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**Comparison of Student Experiences with Different Online Graduate**  
**Courses in Health Promotion**

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**Abstract**

The purpose of this study was to understand the experience of students as they progressed through three specific online graduate courses in health promotion studies delivered primarily by asynchronous computer conferencing. Focused teleconference discussions were conducted with approximately 45 students from the different courses and the transcripts subjected to qualitative analysis. Themes that emerged included what new students appreciated most when adapting to learning online, factors that contributed to learner satisfaction, and the difficulties encountered by students taking a course when the content was not as well suited to the instructional method. The findings are discussed in relation to the three components of Garrison, Anderson and Archer's (2000) Community of Inquiry model of learning: cognitive, social and teacher presence.

Implications are presented for assisting students with the process of adapting to online learning and enhancing the 'fit' between course content and online instructional methods.

**Résumé:** L'objet de l'étude consiste à comprendre l'expérience des étudiants alors qu'ils suivaient en ligne trois cours donnés aux études supérieures dans le domaine de la promotion de la santé, cours donnés principalement au moyen de conférences informatisées asynchrones. Par la suite, on a discuté de téléconférences avec environ 45 étudiants des différents cours et les transcriptions ont fait l'objet d'analyses quantitatives. Les points saillants comprennent ce que les nouveaux étudiants apprécient par dessus tout lorsqu'ils s'adaptent aux cours en ligne, les facteurs qui contribuent à la satisfaction de l'apprenant et les difficultés auxquelles ont dû faire face les étudiants qui ont pris un cours alors que son contenu n'était pas approprié à la méthode d'enseignement. On discute des conclusions relativement aux trois composantes du Community of Inquiry model of learning de Garrison, Anderson et Archer (2000), c'est-à-dire l'élément cognitif, l'élément social et la présence de l'enseignant. On présente les répercussions afin d'aider les étudiants à s'adapter à l'apprentissage en ligne et d'améliorer l'équilibre entre le contenu de cours et les méthodes d'enseignement en ligne.

### **Introduction**

Computer-mediated communication (CMC) is rapidly gaining wide use in higher education. Asynchronous computer conferencing, in particular, is recognized as an important method of delivering educational programs on an 'anytime, anywhere' basis. Research aimed at better defining the key elements of computer conferencing that contribute to a successful learning experience, is extensive and ongoing (cf. Dykes & Schwier, 2003; Hiltz, Coppola, Rotter, & Turoff, 2000; Kennedy, 2002; Rourke, Anderson, Garrison, & Archer, 1999; Schwier & Balbar, 2002; Stacey, 1999).

The literature provides numerous examples of student experiences with online learning in a single course (cf., Dykes & Schwier, 2003; Hong, Lai, & Holton, 2003; Schwier & Balbar, 2002) or several courses examined together (cf., Burge, 1994; Hatch, 2001; Hiltz, et al., 2000; Hurlburt, 2001; Kennedy, 2002). However, few comparisons exist of students' experiences with online courses undertaken at different stages of their educational program and/or with differing types of course content. The development and implementation of a new campus and online interdisciplinary Master's degree program in Health Promotion Studies (HPS) over the past six years provided the opportunity to evaluate students' experiences with online learning at different stages of their program and with different courses. The purpose of this study is to compare the experiences of graduate students with online learning in three different courses: first, with their initial course using asynchronous computer conferencing; second, with a later course of similar instructional method and content; and third, with a later course of substantially different

content.

Garrison, Anderson and Archer (2000) have developed a conceptual framework that identifies three components considered critical to a successful educational experience using computer conferencing in a text-based environment: cognitive presence, social presence, and teacher presence. *Cognitive presence* refers to the extent to which participants are able to construct meaning through sustained communication and is both a process and outcome. *Social presence* refers to the ability of participants to project their personal characteristics into communications (or become 'real people') within a community of learners, and *teacher presence* refers to the responsibilities for the design and facilitation of the educational experience (Garrison et al., 2000). The findings from the course comparisons in our study are considered in relation to this *Community of Inquiry model* of learning using asynchronous computer-conferencing.

### **Background: Health Promotion Studies (HPS) Graduate Program**

Health promotion is the process of enabling individuals and communities to increase control over and improve their health (WHO Ottawa Charter, 1986). The broad purpose of the Master's degree graduate program offered by the University of Alberta Centre for Health Promotion Studies is to support the development of leaders in this field. The Centre offers parallel Master's degree programs on campus in the classroom and online using the Internet. Most online students take the course-based program in which they complete nine courses including a practicum and a major paper. A few students have taken the thesis-based route, in which they complete six courses and a thesis. Each course extends over 13 weeks, coinciding with the University of Alberta fall, winter or spring/summer terms. As of 2004, 14 courses had been developed for online delivery, including five in collaboration with other universities. For details on courses, see the Centre for Health Promotion Studies website: [www.chps.ualberta.ca](http://www.chps.ualberta.ca).

Most of the online students study on a part-time basis and complete the program over four years. The majority are employed full-time or part-time during their studies and many have experience in health promotion practice. As of the academic year 2003-04, 83 students have been admitted to the online learning program and 43 will have completed their requirements. As each annual cohort is admitted, students go through a web-based orientation course where they become acquainted with each other and the program, and learn about the technologies and support systems they can access (library, computer services etc). Immediately before online classes begin the instructors, students, and support staff meet on campus for four days of face-to-face orientation. During this time, they meet the people involved in their online 'learning community' and become more familiar with the program, the technology, and the support systems.

Before starting each course, students receive a print package (Course Pack) that includes the required reading resources for each week's online discussion. Online class communication is primarily via computer-mediated conferencing using Web Course Tools (WebCT) software accessible from any site with Internet access. In one asynchronous

'seminar' week, students and instructor address approximately the same content as a three-hour seminar class on campus. Students log onto the course at their convenience throughout the week, typically three to five times. Most courses also include one to six hours of audio-teleconferencing and students may contact their instructor individually by e-mail or telephone if necessary.

### **Methodology** **Courses for Comparison**

Student experiences with three courses (designated as A, B and C), taken at different times and with varying content, were evaluated using focused discussions by audio-teleconference.

Course A was an introductory course to the fundamentals of health promotion. Topics included the following: foundational concepts of health and determinants of health, evolution of the health promotion field in the Canadian and global contexts, philosophy and key concepts (e.g., empowerment, participation, sustainable change), an overview of fields of practice and research, and principles of best practice (e.g., interdisciplinary, intersectoral, community capacity building). As much as possible, instruction was learner-centered and context-based, working from the ideas and experiences that participants bring to the course and linking with concepts presented in research and practice literature. Web-based seminars provided a text-based environment to discuss and deepen understanding of health promotion concepts and controversies, stimulate critical analysis, and illustrate application of theory. Through a variety of means, these discussions and related assignments were meant to engage class members with theory as it relates to health promotion practice. Course A is always taken in the first semester of a student's first year in the HPS graduate program, and most, if not all of the students in the study were new to online learning. This course provided the baseline data for comparisons since it reflected the students' initial experiences and adaptations to learning in an online environment.

Course B focused on health promotion practice in community settings (i.e., with populations or groups rather than individuals). Topics discussed include the following: critical analysis of health issues, community development approaches, using epidemiology in the analysis of health issues, advocacy and policy influence, social marketing, and an introduction to program planning and evaluation. Course B was similar in structure and instructional method to Course A in that the focus was on the discussion of concepts and issues and on linking health promotion theory to practice. However, students normally took this course in their second year of the program and had experience in online learning as well as the conceptual background. A comparison of Course B with Course A was seen as a way of uncovering differences between students' later online learning experiences and their initial experiences.

The third course, Course C, was an introductory research course that presented an overview of research philosophies, qualitative and quantitative methods and other techniques used in health promotion. Emphasis was placed throughout the course on

developing a practical understanding of the roles of research in health promotion initiatives and knowing why, when, and how to use research methods as students prepared to participate in and conduct their own research projects.

Like Course B, students enrolled in Course C after Course A and so had experience with WebCT and computer conferencing. Because Course C content was focused on acquiring knowledge and skills pertaining to research, the discussions were directed to solving problems that often have specific right or wrong answers, rather than discussing theories, issues and controversies related to health promotion practice as was the case with Courses A and B. As the instructional method was consistent for the three courses, comparison between Course C and the other two courses was seen as a way of identifying issues resulting from the match between course content and instructional methods.

### **Focused Discussions With Students**

The relatively small number of students enrolled in the Health promotion Studies graduate program limited the types of evaluative research methods available. Collecting useful information over time that can help the program make useful decisions was important. A primarily qualitative approach was used for these reasons and to get a greater depth of understanding of the students' perspective. The major method chosen was focused discussion groups with students that were similar to focus groups (cf., Krueger, 1994; Morgan, 1997). Although a focus group methodology was used, some differences were dictated by the nature of the program. Because of the relatively small class size, instead of selecting informants, all students in the particular course were invited to participate in the discussion, and the actual sample consisted of those that could attend the session during the designated times. Again, because of size limitations, all discussions of a particular course offering were held with a single group of students. Replication came from focused discussions that occurred after several offerings of the particular course.

Focused discussions with online students were conducted by audio-teleconference at the end of each course. Over the three academic years from 1998/99 to 2000/01, eleven focused discussions were conducted; five for Course A, three for course B, and three for Course C. Eight instructors taught these three courses during three academic years. More than one instructor taught each of the courses; two for Course A and three for Courses B and C. Prior to the focused discussions, students provided written consent for participating.

The entire class of six to twelve students was informed of the research project and teleconference discussions, and those who were interested and available during the designated time (usually four to seven in number), indicated their intention to participate by forwarding their names to the online learning coordinator. Participants were then called directly at the appointed time. Two researchers participated in the teleconference, one asking most of the questions and the other taking notes. The instructor was not included in the evaluative teleconferences. The discussions lasted between 30 and 60 minutes, averaging 45 minutes. To protect the anonymity of the participants, identifying information was removed from reports and released transcripts. The discussions were unstructured

and informal with the process of analysis and subsequent focusing of discussion following an exploratory approach with the participants providing much of the discussion's direction.

The stated goal was to examine the instructional technology and approach rather than the course content but students were free to raise any topic they felt was relevant. While the questions varied, most discussions started with open-ended questions regarding the students' general impressions of the instructional technology (i.e., WebCT and computer-based conferencing), what they liked, and what improvements they would like to see. Aside from these preliminary questions, the students' issues determined the direction and content of the discussion. Once a topic was initiated the researchers would try to clarify and better understand it and determine if other participants shared the same viewpoint. Before moving on to another topic the researcher would offer the group his summary and interpretation of what had been said for group validation or modification. The researchers typically had in mind two to three questions that arose from discussions with previous classes or from interactions with the instructor. If the students did not raise these same issues, the researchers would ask specific questions to prompt discussion. In four of eleven instances a mid-term 'formative' teleconference had been held to identify issues at an early stage in the course. Since it was an unstructured process what was learned from earlier focused discussions also informed questions asked in subsequent discussions. Students in focused discussions relating to Courses B and C had participated in one or more evaluative teleconference(s) previously and, as a result, these experiences may have informed the topics and discussion.

### **Analysis Procedures**

The focused discussions were recorded on tape cassettes, transcribed and entered into NVivo qualitative analysis software. In order to ensure validity, three researchers were involved in the coding and qualitative thematic analysis process. Each researcher independently read the raw data and systematically compared comments in order to determine the major themes within each course. These individuals subsequently met and compared matching major themes in order to establish salient themes within the data set. Only those themes where all three researchers reached consensus are presented.

### **Results**

The themes arising from the qualitative analysis of the focused discussions of Courses A, B and C are shown in Table 1. These themes are elaborated with quotations in three sections using illustrative quotes: initial experiences with online learning (Course A), later experiences (Course B), and experiences with different types of content (Course C). Several themes were represented in data from more than one course.

Table 1.

<b>Major Themes</b>	<b>Course A Initial Experiences</b>	<b>Course B Later Experiences</b>	<b>Course C Different Content</b>
Increased peer bonding	X		
Increased flexibility	X		
Increased reading / posting		X	
High instructor presence	X	X	
High overall course satisfaction		X	
Insufficient feedback	X		X
Increased frustration & confusion			X
Lack prerequisites			X
Lack synchronous visual examples			X
Unclear expectations			X
Insufficient facilitated discussions			X
Beneficial teleconferences	X	X	X
Beneficial CMC discussions	X	X	X
Technical problems	X	X	X
Various posting issues	X	X	X

### **Themes From Initial Experiences With Online Learning (Course A)**

The baseline data to emerge from Course A reflect students' initial adjustment experiences and adaptations to learning online.

#### **Peer Relationships and Support**

Those students new to online learning experienced the significant development of peer relationships and support. As one student noted,

I really was impressed with how supported I felt by the conversations, the discussions, the postings we had in the course. I don't know if that's just a unique part of the group of people that are enrolled in the HPS . . . course or what, but I was impressed by how supported I felt by learning through a distance, just from my classmates, from our online discussions.

Another student commented on the relationship and community building that resulted from interactions in the course, "I found the cohesiveness of the group...I was really surprised. This is the first distance course that I've taken so I really didn't know what to expect. I was pleasantly surprised." They appreciated the sense of connection and support from

others, "That was one thing I was really concerned about – wanting to feel connected to the university and my classmates. I'm really happy that I felt that way and I definitely felt very supported."

### **Increased Flexibility**

The second major theme to emerge was appreciation for the flexibility that online education offered students, particularly being able to access the CMC discussions at their convenience. One student noted the time saving,

I think there was probably less time allotted in my day, just take away the transportation time and going to the university and getting all organized. When you're at home, you just flip on and it's a lot less intrusive to your day that way.

Another student enjoyed the freedom from travel,

One of the things with this, too, is it offered the flexibility. Really, outside of the first week in Edmonton, there was only three times when we had to be at a certain place at a certain time. I liked that. Most of us are working.

A third acknowledged, "The distance component was a real plus, the flexibility was great because I have a very demanding job. There was no need for driving and commuting."

### **High Instructor Presence**

A major theme expressed in both the initial theory-based Course A and the later theory-based Course B was high instructor presence. In Course A, the students were new to the online learning environment and greatly valued their interactions and frequent involvement with the instructor as evidenced by the following comment:

Every time I posed a question it was answered in the same day. Sometimes I would post a question in the morning and it would be answered in the afternoon. I didn't feel alone, felt like I was in a classroom with classmates and a teacher.

Another student's comment also supports the theme of experiencing a high instructor presence, "One thing I saw as a strength was the faculty. I thought they were really good. I did two courses and both faculty were very good at really focusing discussion, moving it along, adding really challenging critical thinking skills." The experienced students in Course B, the other course oriented to theory and practice discussions, also described the benefits of a strong instructor presence; "Just having that verbal feedback as to what the expectations were and being able to ask some questions about the paper was particularly beneficial."

### **Need for More Feedback**

Despite the fact that Course A students greatly valued the high instructor presence, they also expressed the need for more feedback. Being new to the online environment and experiencing anxiety related to uncertainty, students in Course A felt at times that they needed more instructor feedback in order to ensure understanding of course content and maintain a sense of being 'on track' in their thinking and writing. As one student noted, "Sometimes I sort of get tied up, am I on track, am I off track? Sometimes if you don't have someone right there to bounce it off of, it would be nice to get that feedback. It

would be helpful.”

Students in the research course (C) also indicated (perhaps due to the nature of the course content) that they needed more feedback from the instructor, “ when we got into the quantitative stuff, most of us were looking Ã for some more feedback, just to make sure we were on track.”

### **Themes From Later Experiences With Online Learning (Course B)**

Course B was very similar in instructional design to the previous Course A. As students usually took this course in the second year of their program, it was used to explore the issues students were experiencing once they had adjusted to learning in an online environment.

#### **Increased Reading and Posting**

Comments from students in Course B suggested that the content load increased with a larger amount of both reading and posting taking place,

Maybe I'm a slow reader, but there were some articles that I would spend two hours reading one article. I tend to read slowly and highlight as I go and make notes. I'd say I spent five-six hours/week reading and probably four-six hours/week, depending on the week, on the computer, reading the postings and replying. [Author's note; this time spent may not be excessive.]

In addition, a student made the following comment about increased posting,

The posting, because we had so many, it took a long time to read them and decide which ones to reply to, because if you replied to every single one, you'd have a million postings. I would say that took about three to four hours every week.

#### **High Overall Course Satisfaction**

Although students in Course B devoted more time to reading and learning numerous theories, they found the course enjoyable because they were better able to integrate theory into practice. For example, one student stated, “I think the discussion was much more in-depth. I just got a lot more out of it than other classes.” Another student added, “In this course, it was at a conceptual level where we could just think and be creative.” As well another student noted, “I had no complaints and thought that the course went really well.”

### **Experiences With Different Instructional Design and Course Content (Course C)**

Course C focused on research methodologies including statistical analysis. The content was less suited to discussion and involved more calculations and distinct right and wrong answers. Many student perspectives and themes were unique to this course.

#### **Frustration and Confusion**

Because of the visual and statistical content of Course C, many students expressed frustration and confusion. Several students described from the very beginning their anxiety about taking a statistics course online as illustrated in the following quote, “We had anxiety about quantitative from the beginning.” Another student noted, “I found it really hard to learn stats this way. I struggled with the last assignment in a huge way. I spent a

100 hours on it at least.” In addition, several students noted that one of the reasons for their frustration was due to a lack of in-depth instructor feedback and guidance as evident in the following comment,

I phoned [the instructor] yesterday, still feeling like I didn't know the stuff. . . I just wanted to understand it but [the instructor] couldn't explain it to me. I felt I was brushed off, but [the instructor] could've been very busy. It made me very frustrated.

An additional student revealed his/her feelings of frustration in the following comment, “I was at a point where I was telling people I would never take a research course through distance.”

### **Lack of Prerequisites**

Students found that it was important to have significant statistical background and many felt statistical prerequisites were warranted. As one student suggested, “Laying out the specific stats you were going to need would have been extremely helpful.” Another student noted, “I would recommend that if you get accepted in the spring that it is strongly recommended that you take a stats course over the summer.”

### **Lack of Synchronous Visual Examples**

Many students indicated that it was difficult to clarify their concerns using asynchronous communication tools such as WebCT and e-mail. Students therefore recommended that it would be useful to conduct tutorials in ‘real time’ using visual and synchronous examples of analysis processes.

I didn't have anyone who knew stats or was really good at stats close at hand and that would have been really helped. I needed a person because I couldn't get my questions organized enough to verbalize it on the web. I needed to be shown stuff.

One student suggested that, “[It is] better to see live graphing, T-tests, one tail tests and it is better when you see it at the same time”

### **Unclear Expectations**

Students felt that a contributing factor to some of the difficulties experienced with learning this type of course content online was the lack of clear course expectations. For example, one student stated, “I don't even know what [the instructor] wanted from that assignment.” Another student noted that, “It took me two frustrating days to write the equation. I wasn't clear on why I had to seek out a T-table and I was confused about what to do with that.”

*Insufficient Facilitated Discussions* Students also felt that it was especially important for their instructor to facilitate discussions in order to enhance student understanding. As one student remarked, “It is difficult to become interactive on it because there is very little discussion you can do, the answer is either right or wrong.” Another noted; “What is missing is not just instructor, instruction and feedback but also the heaps of stuff you can learn from your colleagues which wasn't encouraged. I would have loved to have heard more of the other students' ideas.”

### **Insufficient Instructor Presence**

Students suggested that there was insufficient instructor presence in Course C. “Even if you went specific and said ‘Hey, could you tell us if we've got the stats right?’ and the prof.

didn't. Didn't even acknowledge that anyone had said that." As noted by another student, "We get the same notes [as in the classroom], but it is not explained to us and it's not the same as reading it. The details were not explained to us."

### **Themes Common to All Three Courses (Courses A, B, C)**

There were several themes that were experienced by the students in all three courses. All of the issues were related to the delivery technology, with the most popular issues centered on conducting discussions at a distance.

#### **Beneficial Teleconferences**

Students in the three courses indicated that they found the teleconferences to be beneficial to their understanding of expectations and for social support that in turn, enhanced perseverance and successful learning. As one student stated, "Being on the teleconference has really helped to regroup and get our thoughts together so that we were thinking along the same lines. Even the way we interpreted assignments or answers, it was kind of different, based on past experiences or what was going on with ourselves." The students also recommended that there should be more teleconferences held throughout a course. For example, "Have more conference calls, perhaps four or five. Last paper we were more lost because we didn't have a conference call." Teleconferences provided a means to synchronously communicate and get immediate feedback. This method can compliment the computer-based conferencing by providing a human element to the online environment. For example, one student stated, "The teleconferences were great, you could communicate with people and hear people's voices."

#### **Benefits of Cmc Discussions**

In all three courses, students indicated that the online CMC conferencing discussions were valuable for a number of reasons, not the least of which was their contribution to the social and mental enjoyment of the course. "I also enjoyed the [online] conversations that we had, the postings and things. It seemed to flow and it really stimulated a lot of thoughts that I was having or helped solidify some sort of concepts as we went along." The discussions allowed students to share and benefit from one another's background experiences and knowledge. As one student stated,

Having met one another before, and knowing some of the background of people in our group, I knew there was a lot of expertise. I trusted that they would keep me on track if I was out in left field or not understanding something.

In addition, students felt that the online medium allowed for more in-depth discussions. For instance, "I just feel like sometimes the conversation is richer because everybody has that time to think about their answers, write them, edit them, re-read them or whatever, and then post them. Sometimes the conversation is richer that way."

#### **Technical Problems**

Several students in each course encountered technical problems ranging from issues with passwords to difficulties with servers. Several students found that password access was a problem, "We were given our initial password but it was incorrect and there was a bit of trouble trying to get on because the password had changed." Another student had

problems accessing the online library system (which was just being developed during the first two years of this study), "I tried accessing the library a couple of times and really didn't get very far so I just used the Internet for the majority of my stuff."

### **Various Posting Issues**

In each course, students often commented on a variety of posting issues. They expressed concerns regarding the appropriate number of initiating questions, length of postings, and the number of postings expected for a question. As one student commented, "With the postings, I thought that three [initiating] questions was a good number. The one time we had five questions seemed like a bit much." Another student stated that online postings should be limited:

I find that any time you say a range [for example post 4-6 contributions each week] in a class like this that has a lot of people, the benchmark gets raised to the highest amount because somebody else does that and nobody wants to be seen as somebody that's not doing the most in the class. Better just to say. 'Please put three postings on.' instead of four to six.

One student commented that the number of people in an online discussion group can also influence the reading required and satisfaction derived from the discussion, "I thought it was really good splitting groups 'cause it was too much reading...I like that with the two sections...we didn't have to be carrying on the conversation with ten or eleven people."

For many students there was no pre-existing standard for determining the participation grade in the course. As a result, students looked for clues as to what would be appropriate participation.

### **Discussion**

The findings of this study are relevant to the important issue of how to make the best use of computer conferencing for online learning. In relating our findings to the model of Garrison et al (2000), however, it is important to note that this discussion is based on themes derived from transcripts of discussions with students and not analysis of the transcripts themselves as described by others (Rourke, et al., 1999). Social presence, defined as the ability of participants to project their personal characteristics into the community of learners (Garrison et al., 2000), has emerged as a key element of successful learning through computer conferencing that correlates well with student satisfaction and performance (Gunawardena & Zittle, 1997; Hiltz, et al., 2000; Picciano, 2002; Rourke, et al., 1999; Tu, 2002). The importance that students attached to developing relationships with their peers in the first online course of our study (Course A) is noteworthy in this regard. The interactions among students and with the instructor resulted in a strong feeling of mutual support, facilitated collaborative learning, and contributed to a sense of participating in a learning community. Students also appreciated the flexibility and convenience of online learning methods. These results concur with findings described in the literature as being important features of computer conferencing (Burge, 1994; Felix, 2001; Goldsmith, 2001; Stacey, 1999). Social presence, however, is only one of three core elements in a Community of Inquiry model of computer-mediated communication, with cognitive presence and teaching presence also being essential to the educational process

(Garrison et al., 2000).

Cognitive presence refers to the extent to which participants are able to construct meaning through sustained communication (Garrison et al., 2000). In the initial online course it was noted that the CMC discussions were more in-depth or richer than students' previous classroom experience and that critical thinking was enhanced by frequent interactions with the instructor and other students. Students commented on the benefits of learning from the expertise and experience of other students, and that the time required thinking about written comments added richness to the discussions. Students' later experiences with a similar course (Course B) confirmed the occurrence of more in-depth and conceptual discussions and were associated with a high degree of satisfaction with CMC conferencing. These findings support the value of text-based discussions for in-depth student understanding (cognition). A previous study of instructors' adaptation to online education in the HPS graduate program (Wilson et al., 2003) indicated the positive effects of computer conferencing on the quality of discussions. Students also suggested that all three courses would benefit from increased synchronous communication (teleconferences), particularly to clarify assignments or group progress. In their evaluation of a graduate seminar, Dykes and Schwier (2003) described the value of including both asynchronous and synchronous discussions in an online learning environment.

Our findings support the critical role of instructor (or teaching) presence in online learning. Teaching presence refers to the responsibilities for design and facilitation (structure and process) of the educational experience (Garrison et al., 2000). Student experiences with the third course (Course C) were revealing in this regard. In addition to peer support and a strong social presence, students indicated that a strong instructor presence was critical for effective student learning. Although the CMC discussions were considered beneficial, the students described significant difficulties. This introductory research course involved students working independently through sample calculations; a very different course content than their previous online courses (Courses A and B). They felt inadequately prepared for the course (lack of prerequisites), that expectations were not sufficiently clear and that they needed better visual examples and more synchronous discussion for clarification purposes. They also noted insufficient instructor presence, feedback, and facilitation of discussions. Despite the students' previous experience with online learning, there were feelings of frustration with this particular course. Since three different instructors taught the course, it is not likely to be solely an 'instructor effect'. In general, there appeared to be a lack of 'fit' between the content of this course, the instructional method, and the computer conferencing delivery system. In considering these findings for Course C in relation to Garrison et al.'s model (2000), it seems clear that despite the high levels of social presence described previously by these students, cognitive presence was not adequately achieved. It seems likely that this was due to inadequate teacher presence in both the instructional design and course facilitation. Other researchers (Hong, et al., 2003) have noted difficulties with problem-based learning using CMC for a statistics course.

Why would experienced students express problems in a course delivered in the same way as the previous courses (both in delivery and instructional methods), particularly when students previously demonstrated an understanding of the delivery and instructional methods? Clark (1994) offers a possible explanation. In arguing that the important factor in examining instructional technology is the instructional method, not the delivery technology, he points to a possible reason for the change in attitudes. Perhaps the type of instructional method needs to be modified to be appropriate for the course content. Since the students are at a distance, the delivery method cannot be easily changed. However, it is possible to change the instructional method to one that best suits the course content of Course C. "Fit" can be seen as the suitability of the instructional method for the material that is being taught. Considerable additional research is needed and overdue in this area.

In summary, the novice online students (Course A) placed a higher emphasis on peer-relationships and instructor presence while the more experienced online students emphasized high course satisfaction along with the benefits of rich discussions (Course B). However, the change to a more calculation-oriented content, along with insufficient teaching presence and lack of 'fit' of the course content with the instructional method, resulted in some students expressing frustration and isolation within the online learning environment (Course C).

### **Implications of Study Results**

The findings of this study have had an impact on the administration and delivery of online courses in the HPS graduate program – including admission requirements, orientation of students and instructors, instructional methods, and delivery technology. In order to be admitted, all students must now have pre-requisite undergraduate courses in research and statistics. The student orientation process has continued to evolve with direction from the study's findings. The web-based orientation course, previously focused on learning to use the WebCT technology and the basics of CMC, now also acts as a "virtual home" where students can learn how to access a variety of human, technical and program supports that will be useful from admission to graduation and beyond. Recognizing the importance of social support among learners at a distance, the web-based and face-to face components of orientation more strongly emphasize building relationships and the 'learning community' they will appreciate later when they are physically isolated from one another. Orientation activities help learners to understand more about their overall program so they can anticipate connections among the courses (including those discussed in this study) and become more self-directed and assertive, so they can share responsibility for the relevance of their courses. More attention is also given to using CMC effectively. A section called "Power CMC" assists students to establish clearer expectations and build skills that will enable them to read and post with greater efficiency and effectiveness and, hopefully, increase satisfaction of both instructor and learners.

Instructor preparation and in-progress support has also been enhanced as a result of the findings. New instructors begin by undertaking the same web-based orientation as students so both have a common understanding of the HPS graduate program, and

common expectations for communications action in courses. The themes raised in this study have been addressed through instructor orientation and quarterly team meetings. Over the course of two years since the study, attention has been directed to devising common and clear expectations, facilitating effective CMC discussions, providing clear feedback, raising levels of instructors' presence, and early problem identification with timely and effective action to address problems. CMC via WebCT continues to be the backbone of online communication in the HPS program but improvements in delivery technology have been introduced in response to themes in this study. Instructors and students now have access to cost-free synchronous communication (Web4M), which, from preliminary information, is improving instructor-learner communication as well as collaboration among learners. This technology provides a useful alternative to teleconferences, which, taken together, were quite costly.

### **Limitations and Future Research**

This research was exploratory and open-ended in its nature, looking for themes that emerged from the students in these three courses. Because of this, much of the analysis is post hoc in nature. In the case of Course C, it was clear from the focused discussions that the students had issues with this course that were not noted with other courses. It was not immediately clear why the students saw this course differently. Our explanations were refined after the course had been taught subsequently as some of the initial possible reasons were not supported by further data. The ability to examine courses repeatedly was valuable and allowed explanatory theories to be refined. However, since the analysis remains post hoc, additional research is needed to better examine these theories.

The findings point to the need for research in several areas. There is a need to examine the effectiveness of various instructional and delivery methods for different pedagogical purposes. Perhaps students could be assigned to sections that use different approaches to better understand the differences between approaches, or it might also be possible to examine these components within a class, where different instructional methods are used. Gaining a better understanding of the strengths and limitations of the instructional methods can certainly help improve instruction. A topic that is receiving an increasing amount of interest in the literature is the collaboration among students in graduate programs and the effects of new technologies (e.g., Web4M), along with other innovative strategies. For example, one might focus on the benefits of combining web-streamed audio-lecture with text and graphics made available asynchronously (Hurlburt, 2001). In terms of students' critical thinking and analysis at the graduate level, it would also be interesting to study further the differences between a traditional classroom and an online seminar course.

### **Conclusions**

With regard to the current literature and theory or models of online education, the findings support the importance of the three elements outlined by Garrison et al. (2000). Specifically, the importance of matching course content and instructional method (teacher presence) is clearly indicated as independent from social presence and essential for

student understanding and critical thinking in higher education (cognitive presence). While this finding may not be surprising, the opportunity to confirm it through a comparison of courses taken by the same experienced students is not often presented. The well-documented value of developing relationships among students for effective online learning (social presence) was confirmed and the benefits of rich sustained discussion for understanding (cognitive presence) were emphasized.

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