undergraduate curriculum has a higher emphasis on assessment, and more undergraduate students reported the use of quiz/test than did postgraduate students (χ^2=9.35, df=1, p<.01). In contrast, more postgraduate students reported use of the discussion forum than did undergraduate students (χ^2=28.11, df=1, p<.001). It is probable that postgraduate students have more need of a platform to exchange ideas and knowledge, and collaborate with peers.

Student Perceptions of CMS Utilities

Students were asked to respond to the statements (Table 8) concerning their perceptions of using CMS. The statements describe a set of common CMS utilities, such as resources access, organizing work and communicating with each other. The top three items that received the highest ratings from students were: enable convenient access to course materials, useful in my study, and saves my time.

Table 8 Student perceptions of CMS utilities

CMS Utilities	Perception of CMS Utilities	
	Mean	SD
Enable convenient access to course materials	3.32	0.67
Useful in my study	3.04	0.59
Saves my time	2.79	0.71
Has enough functions to meet my needs	2.58	0.70
Facilitates exchange of ideas with peers and instructors	2.56	0.77
Helps organize my work	2.51	0.74
Facilitates staying in touch with other students	2.24	0.76

N=769; Perception of CMS utilities: 1= strongly disagree, 2= disagree, 3= agree and 4 = strongly agree

A set of one-way ANOVA reveals significant differences in student perceptions of all CMS utilities among students who access the CMS several times in a semester, and those who access CMS weekly and daily. Table 9 summarizes the effects of CMS usage on the perceptions of CMS utilities. It is perhaps not surprising that as students use CMS more frequently, they tend to perceive higher agreement regarding the CMS utilities.

Table 9 Effects of CMS usage on the perceptions of CMS utilities

CMS Utilities	Mean(SD)			F	df
	Several times a semester	Weekly	Daily		
Enable convenient access to course materials	3.11(0.71)	3.32(0.68)	3.48(0.59)	13.69 ***	(2, 763)
Useful in my study	2.80(0.64)	3.01(0.57)	3.29(0.51)	33.91 ***	(2, 762)
Saves my time	2.53(0.78)	2.84(0.67)	2.92(0.69)	14.90 ***	(2, 742)
Has enough functions to meet my needs	2.35(0.70)	2.60(0.68)	2.74(0.71)	13.97 ***	(2, 741)
Facilitates exchange of ideas with peers and instructors	2.33(0.75)	2.56(0.75)	2.77(0.76)	14.03 ***	(2, 696)
Helps organize my work	2.29(0.71)	2.53(0.74)	2.67(0.72)	11.83 ***	(2, 713)
Facilitates staying in touch with other students	2.08(0.73)	2.22(0.78)	2.43(0.73)	8.974 ***	(2, 690)

***$p<.001$; Perception of CMS utilities: 1= strongly disagree, 2= disagree, 3= agree and 4 = strongly agree

Follow-up Post-hoc Scheffe tests indicated that students expressed significantly different perceptions of CMS utilities depending on whether they accessed the CMS daily, weekly, or several times in a semester. However, students who accessed CMS daily and weekly did not perceive a significant difference in the suggestions that CMS "helps in organizing my work," "has enough functions to meet my needs" and "saves my time." Also, students who accessed CMS weekly and several times a week did not perceive a significant difference in the notion that CMS "facilitates staying in touch with other students."

User support preference

Students were asked to indicate how often they received help from the listed sources (Table 10) when they experienced difficulty in using CMS. The results indicated that students often turned to their "peers and friends" for help, and least preferred to seek "technical support from computer centre" (Table 10), but sought support only "rarely" to "sometimes".

Table 10 Help and support for CMS use

Types of help and support	How often	
	Mean	*SD*
Peers and Friends	2.91	0.95
Technical support from Faculty or Department	2.07	0.88
Technical support from Computer Centre	1.89	0.84
Books, manuals or FAQs	2.22	0.99

N=766; Four-point scale of how often: 1= never, 2= rarely, 3= sometimes, 4= often

In the open-ended response, a few students mentioned that they would just explore the CMS on their own through trial-and-error or online help, and refer to their own notes and their own exploration. A few other students responded that they would ask their instructors for help. Three students commented that they had no problem with the use of CMS, and one of them even reported being the support for others. In accessing sources of help and support, there was significant difference in study levels for those getting help from peers and friends. Undergraduates frequently received more help from peers and friends than postgraduates (t(682)=4.18, p<.001; Undergraduates: Mean=3.19, SD=0.70; Postgraduates: Mean=2.89, SD=0.74).

Self-reported worst experience

Students were asked in an open-ended question on the last part of the questionnaire to describe their worst and best experiences in using CMS. In general, descriptions of worst experiences were reported more frequently than best experiences. Table 11 summarizes five categories of problems that emerged from the analysis of student reports.

Table 11 Worst experience of CMS use

Types of problems	Number of codes
Technological problems	230
Communal involvements and competition	60
Teachers are not keen	50
Problems of system design and features	40
Efficiency of administration and support	24
Total	404

Most students complained about technological problems with CMS, such as lack of speed and system errors that they encountered. Large numbers of students said the CMSs they used were slow. For example, a student wrote, "*Slow uploading times for coursework submission. Sometimes the upload session failed or stalled during peak times (server overload).*" Students also frequently complained about system errors; for example, "*There are some bugs in the system and the calendar cannot save some of the events or the events disappear before the alarm rings/before the timeout.*" Students found the technical errors annoying. One student wrote, "*Whenever I try to download a file from the WebCT, a bar appears at the top and I have to click it and choose 'download file', and then I am redirected to the main page, and I have to click, click and click to go to the file I want to download again from the beginning... I find it very inconvenient and a waste of my time.*" Technological issues contributed greatly to students' experiences of using a CMS. Students expected the CMS to be flawless to navigate and error-free.

Discussion

The student experiences prompted several observations of CMS implementation. These observations are connected to three aspects: technology, pedagogy, and implementation strategies (Collis & Moonen, 2001).

Technology

By exploring the usage patterns and perceived utilities of CMS, we have attempted to understand students' experiences with such "special" technology. Are students satisfied with the technological features of the CMS they are using? Relevant to observations made by Concannon, Flynn & Campbell (2005), we found that students' negative experiences with CMS centered on technological problems. It is important not to overlook the design of CMS functions or features when addressing student experiences, keeping in mind that those experiences will continue to change.

New technologies that students used regularly and found useful in their studies included Instant Messenger and Wiki, technologies that are communicative and interactive in nature. Recently, Web 2.0 advocated a new perspective of "mass collaboration," an approach that is successfully challenging traditional business designs and shaping our everyday life. What this indicates is that instead of using the available CMS functions, students may expect to use other functions such as Wiki, Blog, and RSS to facilitate more collaboration and strengthen social networking. This preference for collaborative learning underlines the importance of Web 2.0 technologies to CMSs.

In terms of user support preference, it was obvious from the results that students often turn to their peers for help rather than seek technical help from faculties or computer centers. It is possible to speculate that easy-to-use should be a major principle for future development of CMS technology; that is, CMS should not be a complex system, but should have the capacity to be supported by peers without specific technical competence.

Pedagogy

CMS holds great promise both for increasing access to information and as a means of promoting learning and linking students and teachers in learning communities. Nonetheless, there is little empirical evidence that CMSs actually improve pedagogy (Morgan, 2003). The initial findings of student experiences reveal that CMS as an educational technology is in fact widely used by the majority of the students in their study, and they use it on a regular basis. It has most often been used for simple information retrieval and uploading. Students perceived "enable convenient access to course materials" as a key CMS utility. In terms of communicative CMS utilities, the findings did not show evidence that students either use these features often or find them particularly useful. Regarding student perceptions of CMS utilities, positive effects were shown on how often students use CMS. Although the challenge of the pedagogical impact of CMS still stands, we argue that the understanding of students' experiences with CMS would suggest possible avenues to improve pedagogical use of CMS apart from "convenient information access."

Implementation strategies

Having the technology available and accessible is no guarantee that people will find it useful, find it easy to use, or even find it at all. However, the use of new technologies in teaching and learning is never solely a technical matter, as the new technologies are "used in a social environment and are, therefore, mediated by the dialogues that students have with each other and the teacher" (Bransford, Brown & Cocking, 2000; p. 243). What factors affect the adoption and use of CMS? This is a crucial question about the implementation strategies of CMS. From the analysis of students' self-reported experiences, the results suggest four important factors associated with CMS use: infrastructure, people, support, and learning, as described in the "types of elements".

There is always the concern that potential benefits of CMS in facilitating classroom learning may not be fully realized when teachers themselves, for various reasons, do not adopt a more comprehensive use of CMS in their teaching. We suspected that one of the compelling reasons why students used these communicative platforms so rarely was because the usefulness of these features was not emphasized, encouraged or demonstrated by their teachers. In this study, students reported that some teachers were not keen on using CMS. The question therefore is whether there is in fact reluctance among academic staff to use CMS, and what the potential barriers are. How the university as a whole may address such problems could also lead to issues of staff development, an essential consideration in implementation strategies.

Conclusion

This is a small-scale study of a university in Hong Kong. Due to its small size, study results will not produce generalizations that can be applied directly in other institutions. Nevertheless, empirical studies in CMS implementation are relatively rare, and results of this study provide initial evidence to shed light on a number of issues concerning the implementation of CMS. Technology has evolved and become more central in higher education, and will continue to shape students' experiences and their expectations of learning and teaching. As argued by McCarthy and Wright (2004), "we don't just use or admire technology; we live with it" (p. 2). Technology is deeply embedded in everyday experience. It touches on many areas of students' lives, such as work, leisure, and learning. It brings fundamental changes in how people see themselves and their world. Thus, an account of students' experiences is essential to the design and implementation of CMS. This study serves as a starting point for exploring the role and impact of CMS in higher education.

References

Alexander, S. (2001). E-learning developments and experiences. *Education + Training, 43*(4/5), 240-248.

Bransford, JD, Brown, AL & Cocking, RR (2000). (Eds.) *How People Learn*, Washington, D.C.: National Academy Press.

Collis, B., & Moonen, J. (2001). *Flexible learning in a digital world: experiences and expectations*. London, Kogan Page.

Concannon, F., Flynn, A., & Campbell, M. (2005). What campus-based students think about the quality and benefits of e-learning. *British Journal of Educational Technology, 36*(3), 501-512.

Cook-Sather, A. (2002). Authorizing students' perspectives: Toward trust, dialogue, and change in education. *Educational Researcher, 31*(4), 3-14.

Cook-Sather, A., & Shultz, J. (2001). Starting where the learner is: Listening to students. In J. Shultz & A. Cook-Sather (Eds.), *In our own words: Students' perspectives on school* (pp. 1–17). Lanham, MD: Rowman & Littlefield.

D' Angelo, J. M., & Woosley, S. A. (2007). Technology in the classroom: Friend or foe. *Education, 127*(4), 462-471.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340.

Liao, K., Lu, J., & Yi, Y. (2007). Research on humanised web-based learning model. *International Journal of Innovation and Learning, 4*(2), 186-196.

Löfström, E., & Nevgi, A. (2007). From strategic planning to meaningful learning: Diverse perspectives on the development of web-based teaching and learning in higher education. *British Journal of Educational Technology, 38*(2), 312–324.

McCarthy, J. & Wright, P. (2004). *Technology as Experience*, MA: The MIT Press.

Morgan, G. (2003). *Faculty use of course management systems*, Vol. 2, Research Study from the EDUCAUSE Centre for Applied Research.

O'Leary, J., Quacquarelli, & Ince, M. (2007). THES-QS Higher Education Rankings. Retrieved May, 17, 2008 from http://www.timeshighereducation.co.uk/

Salaway, G., Caruso, J. B., Nelson, M. R., & Dede, C. (2007). *The ECAR study of undergraduate students and information technology 2007*. Boulder, Colo.: EDUCAUSE Center for Applied Research.

Surry, D. W., Ensminger, D.C., & Haab, M. (2005). A model for integrating instructional technology into higher education. *British Journal of Educational Technology*, 36(2), 327-329.

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