Communications of the Association for Information Systems

Volume 23 Article 20

10-2008

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Recommended Citation
Zhang, Ping and Bhattacharyya, Swati (2008) "Students' Views of a Learning Management System: A Longitudinal Qualitative Study," *Communications of the Association for Information Systems*: Vol. 23 , Article 20.
DOI: 10.17705/1CAIS.02320
Available at: https://aisel.aisnet.org/cais/vol23/iss1/20

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Students' Views of a Learning Management System: A Longitudinal Qualitative Study

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Abstract:

Over the past decade, Web-based learning management systems, such as Blackboard and WebCT, have been gradually integrated into college education. The strategic use and effectiveness of such systems have been investigated to a large extent. What is less covered is what students really think about such learning management systems. Understanding students' evaluations can shed light on the development, selection, training, maintenance, use, and investment on such systems. In this paper, we report a longitudinal study that uses a bottom-up approach to gather qualitative data on student views of WebCT 6. Data were collected at three distinctive times that spanned two semesters to reflect students' different experiences in using WebCT 6. Two different methods were used to collect qualitative data so that students could report their views in unconstrained ways. The content analyses results show that (1) students have an integrated view of their technology assisted learning environment, which can be represented by the notion of S-I-A (the system, the instructors and the administrators); (2) as students' experience with WebCT 6 increases, their complaints and wishes for instructors and administrators increase; (3) communication-related features continuously dominate students' views about WebCT 6; and (4) as their use of WebCT 6 increases, students grow more appreciative toward WebCT 6 features that support learning activities. The findings contribute to the literature with additional evidence on the nature and effectiveness of learning management systems. They provide a set of suggestions that should be carefully considered by all personnel involved. We identify a number of research implications. One particular research contribution is the identification of a fifth type of interaction that plays an important role in the technology-assisted learning context: the learner-administrator interaction.

Keywords: student evaluations, learning management systems (LMS), technology assisted learning, interaction, qualitative data analysis, longitudinal study

Volume 23, Article 20, pp. 351-374, October 2008

I. INTRODUCTION

Information and Communication Technologies (ICTs) are an integral part of many aspects of organizations and societies. ICTs are technologies for information processing and communication purposes. They are expected to add value to corporate training and university education; thus investigations on ICTs in training and education have been regarded as an important part of IS research [Alavi and Leidner 2001; Alavi et al. 1997; Leidner and Jarvenpaa 1995; Webster and Ho 1997; Zhang 1998a]. ICTs that enable collaboration and partnership in education settings are relevant in IS research because using these ICTs can contribute to the value of education processes [Alavi et al. 1997]; ICTs can help improve communication, efficiency and problem solving in the educational context; and ICT use can either automate or transform education processes [Leidner and Jarvenpaa 1995]. In ways similar to corporate use of ICTs, educational organizations have to make various decisions related to ICT investment, deployment, training, use, and maintenance [Alavi and Leidner 2001]. With the globalization of education efforts (such as distance education) and the technological revolution, it is anticipated that ICTs, especially Internet- and Web-based ones, will play even greater roles in the management of education [Hitt 1998]. Thus, it is critical for the IS community to continue the research effort on ICT use in education settings in order to both validate existing findings and reveal new findings.

Learning management systems (LMS), especially those that are Internet- and Web-based, have matured during the past decade and have been used to support a variety of learning formats, including face-to-face learning, distance learning, and hybrid/blended learning [Connolly et al. 2007; Conrey and Smith 2007; DeNeui and Dodge 2006; El Mansour and Mupinga 2007; Vaughan 2007]. Scholars have researched the perspectives of the administrators and policy makers [Amrein-Beardsley et al. 2007; Lofstrom and Nevgi 2007; Romm and Ragowsky 2001], the instructors [Amiel and Orey 2007; Mumtaz 2000], the students [Yi and Hwang 2003], or all of them [Vaughan 2007]. Among the many research interests and efforts are comparisons of various learning models [Leidner and Jarvenpaa 1995] and learning formats [Carmel and Gold 2007; Mentzer et al. 2007], pedagogy issues in technology assisted learning [Zhang 1998b], technology assisted learning outcome assessments [Connolly et al. 2007; DeNeui and Dodge 2006; Webster and Ho 1997; Yi and Hwang 2003] and learning process assessments [El Mansour and Mupinga, 2007], and evaluations of learning management systems [Chang 2001; Sturgess and Nouwens 2004], among others.

The studies that considered students' perspectives can be summarized to contain the following elements: the learning format or delivery modes, the technology used, and the effects on either the learning process or the learning outcome. Delivery modes can be (1) the classroom mode that is time and space bound where face-to-face is the main interaction method among class participants, (2) the online mode where students and instructors do not co-locate in time or space, interacting virtually via an LMS that is available 24 hours a day [for example, Alavi et al. 1997; Amiel and Orey 2007], and (3) a blended (or hybrid) mode that combines classroom and online modes, where interactions occur both face-to-face and through LMS [for example, DeNeui and Dodge 2006; El Mansour and Mupinga 2007; Lofstrom and Nevgi 2007; Morss 1999]. Technologies deployed in existing studies were of various natures and capabilities such as the Blackboard and/or WebCT systems, video conferencing, multi-user synchronous systems with streaming of data and voice, among others.

Learning outcomes, such as performance and satisfaction, have been popular subjects of study. It is noted that many studies on various forms of technology mediated learning have focused on the influence of technology features (e.g., presence or absence of video or media synchronicity) on learning outcomes [Alavi and Leidner 2001]. Bongey, Cizadlo and Kalnback tested whether there was significant improvement of test scores by the students over one semester due to the use of WebCT [Bongey et al. 2005]. Connolly et. al. found that online students have consistently performed better than the part-time face-to-face students [Connolly et al. 2007]. Deneui and Dodge found a correlation between Blackboard usage and high scores [DeNeui and Dodge 2006]. On the other hand, Mentzer and others found that learning outcomes do not differ much between Web-based and face-to-face environments, but in contrast, satisfaction can be lower in the Web-based environment [Mentzer et al. 2007]. It was found that various factors could be associated with learning outcomes, including reliability of technology, quality of technology, richness of the medium, interactive teaching style of instructor, instructor's control over technology, and positive attitude toward technology [Webster and Ho 1997]. Communications, especially dialogues and minimal demand on technology use, were important for both the instructor and the students [Zhang 1998a]. Strong support for communication and minimal demand on technology use allowed the focus to be on the subject matters rather than technologies, thus ensuring students achieving high learning performance and satisfaction [Zhang 1998a].

In contrast to learning outcomes, investigations on learning processes have been less prolific. Among the studies that examined the learning processes, Alavi, Yoo, and Vogel found that face-to-face instructions lead to a positive learning experience, which might be the result of rich communication and social presence [Alavi et al. 1997]. They did not find any significant effect of time and location on the learning process. They also came to the conclusion that students have a high degree of tolerance to technical glitches if these are turned into learning opportunities [Alavi et al. 1997]. In other studies, students reported isolation, loneliness and the lack of practical ICT usability as the main obstacles to learning [Lofstrom and Nevgi 2007; Mentzer et al. 2007]. Technology hiccups and feeling lost in cyberspace were some negative experiences in the learning process [El Mansour and Mupinga 2007].

Many of the earlier-mentioned studies used quantitative methods with predefined measuring constructs (i.e. performance, attitude, satisfaction); only a few used more open-ended qualitative methods to discover unexpected issues. In addition, few studies took a long term view to investigate issues over time to provide a fuller picture of the dynamics of technology assisted learning. One exception is a study of student perspectives on WebCT over three semesters [Morss 1999]. In the study, WebCT was used in addition to the face-to-face learning environment. Students from a variety of programs on campus were surveyed with a predefined questionnaire of 54 questions over 18 months. Descriptive statistics (mainly frequencies) were reported on a number of factors including effectiveness of WebCT tools and consequences of using WebCT (workload, student interest in subject and learning pace, learning method preferences, intention to continuously use WebCT, and gender difference). Although the study was to examine students' views of WebCT, the predefined questionnaire reflected the issues the researcher wanted to examine. It was unclear if the questions were on what concerned students most, and whether students would have additional concerns not mentioned in the questionnaire. In addition, participants' experience with WebCT during the 18 month period was not controlled. It was unclear whether participants who participated later in the study had more WebCT experience than the ones who participated earlier, and whether students might have filled in the survey more than once.

Another study that is worth mentioning was conducted to examine the effect of using WebCT on the student learning process and performance in large lecture classes where WebCT was used to augment class lectures and lab activities [Bongey et al., 2005]. Students' usage data were gathering by the automatic usage tracking function in WebCT that captures students' WebCT use activities. Test scores were gathered before and after implementing WebCT. Results showed that students' test scores increased substantially. Although the study showed that using WebCT was beneficial for increasing students' test scores, it did not provide any evaluations of WebCT by the students and did not cover any potential issues in using WebCT.

II. BACKGROUND AND OBJECTIVES OF THE STUDY

We now highlight the characteristics of the current study in terms of background, motivation, learning modes, technology used, study objectives and research questions. In the Fall 2006 semester, the Information School at Syracuse University in the US officially upgraded WebCT from version 4 to version 6 after a pilot run during the summer of 2006. WebCT as a learning management system plays an important role at the university and the school, and many classes (including both on campus and distance) require WebCT as part of the learning environment. WebCT 6 is substantially different from WebCT 4 in that it has a different look and feel, different functions, and different concepts. In many ways, WebCT 6 would be a new system to both the instructors and the students in the Fall 2006 semester regardless of prior use of WebCT 4. This study, however, is not a comparison between WebCT 4 and WebCT 6; the switch is background information to the study. The study focuses on WHAT students think about WebCT 6 at various times of use, not on the reasons for students' opinions. Another important background information is that there were no other alternatives for the instructors to use, thus instructors' comments or complaints on this new version might have some impact on the students' views. Nevertheless, we collected the students' views at different time points. We are not concerned with the bases on which students formed their views.

Due to the importance of WebCT 6 to instructors, students, the school and the university, it is vital to understand what the instructors and students think about WebCT 6 in their teaching and learning. Such an understanding can inform the school's decision making regarding LMS investment, training, use and maintenance. In order to gain such an understanding, we reviewed the literature from the administrative, teaching and students' perspectives. Then we conducted two studies from September 2006 to May 2007 in order to gain an understanding from multiple perspectives. One study was a survey of instructors during September 2006 (at the beginning of using WebCT 6). The other elicited students' views at three different points of time: September 2006, November 2006, and May 2007. This paper reports the students' views.

The study focuses on learning processes rather than learning outcomes. Only the online and blended modes are considered; for the blended mode, only students from the courses that mandate WebCT 6 were recruited for participation. All courses in the school that mandate WebCT 6 had a technology requirement in the course syllabi making students aware of this requirement. Specifically, we wanted to understand various types of students' ongoing

and unconstrained views of using WebCT 6 for their college education. For ongoing views we looked for the views to be stated throughout the process as students gained experience with WebCT 6. For unconstrained views we tried to hear students' true voices, rather than to ask students to fill in or confirm a pre-defined set of questions or assumptions. Such objectives warrant a special design of the study to be qualitative in nature and spread over a period of time (two semesters). We hope to gain insight on the following general research questions:

- RQ1. What are students' views about using WebCT 6 in their learning?
- RQ2. What are the changes in the patterns of students' views as their experiences with WebCT 6 increase?
- RQ3. What might be the suggestions for administrators, instructors, and the vender/designers regarding WebCT 6?

Several characteristics of this study make its contribution to the literature unique and significant.

- The study was conducted in a real setting where real users' views were collected and analyzed;
- Qualitative data were collected in unconstrained ways so that participants could voice what concerned them the most, rather than what the researchers planned to confirm or disconfirm;
- Different data collection methods were used to ensure a better coverage of issues and cross validation of the findings;
- A longitudinal design with three data collections at three distinctive times showed the dynamics of students' views over time and thus provided a much richer understanding;
- A large number of students participated in the study, with a total of 1,043 responses over the three data collections, making the results more convincing and representative.

The rest of the paper is organized as the following: In the Research Methodology section, the research design is introduced, which includes data collection timing and data collection methods. We also introduce data analysis methods, especially the development of coding schemes for content analyses. In the Data Analyses and Results section, we report the details of the data analyses. Finally, in the Discussions and Conclusions section, we provide discussions of the research limitations, implications, and contributions.

III. RESEARCH METHODOLOGY

The data for this study were collected as part of a larger research design that was aimed at a thorough evaluation of WebCT 6, quantitatively and qualitatively, using both top-down (theory driven) and bottom-up (data driven) approaches. The quantitative aspects of the study focused on affective evaluations of WebCT 6 [Zhang & Li 2007] and attitude toward WebCT 6 usage [Zhang et al. 2008], while in contrast, this study focuses on the students' views of WebCT 6 and uses longitudinal qualitative data collection methods identified as Time 1, Time 2, and Time 3 .

Time 1 was during the third and fourth weeks of the fall 2006 semester when students had just settled with their classes after the add/drop period and just started getting to use WebCT 6 for their classes. Data were collected in two ways: a paper-based survey and an online survey. The paper-based survey was administered by individual instructors during their class time. These surveys were completed by students in on-campus classes (the blended mode). For online classes (the online mode), an announcement was added to the class' WebCT 6 homepage that would lead students to the survey Web site. An incentive of winning one of two cash prizes of $100 each was used for the entire survey. A total of 634 students from 12 undergraduate classes and 46 graduate classes (including one doctoral class) participated in this first survey.

Time 2 was during the 11th and 12th weeks of fall 2006 semester. By this time, students would have made fairly extensive use of WebCT 6. Participants were recruited by e-mailing those who voluntarily entered their e-mail addresses in the first survey. A total of 241 students participated in the second survey. Again, an incentive of winning one of two cash prizes of $150 each was used.

Time 3 was toward the end of spring 2007 semester or the end of the academic year. By this time, respondents would have made extensive use of WebCT 6 and attended classes offered by at least two different instructors who mandated WebCT 6 in their classes. The same incentive of two cash prizes of $100 was used. Recruiting participants was accomplished by e-mailing participants from the last two surveys. This time, 168 students participated.

The second aspect of the research design was on how to collect qualitative data. Although a predefined set of specific questions could have been devised, we were more interested in finding out the students' own views of

WebCT 6. Two methods were used to collect students' views. The first method was semi-structured. Students were asked to list three WebCT 6 features (functions, appearance, content, etc.) they liked most, three features they disliked most, and three features they wished to have. We believed that students would list features that they were most impressed with, thus reflecting what they were most concerned about, either positively or negatively. The second method was to employ a completely open-ended question with no prompting or examples. Students were asked to comment on any aspect of WebCT 6. Again, we believed that students would most likely to voice things that either annoyed or pleased them the most.

Data from the two different methods were content analyzed separately by different researchers using two different coding schemes.

Coding Scheme for the Most Liked/Disliked/Wished Features

The coding scheme was an adaptation of a previously developed scheme for general Web site evaluations [Zhang et al., 2001]. Zhang and colleagues used an inductive thematic analysis approach [Boyatzis 1998] to examine user perceptions of the importance of Web site design features in six different domains: financial, e-commerce, entertainment, education, government, and medical. During data collection, they asked participants to list the five most important features for each domain. The coding scheme reflected the five most important features and categories (or "families of features" as appeared in their paper) across the six domains [Zhang et al. 2001]. Since our study focused on the education domain and had a similar nature in data collection, the scheme developed by Zhang et al. is considered applicable.

The scheme was adapted to fit this study by reducing the number of families in Zhang et al.'s scheme due to their lack of relevance in the education domain. We also expanded families to show more aspects of learning related activities and concerns. Appendix A shows the coding scheme for WebCT 6 features and categories/families.

We developed and validated the scheme by following the procedure suggested by [Boyatzis 1998]. First, one researcher started with a sub-sample of data during the initial development. Second, the scheme was tested by another researcher on a different sub-sample of data. Third, the scheme was refined iteratively with different sub-samples until saturation was achieved (no new codes can be added).

Coding Scheme for the Open-Ended Comments

A new coding scheme was developed for this part of the data in order to capture the students' views without any pre-set framework. Again, the suggested procedure [Boyatzis 1998] was closely followed. For this part, the entire comment/response from a student formed the unit of analysis as well as the unit of coding [Boyatzis 1998]. A different researcher screened the entire data set from Time 2, then initiated the coding scheme based on a sub-sample of Time 2 data. After several rounds of testing and refining with different sub-samples, and inviting another researcher to code with interim schemes to test inter-rater reliabilities, the final scheme was developed. Appendix B shows the coding scheme for the open-ended comments.

IV. DATA ANALYSES AND RESULTS

In this section, we first report the demographics of the participants and their reported use of WebCT 6 at the times of data collection. Then, we report the results of the most liked/disliked/wished features and the results of the open-ended comments. We also compare the results from the two methods to check issue coverage and cross validate findings. Finally, we examine further the most concerned feature category—communication—to gain more insight.

Participants and WebCT 6 Use

Table 1 lists the demographics of the student participants for each of the three data collection periods.

Students reported their perceptions of WebCT 6 use to be either voluntary or mandatory. They also reported the frequency of use (hours per week) and how many weeks they have been using WebCT 6 at the times of data collection. Table 2 shows that regardless of campus or online courses, WebCT 6 was perceived to be required by the majority of the courses. There are some differences on the total number of hours per week using WebCT 6 between campus and online courses, which can be expected. That is, online students spent more time on WebCT 6 than campus students. For subsequent analyses, the paper-based and online-based surveys were considered together for Time 1.

Table 1. Demographics of Students Participants

	Time 1-Paper (N=381)	Time 1-Online (N=253)	Time 2 (N=241)	Time 3 (N=168)
Male	32%	32%	36%	30%
Female	67%	67%	64%	60%
Caucasian	57%	60%	64%	61%
Asian	13%	19%	22%	17%
African-American	14%	5%	6%	5%
Hispanic	6%	4%	3%	2%
Other	8%	7%	5%	5%
Undergraduate students	86%	2%	21%	14%
Masters students	2%	89%	68%	81%
Doctoral students	12%	9%	11%	5%
Age	20.7 (4.4)	32.4 (9.4)	31.0 (10.6)	32.1 (10.1)
Year of using computers	10.8 (3.9)	15.2 (5.9)	14.8 (6.0)	15.5 (6.5)
Year of using the Web	8.4 (2.5)	10 (2.9)	9.7 (2.7)	10.4 (3.1)

Note: Among the 1043 responses, 47 were unusable. They were excluded from further analyses starting from Table 2.

Table 2. Reported Actual Use of WebCT 6

	Time 1-Paper (N=361)	Time 1-Online (N=244)	Time 2 (N=224)	Time 3 (N=167)
Using WebCT 6 is mandatory/required	93%	96%	67%	91%
Using WebCT 6 is voluntary/optional	7%	4%	31%	9%
Number of hours/week for all courses	5.4 (6.3)	14.2 (11.4)	12.3 (18.0)	10.6 (9.0)
Number of weeks using WebCT 6	3.8 (3.7)	7.7 (7.7)	14.7 (10.1)	43.6 (12.2)

Results of the Most Liked/Disliked/Wished Features

Figures 1–3 report the results for the Most Liked, the Most Disliked, and the Most Wished feature categories, respectively. The Y axis means the percentage (%) of listed features out of the total number of features in the Liked, Disliked, and Wished categories respectively. For example, at Time 1, Learning Activity Support features took about 13 percent of all the Most Liked features, about 8 percent of all the Most Disliked features, and about 18 percent of all the Most Wished features.

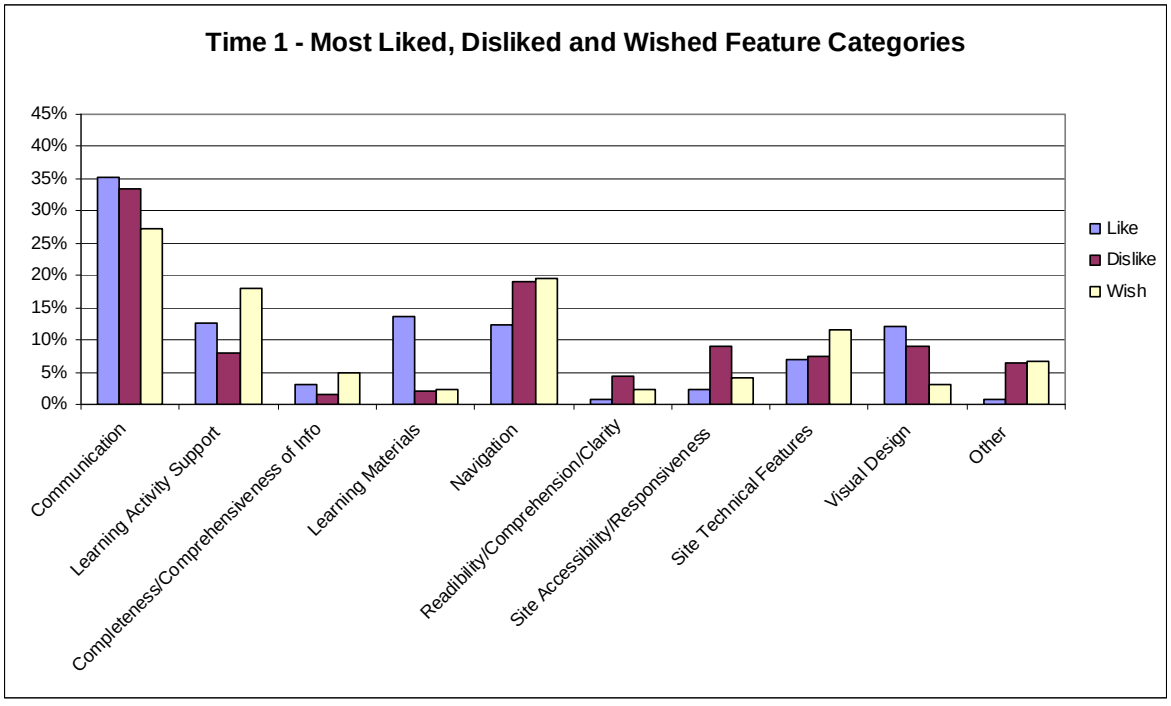

Figure 1. Most Liked, Disliked, and Wished Feature Categories at Time 1

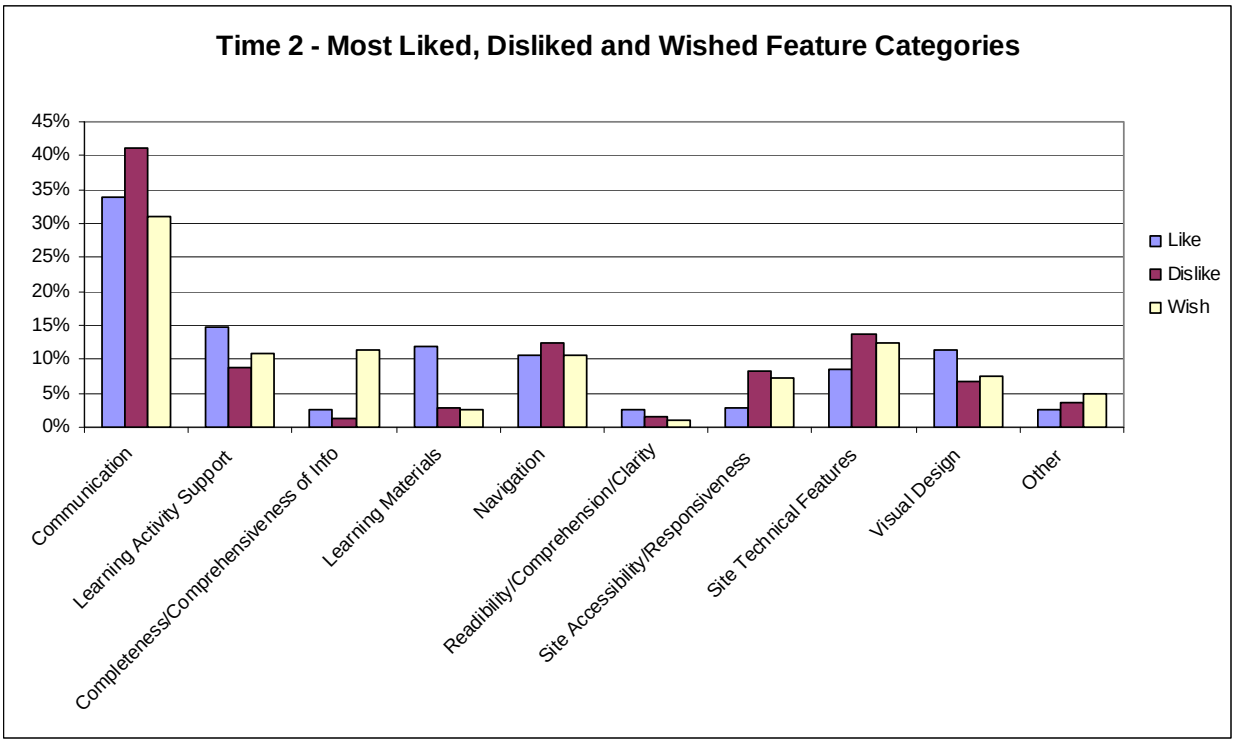

Figure 2. Most Liked, Disliked, and Wished Feature Categories at Time 2

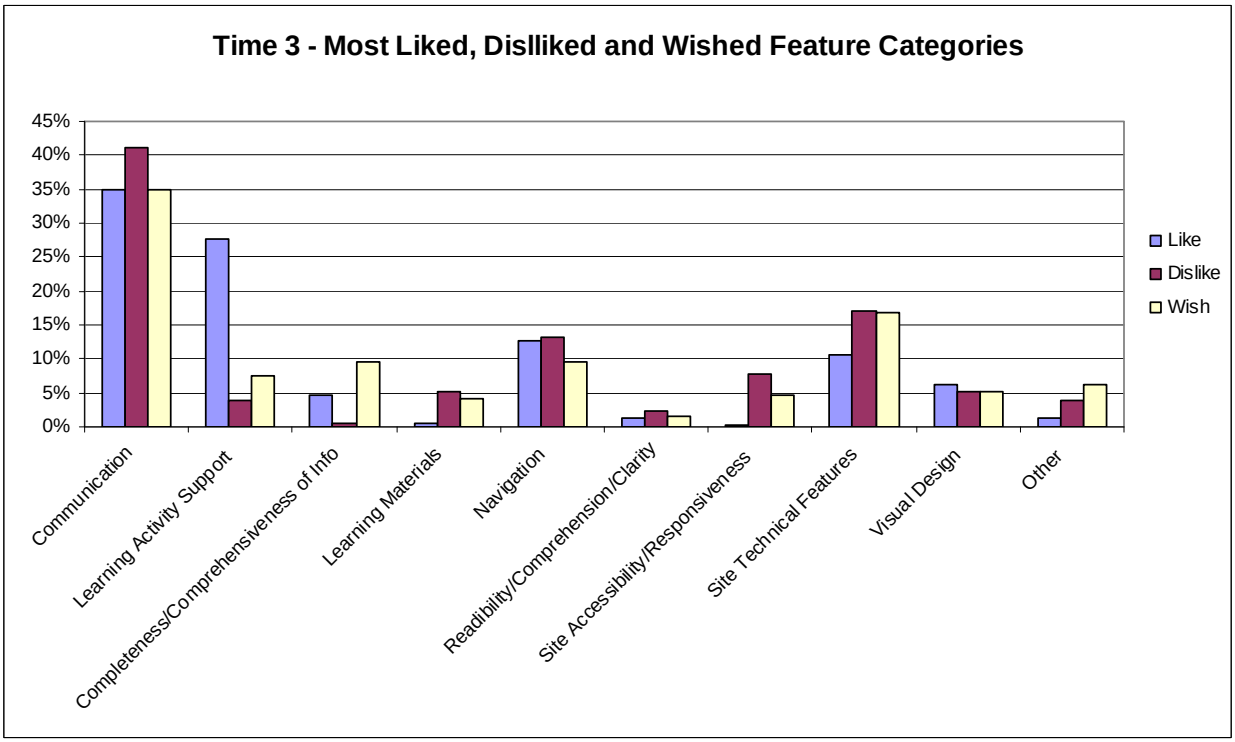

Figure 3. Most Liked, Disliked, and Wished Feature Categories at Time 3

The feature categories can also be examined across different surveys to reveal any changes over time. Figure 4 to Figure 6 depict such changes. The following are noticeable from these figures:

- Communication features stand out to be the most liked, disliked and wished features, and this is true across time. As the experience with WebCT 6 increased, students weighed more complaints and wishes for the communication features.

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- As the experience with WebCT 6 increased, students had grown to appreciate features that support learning activities. As shown in Appendix A, such features include the assignment drop box, collaboration tools (such as group discussion boards), progress reports (such as My Grade), reminders for upcoming assignments or events, personalization and writing tools.

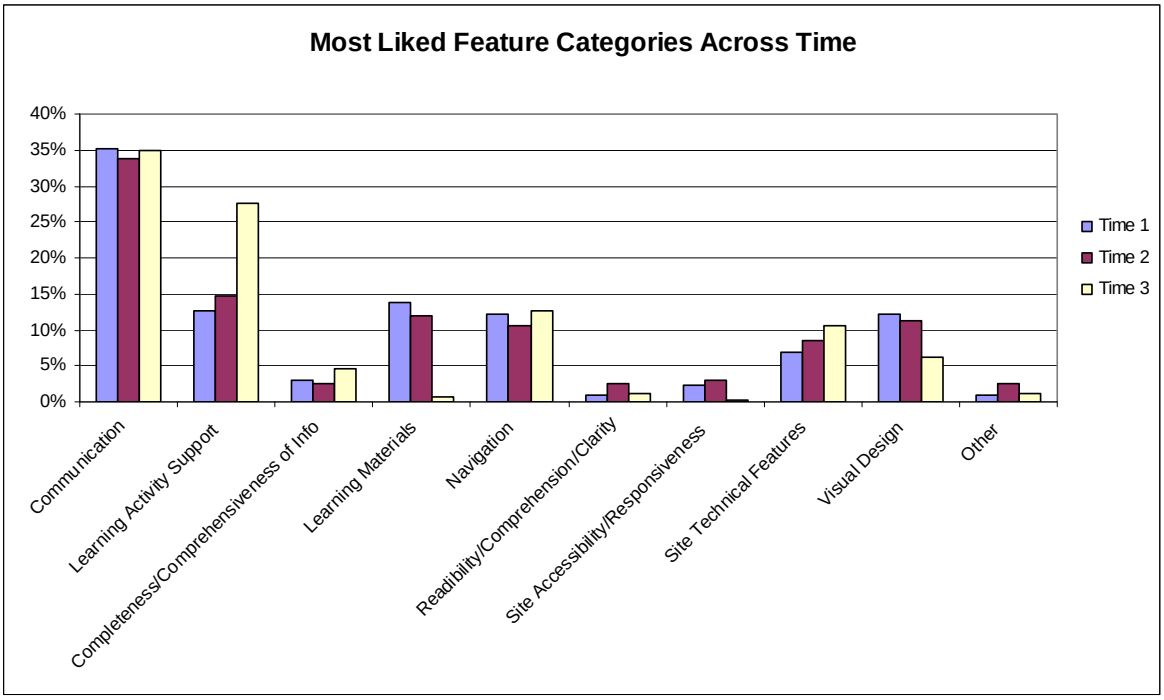

Figure 4. Most Liked Feature Categories across Time

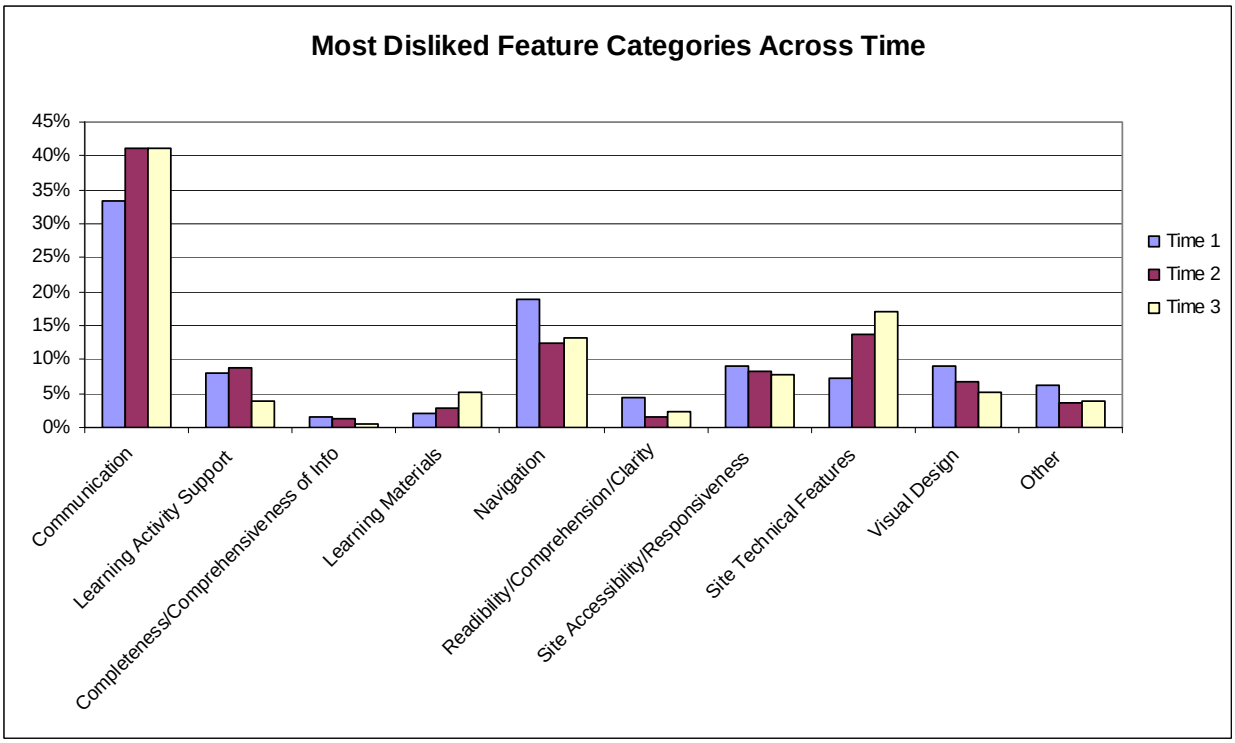

Figure 5. Most Disliked Feature Categories across Time

- Students' concerns on navigation decreased as their experience increased; their complaints and wishes for other site technical features increased.

- Students seemed to be least concerned about learning content related features, as indicated by the bars to be among the shortest. Categories such as Completeness/Comprehensiveness of Info, and Readability/Comprehension/Clarity are among the bottom half of the 10 categories in all three times.
- Another category that does not concern many students is Learning Materials. As time went by, their liking of learning materials decreased greatly, and they did not overwhelmingly dislike or wish for more learning materials.

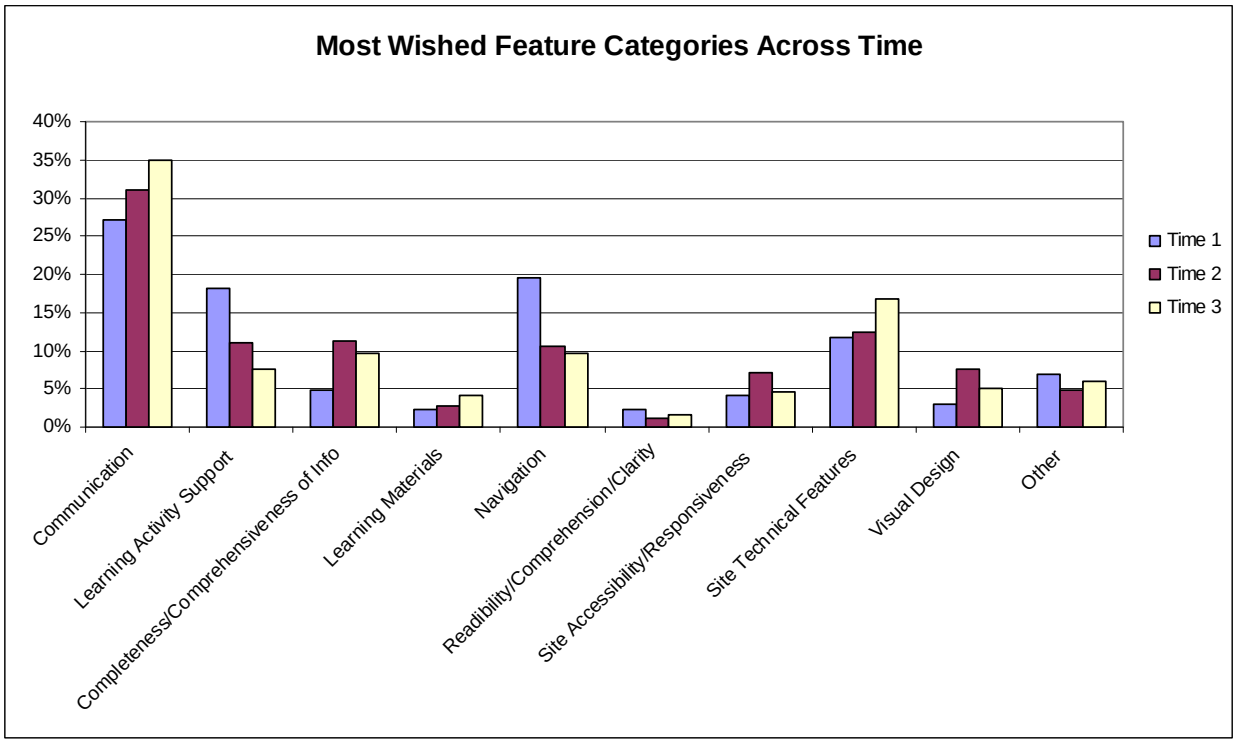

Figure 6. Most Wished Feature Categories across Time

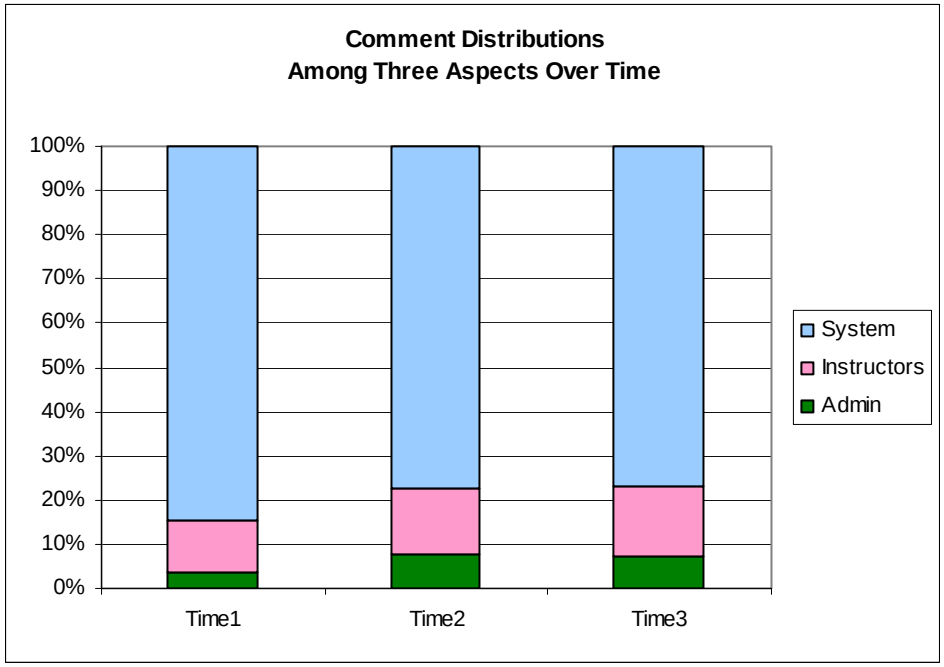

Figure 7. Comparison of Distribution of Comments across Categories

Results of the Open-Ended Comments

The purpose of this study is to find out what students think about WebCT 6. The open-ended comments are another way of finding out. Content analysis shows that students' open-ended comments fall into three dimensions: comments on the WebCT 6 system, comments on instructors and their use of WebCT 6, and comments on WebCT 6 administration. Appendix C provides some sample quotations of the open-ended comments as coded with the coding scheme. If a student's response was about the instructors, it would be counted as one response for the instructor's dimension.

The distributions of the responses among these three dimensions can indicate where the major concerns may lie, thus to provide insight to our research goals. Figure 7 depicts such distributions within each survey, and across three surveys. For example, it shows that in Survey 1, about 85 percent of the comments were about the WebCT 6 system, 10 percent about instructors and 3 percent about administration. Consistently over the three surveys, most comments were about the WebCT 6 system. Over time, it seems that the percentage of comments on WebCT 6 system decreased slightly, but the percentages of comments on instructors and administrators increased.

We further show the distribution of comments on the WebCT 6 system dimension to see what system features concerned the students the most. Figure 8 shows within each survey, the percentage distribution of comments on various facets of the WebCT system. Figure 9 shows that collectively across the three surveys, which facet received most concerns. The figures show that most concerns are around Functions/Utilities.

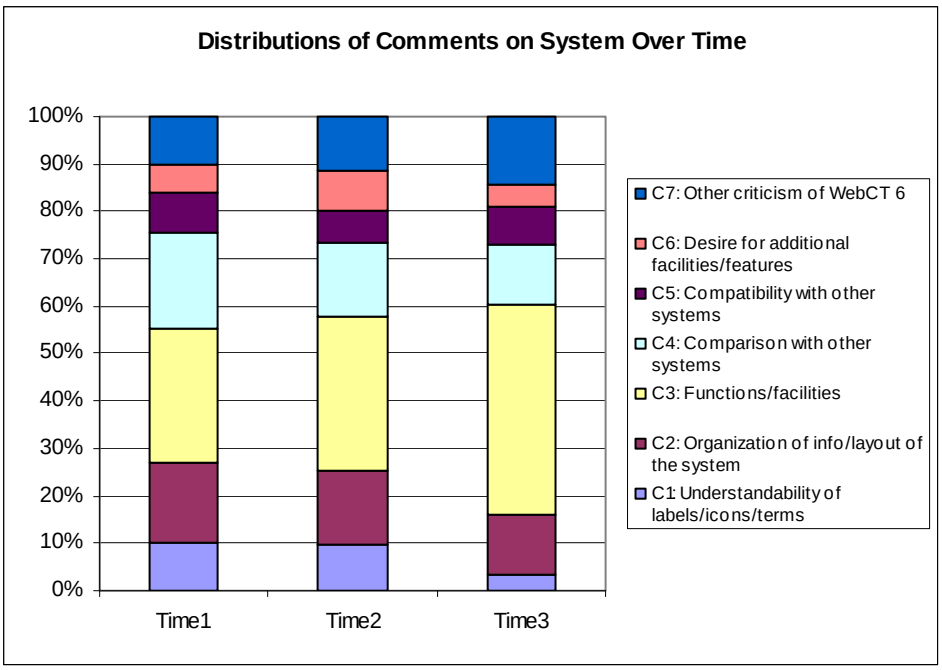

Figure 8. Comparison of Distribution of Comments about WebCT 6 System

Comparison of the Results by Two Methods

The two schemes show different emphases. The scheme for the open-ended data clearly shows three dimensions: the S-I-A notion that includes the system (S), the instructors (I), and the administrators (A). Such dimensions are at a higher abstract level than the WebCT 6 features using the semi-structured approach. For the open-ended field in the survey forms, students could freely voice whatever that concerned them the most and that they had not had a chance to voice yet (this was the last question in the survey), rather than think in terms of WebCT 6 features, as we asked them to do in the first method.

By re-examining the features data, we found that the S-I-A notion is also apparent. The "Other" category of the coding scheme for features is for the purpose of grouping any listed "features" that have to do with either instructors or administrators. As shown in Figures 4–6, this "Other" category has a higher frequency than the categories related to content quality. This indicates that students were more concerned with instructors and administrators than with content quality.

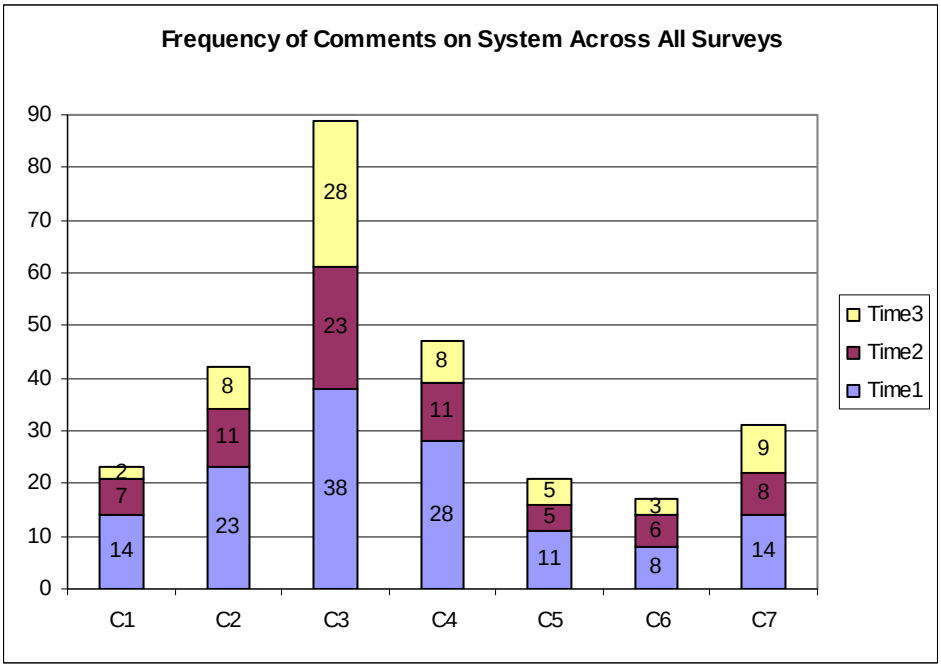

Figure 9. Frequency of Comments on WebCT 6 System across Time (The legend for C1-C7 is the same as that in Figure 8.)

Although the open-ended data showed concerns on the system dimension, the scheme does not provide as much detail as the featured based scheme. For example, Figures 8 and 9 indicate that C3 (Functions/Utilities) is of most concern. We would need to drill down further, however, to know what specific facets of the system functions bothered the students and in what ways.

Overall, the two methods complement each other. Collectively, they provide a more realistic picture of the true views students have. The feature scheme is good to show the specific system features and their categories (see Figures 1-6 and Appendix A) and the extent to which they are of concern. Since communication is an important part of technology assisted learning, it is understandable that communication related features dominate the concerns students have across time. A further examination of the open-ended result on C3 shows that the majority of the comments actually had to do with the communication components, such as message/discussion boards, e-mails, notifications, pop-ups, and announcements. The two data sets provided a consistent picture of what concerned the students the most. This is exactly what we intended to find out in this study.

Further Analysis of Communication Related Issues

Due to the overwhelming concerns on communication related features, we decided to provide further analysis on these features. Appendix A shows the specific features in the communication category. We reexamined the communication feature data to show frequency distribution patterns at the feature level. Some of the 11 features had a very low frequency and were dropped for further analysis. Figures 10-12 summarize the eight communication features by the most liked-disliked-wished types across different surveys. We will discuss the findings along with the open-ended comments related to these features.

Some of the features need additional description here before we can discuss the findings. The announcements feature is represented as a link on the navigation panel of WebCT 6 so that once clicked, the students can see messages from the instructor on the screen. Pop-ups have two uses: for making announcements (but students would have no control of the appearance of the pop-up windows) and for displaying information. Notifications mean the small green colored icon that would appear next to the e-mail or discussion links on the navigation panel to indicate there are new e-mails or new posts. Community Info includes two types of information: the class members' profile information once the Roster link on the navigation panel is clicked, and the information showing "Who is online."

Communication tools can provide different levels of interactivity to participants. Among the eight features, the least interactive tools include announcements, calendar, and community information. These tools are one-way information delivery tools. Participants have full control of when or whether to access these tools or receive information provided by these tools. Figures 10-12 show that students generally liked these features and had little concerns about them.

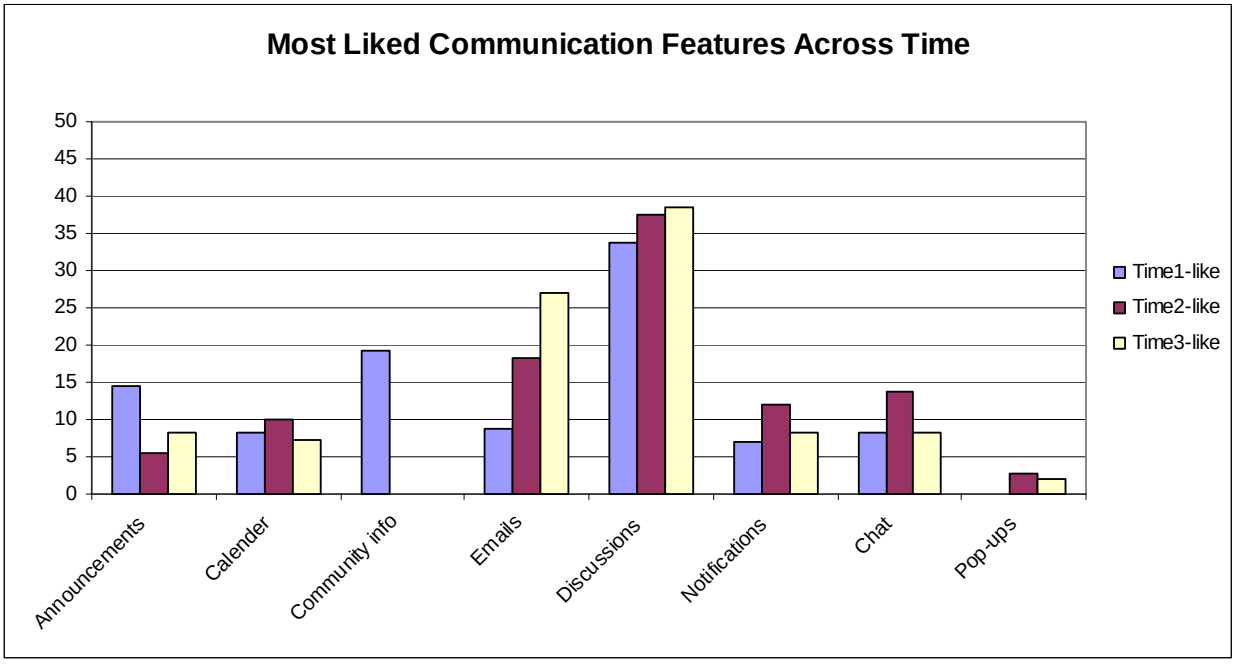

Figure 10. Most Liked Communication Features across Time

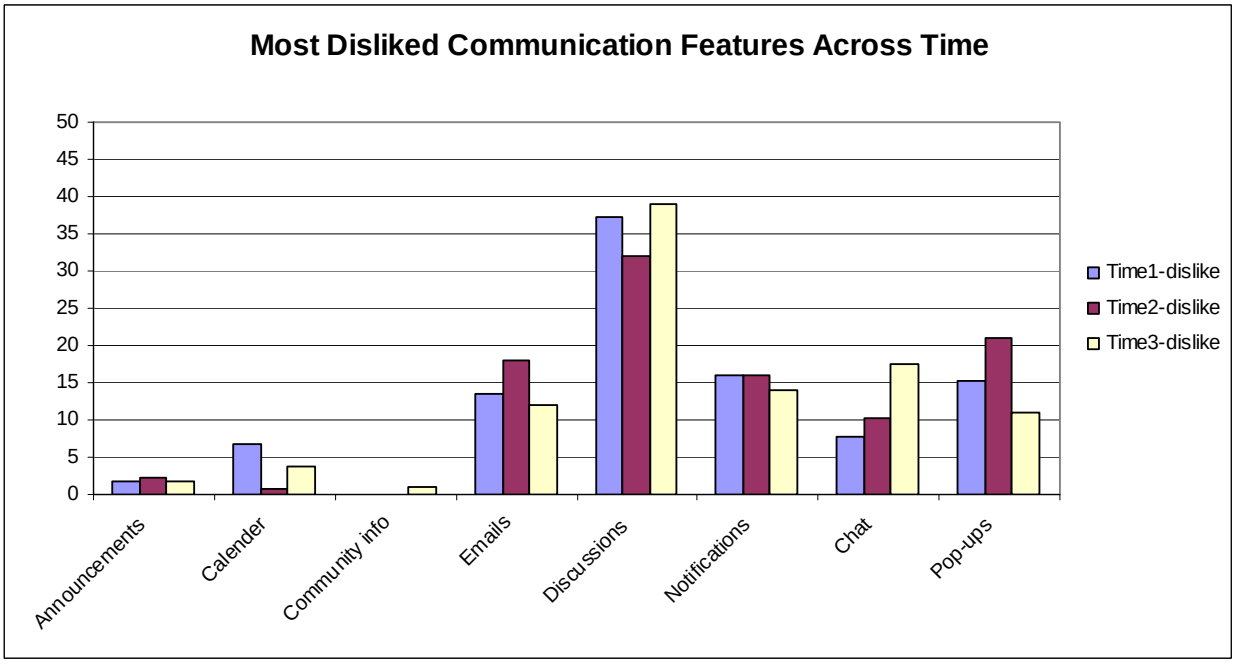

Figure 11. Most Disliked Communication Features across Time

The tools with moderate interactivity would be emails, discussions, and notifications. These are two-way asynchronous communication tools that may involve more people or messages. Although these tools are asynchronous in nature, timeliness is important: if an e-mail or post is not received or responded to in time, there can be consequences for the students' participation and learning in the course. Figures 10-12 show that these are among the most reported features for the communication category. The discussion feature was rated as the most liked, most disliked and most wished feature during all three surveys. Students liked certain aspects of the discussion feature and disliked and wished for other aspects. As students' experience with WebCT 6 increased, the discussion feature received increased weight to be most liked, most disliked and most wished feature. Students believed the discussion feature was one of the most important features in WebCT 6 for their learning. This is understandable because the discussion tool is the platform for students to air their own perspectives, understanding, and comments on course materials, and to interact with other members for course content. Such participatory and

collaborative learning is found in the majority of the courses offered. Any glitches of the tool would directly and immediately affect students' learning experience.

A careful examination of the related comments on the discussion feature shows that most complaints and suggestions have to do with the ways the discussion posts were organized and displayed. Students suggested that the organization is confusing; the display is not flexible; and retrieval of old postings is difficult. For example, the following comments were common among the comments on discussion:

"The discussion boards can get very confusing given the threading and the way new posts are shown."

"Really difficult to go back and find a particular reply."

"It is VERY annoying that one cannot view only the new messages on the discussion boards."

"When clicking on New Messages in Discussions, I get a lot of old messages that I've already seen."

"One egregious downfall of WebCT 6 is that it does not remember the posts I have already read on one computer when I access it later from another computer."

"Is there a way to hide posts that are already read but reactivate the entire thread when a new reply is posted?"

"Make options such that we can select to always see the expanded threads and then save these personalized settings."

The notification feature can be somewhat related to the discussion feature. For example, the following comment is coded as a notification feature because the students would have seen the "New Post" icon in the discussion link before trying to find the new posts:

"I must wade through old postings, looking for the 'NEW' one, when there isn't a 'NEW' one after all."

Finally, the most interactive tools would be chat and pop-ups. Chat is a synchronous tool where a group of people can message each other online in real time. People also have the control over whether to be in a chat session. Figures 10-12 show that as time went, the chat tool became more dislikable and more wishful than likeable. This may have to do with the limited functions of the chat tool, as one participant commented:

"The chat feature should be more interactive."

Overall, our data shows that the chat tool did not generate more overwhelming responses than the moderate interactive tools such as discussions, notifications and e-mails. This may have to do with what some of the instructors reported that they hardly used the chat tool in WebCT 6 for their classes. Some students reported that they actually used popular IM tools when they had a need for their course work, rather than using the chat tool in WebCT 6 that is much less powerful than many popular IM tools.

Pop-ups automatically appear on the screen as a separate window and normally during a time when people do not anticipate for them, and they have no control of not having it. As shown in Figures 10-12, people disliked pop-ups more than they liked or wished for them. Some specific comments on pop-ups include:

"Stupid pop-up windows EVERY TIME I log in."

"The pop-up box that comes up ALL THE TIME."

"Pop-ups – get the message off."

"Unpredictable downloading of files (pop-up)."

"Not so many pop-ups when opening."

"Let users resize (and save the size) of pop-up windows."

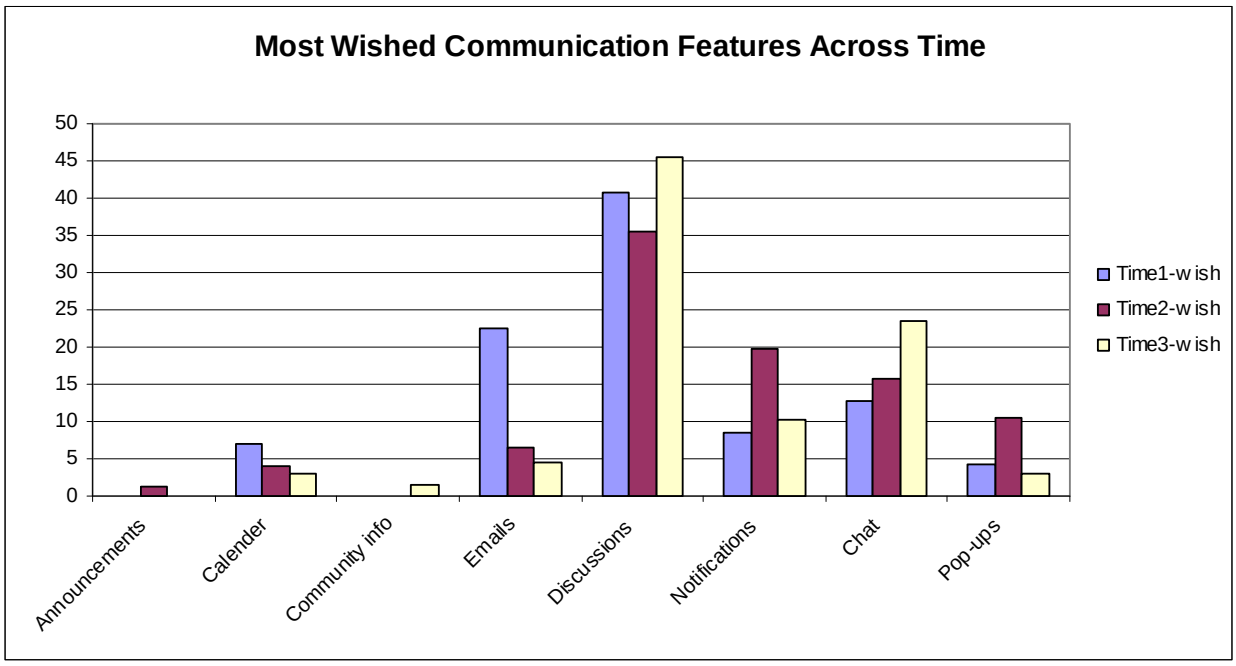

Figure 12. Most Wished Communication Features across Time

V. DISCUSSIONS AND CONCLUSIONS

In this section, we first provide a summative discussion around the following research questions that we listed at the beginning of the paper:

- What are students' views about using WebCT 6 in their learning?
- What are the changes in the patterns of students' views as their experience with WebCT 6 increases?
- What might be suggestions for administration, instructors, and the vendor/designers regarding WebCT 6?

We then provide additional discussions on research implications and contributions.

Students' Concerns about Using WebCT 6

From the qualitative analysis of students' responses, we found that students seem to have an integrated view of their technology assisted learning environment, as depicted by the S-I-A notion. For example, both the semi-structured question and the open-ended comment field gathered data showing that students' concerns are related to the WebCT 6 system, the instructors using WebCT 6, and the administrators who manage and maintenance WebCT 6. This is an interesting finding in that students' concerns are beyond just the learning management system itself. Although in a technology assisted learning environment, students interact with WebCT 6 directly, it is the instructor that is behind the picture. Instructors decide why and how students have to use WebCT 6. Instructors design the WebCT courses that directly influence students' use and any consequences of the use. It is almost impossible for students not to comment on instructors when they are asked to comment on any aspect related to the WebCT 6 system.

It is in the same line of logic that administrators play an important role in students' use of WebCT. Administrators are personnel in a local university who are responsible for the selection, implementation, training, maintenance, and support of a learning management system. Administrators are important because they provide the "infrastructure" of using a learning management system to learn particular subjects guided by particular instructors, and function as the "railroad engineer" to ensure a smooth experience with the LMS. To this extent, it should be expected that students would comment on administrators as they were asked to comment on features of the WebCT 6 system.

With respect to the administration of WebCT 6, students stressed on the training aspect of WebCT 6 (training for both students and instructors) and accountability of the technical support, as indicated by Appendix B.

Regarding instructors, what seemed to trouble students most is the very personal, diverse, or "amateur" (as one student put) ways of using various features of WebCT 6 by different instructors. In addition, students were not

confident about instructors' use of WebCT 6. These are demonstrated in Appendix B and some comments in the feature based data.

Expectedly, out of three dimensions of administrators, instructors and the system, students were most concerned with WebCT 6 as a system. Students' views on the system covered a number of different aspects. In an asynchronous environment, which is how WebCT 6 is used most of time by this population, the online discussion board and other communication related functions are the main platform for students to exchange ideas and learn collaboratively (Figures 1-6, and 10-12). These features were considered important features thus were liked by the students, but they also caused much displeasure among the students.

Change over Time in the Patterns of Students' Concerns

The noticeable changes during the nine months have been detailed in early part of the paper. Here we highlight two of such changes:

The overall distributions of the most liked, disliked and wished features changed (reference Figures 1-6). For example, at Time 3 students liked more about features that support learning activities than they did at Time 1 and Time 2. This indicates that as their experience with WebCT 6 increased, they discovered more WebCT 6 features that can support their learning activities. On the other hand, their wishes for communication-related features increased at Time 3. This can imply that the students became more aware of the importance of communication functionalities in supporting their use of WebCT 6. They might have also become aware of the possibilities of better communication features to address their technology assisted learning needs.

Concerns for instructors and administrations increased at Time 2 and Time 3. It is understandable that during Time 1, students as novice users were busy getting acquainted with the new system thus their attention was more on the system features than on the general assistance the administrators can provide and on the instructors. As time went on, students might have found out that there are certain aspects that are beyond the system itself, and could have been done outside the system to make the entire learning experience better.

These findings are important because it provides insight on what concerns students at different stages of using a learning management system. Such insight can guide any training or student support related efforts to make such efforts more effective.

Suggestions

To Administrators

The results can provide a number of suggestions to the administrators who are in charge of LMS selection, training and support. These suggestions show the aspects of candidate systems as perceived important by students.

1. Persistent problems

Although there are some changes of the concern patterns, some same concerns occurred across the three surveys (see Figures 1-6). This is a clear indication that some problems in WebCT6 have become persistent in the sense that just familiarity with the system is not adequate enough to surmount those problems. In the best interest of the students, such problems must be addressed. The most mentioned concerns are related to the discussion feature, the notification feature (for new postings, new e-mails, or new learning modules), the private e-mail feature, integration with other systems, compatibility with browsers and platforms, pop-up windows, and the personalization of the class site.

Specially, the areas of frequent use and frequent complaints shown in the data include:

Discussion board and other communication channels. In the current system, discussion board forms a major platform for communication within students and between instructors and students. It is important that this facility should be easy to handle by the students. Not only the administrators should look into this aspect for the current version, but also for any future procurement, the administrators should assess which part of an LMS will be highly used and assess the quality of that part from various perspectives such as representation of information, organization of information and functionalities.

Compatibility. Unless the learners have the freedom to use the hardware and software of their choices, the success of an LMS will be greatly impaired. We must not forget that there are now overseas students for whom it may not be easy to change the technology only for the purpose of WebCT 6 for various reasons. The administrators should look

into how the present version can be made more compatible with various platforms and any future procurement of new systems should also focus on compatibility.

Integration with other systems. With the increase in the number of channels of communication that students are now using, it is increasingly desirable that users remain connected to the learning system in multiple ways. E-mail is a system with which most learners are connected frequently. It is suggested that there should be a much closer integration between WebCT 6 and e-mail systems so that messages can be sent to/from the WebCT 6 environment. Currently, WebCT 6 has an in-system e-mail function but it is not possible to connect WebCT's e-mail system to other popular e-mail systems. Students also suggested the integration of WebCT 6 with the university's enterprise system where students would manage their education matters such as course registration.

2. Making it easy to learn

The longitudinal study shows that a good number of comments (including some of the disliked and wished features) indicate students' lack of understanding of the system. For example, some students listed some features they wished to have in early surveys. These features are actually in place in WebCT 6. Some students disliked certain features because they did not understand the features. Formal training in the form of sessions may help, but normally users tend to think they can figure it out themselves. Maybe it is worth exploring other possible ways to get users (including instructors) quickly acquainted with the system, and to help each other or learn from each other along the way. Maybe instructors should be involved to help students (and themselves) in such an informal learning process.

To Instructors

Instructors can be and should be creative in their teaching; however, too much diversity among instructors can be taxing. One possible approach to addressing this issue is to develop a generic reference framework on how WebCT 6 will be used within a group of similar courses or curriculum.

Instructors also were criticized for not being familiar with the system or underutilizing the functionalities of the system. In addition to causing student frustrations of using WebCT 6, these concerns also affect students' confidence in the instructors, thus have a negative impact on the instructor-student interaction and the entire learning experience.

To the Vendors and Designers

The findings can provide suggestions to many specific areas for improvement on the WebCT/Blackboard product in particular and LMS in general. The study identified certain functionality and usability problems. In addition, the study suggests that there might be some issues that are deeply rooted in the differences between assumed pedagogical issues by the LMS and the actual ones as delivered by the instructors or administrators. For example, the concept of Learning Modules in WebCT 6 represents a pedagogy assumption that an instructor would organize the course materials in a way that is similar to a more traditional learning setting. This may not work well with some of the dynamics occurred when students use WebCT 6, especially in a complete distance mode. In general, WebCT 6 is not flexible to accommodate different teaching styles. This has already imposed problems as reflected in this study. It can further cause problems down the road as technology-assisted learning itself evolves and changes [Pahl 2003]. All these concerns prompt the vendors and designers of WebCT 6 and other LMS to better understand the dynamics of many technology-assisted learning pedagogy issues and evolutions.

Research Implications and Contributions

Limitations

Before discussing the research implications and contributions, we need to point out the limitations of this study. Any approach can have advantages and disadvantages. In this study, we used a bottom-up approach to gather qualitative data. This approach has the advantage of discovering surprises that a theory driven approach may not be able to do. For example, we found that students' concerns about WebCT 6 go beyond the system itself. Were we to use a theory driven approach and gather data with a pre-defined survey, we would have missed this finding. On the other hand, this approach may result in limited methods of analyzing data. The second limitation has to do with the study context. Ours is in an educational setting. Cautions should be used when applying the findings to corporate training settings. The third limitation is that this paper reports the students' view of a learning system they must use. Although we collected the instructors' views, we did not provide both views for a more thorough investigation. Future efforts will be put on taking multiple parties' views on the same system.

The study has several contributions: its findings have research and practical values and can be applied to other educational settings; the study offers a methodological benefit for other researchers interested in similar phenomenon; and the study contributes to the literature with a more holistic view of possible types of interactions in a technology assisted learning environment. These are discussed below.

The Value and Applicability of the Findings

LMS have been adopted by many universities across the globe, disciplines, levels of teaching (undergraduate, graduate, doctoral students), and delivery modes (classroom, online, and hybrid/blended). Besides the commercially available LMS such as WebCT and Blackboard, there are open source LMS being developed, such as the Sakai project (http://sakaiproject.org/).

With emerging educational needs, including global education and diverse student bodies, LMS have become important tools for teaching and learning. The question of whether it meets the educational needs effectively, efficiently and satisfactorily is still understudied. This research contributes to our understanding to this question. Although we studied WebCT 6 as a particular LMS with students from a particular school in a particular university in the US, we believe that the majority of our findings can be applicable to a much broader range of LMS and student population.

Research Methodology

This research also has methodological suggestions to other researchers. We used two qualitative methods in a longitudinal study, which is rare in the literature. A predefined questionnaire could impose certain bias in gathering data, thus might miss some interesting and unexpected issues. A one-time data collection can show only part of the concerns and miss the dynamic aspect of the phenomenon. The timing of the data collection can impose certain constrains as well. For example, had we collected the concerns only during the initial use, or only during some time of the continued use, we would not have been able to have a good understanding of persistent concerns as well as time specific concerns. Our results indicate that the two methods work together very well. Collectively, they provide a better picture that reflects both high level concerns such as the S-I-A notion, and detailed system level concerns. Such a longitudinal and multi-method approach can be designed in similar ways to ensure the discovery of true issues and unexpectedness in other technology-assisted learning studies.

Another useful methodological outcome of the study has to do with the two coding schemes that can be applied in future investigations.

We believe that our approach can complement many other quantitative and qualitative studies [Picciano 2002] to better understand the various aspects that influence both the process and the outcome of technology-assisted learning.

The Learner-Administrator Interaction

When compared to some frameworks in the literature, it is interesting to see similarities and overlaps of the thinking process and outcome. For example, researchers have identified four types of interactions in the technology-assisted learning context: learner-content, learner-learner, learner-instructor, and learner-interface [Moore 1989; Thurmond and Wambach 2004]. Although interaction has many definitions in the literature, a parsimonious definition is that interactions occur when objects and events mutually influence one another [Ju and Wagner 1997]. Even though we did not use this classification of four types of interactions in our development of the schemes, the open-ended comments naturally fall into three groups that overlap with and even suggest an expansion to the four types of interactions: the S-I-A notion of system-instructors-administrators. For example, learner-content interaction related comments were found in both the Instructors and Systems dimensions of the comments. Learner-learner interaction related comments were reflected in System comments especially in the Learning Activity Support and Communication categories. Learner-instructor interaction related comments were found in the Instructors dimension. And finally, learner-interface related comments were within the System dimension.

What is missing from the literature is the learner-administrator interaction, which is different from the learner-instructor interaction. In the early part of the paper, we have discussed the importance of administrators in technology-assisted learning. This learner-administrator interaction was not necessary during the traditional learning context but becomes essential in the technology-assisted learning context. Administrators are closer to students than vendors do. Thus they have a greater responsibility to provide a healthy atmosphere and infrastructure for the students (and the instructors) to better utilize LMS for their learning.

As IS educators, our roles in technology-assisted learning with LMS are multi-folds. Besides being instructors, we are uniquely equipped with the core IS knowledge that we discover from our research: what factors are involved in technology adoption and use, and how technology can benefit or hinder organizations' and humans' various tasks including teaching and learning. We are also equipped with social science research skills. There can be many research opportunities for IS educators for scholarly discovery in technology-assisted learning with LMS. For example, it would be interesting to research the appropriate LMS support for various learning and teaching styles. It would also be interesting to study whether there would be some standard course delivery methods that can be effective for many teaching and learning styles. Although this research touched these topics to some extent, it is still far from being clear what the true dynamics are in technology-assisted learning and how LMS can help in the learning process as well as learning outcome.

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APPENDIX A. CODING SCHEME FOR FEATURES AND CATEGORIES

Category of Features	Feature Code
Communication	Announcement Calendar Chat Community info Conference Discussion Email File sharing Notification Pop-ups Voice
Completeness/Comprehensiveness of Information	Center for all related info Comprehensiveness of info. Integration w/ other systems Link to additional info
Learning Activity Support	Assignment Collaboration Personalization Progress Reminder

	Writing tools
Learning Materials	Learning materials Learning module Lectures Syllabus
Navigation	Accessibility of info Collapsing bar Consistent layout of info Intuitive interface Layout of info Navigation Use of frames
Other	Admin or support related issues Instructor's use related issues
Readability/Comprehension/Clarity	Easy to understand info.
Site Accessibility/Responsiveness	Site accessibility Site reliability Site responsiveness
Site Technical Features	Compatibility Customization of site Functions Printable/downloadable Search tool Uploadability
Visual Design	Appearance Color Legible Visuals

APPENDIX B. CODING SCHEME FOR OPEN-ENDED COMMENTS

Dimension	Code Description	Examples/Indicators
Administrators	A1- People responsible for programs and inclusion of WebCT6	"We usually feel pretty remote because WebCT seems to be an afterthought in terms of content and connection with the rest of the school."
	A2 - Accountability of technical support	"I don't care if the communication is that we have to wait, or something's not working—just TELL us what's going on."
	A3 - Training of WebCT6	"Would be nice to have good directions on how to upload photo into a post."
	A4 - Other aspects of administration	"WebCT 6.0 is a very institutional experience."
Instructors	I1 - Use of various features of WebCT6 by instructor	"Some teachers are not fully taking advantage of WebCT features like posting course grades, discussion boards etc."
	I2 - Style of use of WebCT6 by instructor	"Some of the professors use WebCT in a very amateur way. This makes their module very chaotic. They do not use the proper tools to post the information."
	I3 - Content designing in WebCT6 by instructor	"But without strong content from whoever runs WebCT overall (does anyone?) and from professors in their courses, the technology means nothing."
	I4 - Other comments about instructor's use of WebCT6	"I hate how teachers expect you to check it all the time." (The code for this quotation is IC4A.)
System	C1 - Representation/meaning of labels/icons/terms used	
	C11 - Whole WebCT6 system	"I'd like the icons that are within my course to be more intuitive."
	C12 - Components of WebCT6	"Some of the course tools names are confusing."
	C2 – Organization of information/layout of the system	
	C21 - Whole WebCT6 system	"While I would not like it to look like Times Square, it

Dimension	Code Description	Examples/Indicators
		could use some style and pizazz—some personality."
	C22 - Components of WebCT6	**"**The discussion boards can get very confusing given the threading and the way new posts are shown."
	C3 - Functions/facilities of the system	
	C31 - Whole WebCT6 system	"it does what it is supposed to do."
	C32 - Components of WebCT6	"I am unable to open e-mail messages, discussions, etc. I cannot post messages."
	C4 - Comparison with other systems or earlier version of WebCT6	"This is my first class in 6.0. I took two classes with 4.0, and found it much easier on the eyes."
	C5 - Compatibility with other system (IE6, FireFox, Antivirus)	"WebCT6.0 is so much choosy about software dependencies, which any good software should not be."
	C6 -Expressing desire for additional facilities/features	"it would be nice to have the ability to upload a small photo."
	C7 - Any other criticism of WebCT6	"WebCT 6 doesn't offer me the same comfort level."

APPENDIX C. SAMPLE QUOTATIONS FOR OPEN-ENDED COMMENTS

	Time 1	Time 2	Time 3
On WebCT 6 System			
Organization of information	"Perhaps a few broad areas with clearly defined sub-areas further defined after clicking on a broad area." "I find I waste a lot of time navigating through things to try to find the things I need, or I don't know where to look." "Can courses that are over be listed in other sections so that only active courses are readily visible?	"Otherwise, the main problem with the discussion boards is that the heading of a new message blends in with the text - there ought to be more variation in color or font size." "While I would not like it to look like Times Square, it could use some style and pizazz—some personality." "The only major problem I have is the BB threads are very hard to follow unless you can see all of the them."	It is too much and sometimes very hard to find your way around. Then you have to open every window to see what you are looking for. This is pretty frustrating when the file needed is deeply buried.
Representation of information in WebCT6	"They green stars do not always show indicating new content" "there is too much reliance on picture icons and not enough on simple words." "Some of the Course Tools names are confusing."	"I'd like the icons that are within my course to be more intuitive." "I must wade through old postings, looking for the 'NEW' one, when there isn't a 'NEW' one after all." "I still have trouble remembering the difference between 'assessment' and 'assignment.'" "I sometimes have to search for a lecture or a reading because they're called 'media library."	Assessments vs. Assignments—It's confusing.
Functionalities	"My chief complaint about WebCT6.0 is about the functionality of the discussion boards." "One egregious downfall of WebCT 6 is that it does not remember the posts I have already read on one computer when I access it later from another computer." "It's like I'm locked out of the room where class is being taught, and I	"You access the discussion board module you will see the new messages next to all messages. As you click on the new messages several times it gives you an error message." "Why do certain pop-ups continually need to show up every time a person logs in? This is highly annoying and	It is not intuitive, nor is it fully functional to the capacity that I would expect, compared with the great social networking tools currently available. WebCT never ran smoothly and always made my tasks more of a hassle than they had to be

	Time 1	Time 2	Time 3
	can't get in because the person who can unlock the door has left for the day/weekend/vacation/conference." "There is something wrong with the program's ability to remember whether or not I have read messages."	needs to be remediated!" "Why does the curser jump from message box back to the subject box when creating a post (very annoying)?" "Sometimes when i click on a file on WebCT, it will automatically be downloaded to temp fold and opened in the browser, however sometimes it will prompt me to choose whether to download or open." "When something is going to take time, I expect to see an hourglass or other indication of 'wait-state.'"	
Comparison with other system/earlier version	"WebCT 4 I used only 3 clicks." "WebCT 4.0 absolutely was horrible' WebCT 6.0 is better." (Survey-1) "I think I became comfortable with 4.0 and am a little reluctant to change." "I find WebCT 6.0 to be a severe step down in quality from 4.0." "I like 4.0 better. It was easy to used and not too complex." "I think WebCT 4.0 was easier to navigate." "It's amazing how an upgrade from version 4 to version 6 can result in a site that is slower and not that much better." "WebCT was generally easier to use. 6.0 has a steep learning curve but eventually is better."	"WebCT 4 was much quicker, more intuitive, had a much better design which aided navigability and user friendliness. I thoroughly enjoyed using WebCT 4 and feel that WebCT 6 is like going back in time to a less friendly system." "The upgrade has been a major disappointment and hindered my online experience compared to the older version."	Although I only used Web 4.0 a short while, it seems that I had less problems using it. There were all kinds of bugs, in my opinion, that prevented things that worked well in WebCT 4.0 from working similarly in 6.0 and that was frustrating as newer is supposed to be better.
Compatibility with other platforms/software	"Finally, I'm really disappointed that most Mac browsers can't handle it." "There are issues with WebCT 6.0 and Firefox. Firefox crashes and you have to start it up in safe mode to get everything working again after visiting WebCT." "It is also more difficult to use with various operating systems and platforms."	"Norton Internet Security 2006 does not function well with WebCT 6." "WebCT6.0 is so much choosy about software dependencies, which any good software should not be."	And ostensibly doesn't support the latest browsers. If I choose to use an unsupported browser, I have no way of disabling the browser check. I very much dislike the fact the IE7 is not a compatible Web browser.
Expressing desire for additional facilities/features	I wish there was a button to click if you wanted to do ALL READ/ Also, a separate color for items posted by the professor opposed to students/	Doesn't simplify interactions with the other parts of SU the way I hope it will in the future. When something is going to take time, I expect to see an hourglass or other indication of 'wait-state'.	The e-mail being tied to syr.edu would be really nice. It would be nice to get a notification if you had a message like facebook/livejournal or many of the other social networking sites/ There also should be a function to selectively quote and reply to other's posts, instead of simply replying to posts and have them quoted in their entirety at the end.
Others	"WebCT 6 doesn't offer me the same comfort level." "But we're still missing a lot of interactive elements that would	"I really do not enjoy using WebCT. I constantly forget to check it and as a result fall behind, which causes greater	I enjoy the online format for classes. I don't know if WebCT is the best product out there but it serves its purposes.

	Time 1	Time 2	Time 3
	really push online courses beyond simple message boards."	frustration. If it were integrated with MySlice or MyMail, which I check much more often, I would not have this problem." "Doesn't simplify interactions with the other parts of SU the way I hope it will in the future."	Designers should be users. No one who has used the system would design it to work the way it does. Clearly, 'default' settings and methodologies were used to develop the system, resulting in continuous poor user experience.
On Instructors			
Extent of using the features of WebCT6		"In addition I wish there would be a widespread campaign to encourage all faculty to full utilize WebCT and all its functionality. Some teachers are not fully taking advantage of WebCT features like posting course grades, discussion boards, etc."	A class I took spent the first month in fumble because the professor did not know how to use WebCT well. My only frustrations have come from professors who weren't familiar with how to organize, and teach a course via WebCT6.
Diversity in usage style	"Each professor/ class has a different priority structure." "It seems that no two professors use WebCT the same way." "Some instructors will place materials in the Media Library, while some instructors will place materials in the Web Links. Because the Course Tools names are not clear, there is no uniformity in how professors use it."	"Consistency in the use of the categories would be nice. It seems every teacher has their own method of using the various categories and that means it is easy to waste time accessing information because the method of information dispersal is different from one course site to another."	I also dislike it when instructors use the functions in a different way from its intention. For example, we (Ph.D. students) submit some forms through the "assessment" feature. I find it confusing and unpleasant doing it. No two professors I've had have used WebCT, regardless of version, the same; in other words, each professor I've had has used the current WebCT version differently.
Level of content created/provided	"I wish the Web site syllabus listed future assigned readings instead of posting each week's assignment just one or two days ahead of time" "Also, the same documents/activities may be found in four places making it very confusing, but I believe that this has to do with how the instructors have set up the connections between the tools."	"[i]mproving the system is all very well and good, but without strong content from whoever runs WebCT overall (does anyone?) and from professors in their courses, the technology means nothing."	Section instructors must provide useful Web links on WebCT in each of their classes.
Other comments about instructor's use of WebCT6	our group e-mails are incorrectly set, so to communicate with all group members we have to remember to e-mail the group as well.	When there's a need to use it and the prof updates then it's great. When not updated it serves little purpose. Using it just for the sake of using it doesn't seem like a good idea either.	
On Administrators			
People responsible for programs and inclusion of WebCT6		We usually feel pretty remote because WebCT seems to be an afterthought in terms of content and connection with the rest of the school.	
Accountability of technical support	The Student Introduction to WebCT 6 tutorial was great. I just wish that it had been loaded into my acct from the start.	I don't care if the communication is that we have to wait, or something's not working—just TELL us what's going on.	The school supports this product on banking hours. If there is a problem (as there has been) with the system, Academic computing can not help. You have to wait

	Time 1	Time 2	Time 3
			until the next day for someone to deal with the system.
Training of WebCT6	"Would be nice to have good directions on how to upload photo into a post."	"WebCT 6.0 would be better if students and teachers were given more direct training on how to use it make use of all of its features (serendipitous discovery takes time and trial and error can be stressful when one is involved in graduate studies."	There are quite a few features which I do not like but I may not know properly how to use those features.
Other aspects of administration	I want the information from my previous classes back.	WebCT 6.0 is a very institutional experience.	What is most required is to promote how to optimize the use by both the instructors and the students.

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Communications of the Association for Information Systems

ISSN: 1529-3181