Online Scholarly Discourse: Lessons Learned for Continuing and Nurse Educators

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ABSTRACT

This article describes a collaborative three-year research project that focused on nurses' experiences of a learning environment as they participated in an Internet-based cardiac nursing program. In addition to gathering data about the general appropriateness of the learning environment in a specialty content area, the study examined the environment's facilitation of online scholarly discourse about cardiac nursing. Scholarly discourse is characterized by evolution over time of communication by and among learners, inclusion of references to relevant nursing literature, and the practice of writing conventions appropriate to the discipline. Guided by professorial and other learner supports, it is the foundation of theory-guided, evidence-

RÉSUMÉ

Pendant trois ans, ce projet de recherche coopératif s'est concentré sur les expériences des infirmières en environnement d'apprentissage pendant qu'elles participaient au programme de soins infirmiers cardiaques à l'Internet. Tout en rassemblant des données sur la pertinence de l'environnement d'apprentissage dans un domaine de contenu spécialisé, l'étude a aussi fait l'examen de la facilitation du discours académique en ligne sur les soins infirmiers cardiaques. Le discours académique est caractérisé par une communication élaborée à la longue, par et parmi les apprenants, l'inclusion de références à la littérature pertinente en soins infirmiers, et une utilisation des conventions relatives à l'écriture appropriée à la

based practice for registered nurses. The data reflects the study's consideration of online scholarly discourse derived from the nurses' contributions to an online discussion forum. Research partners included Laurentian University's Centre for Continuing Education and School of Nursing, the Sudbury Regional Hospital (SRH), and the Office of Learning Technologies (OLT). The project was funded by the Office of Learning Technologies.

discipline. Tout cela est dirigé par le professorat et d'autres sources de soutien à l'apprentissage, et est la fondation d'une pratique dirigée par la théorie mais fondée sur les résultats cliniques et scientifiques pour infirmières autorisées. Dans cette étude, on a pris en compte les données reflétant le discours académique en ligne et venant des contributions des infirmières participant au forum de discussion en ligne. Les partenaires de recherche comprenaient le Centre d'éducation permanente de l'Université Laurentienne et son École de sciences infirmières, l'Hôpital régional de Sudbury et le Bureau des technologies d'apprentissage (BTA). Ce projet fut subventionné par le Bureau des technologies d'apprentissage.

INTRODUCTION

Every once in a while a development and research project comes along that makes a dramatic impact on how teaching and learning happens in the continuing education sector. The Office of Learning Technologies-funded project called Cardiac Care on the Web, as conceptualized, developed, delivered, and researched by the Centre for Continuing Education and School of Nursing at Laurentian University, working in partnership with the Sudbury Regional Hospital in Sudbury, Ontario, is one such initiative.

The project involved the delivery of a unique educational program in two phases (May-June 2000 and January-April 2001) to registered nurses practising or wishing to practise in the cardiac area. The learning environments were Internet-based, using a Web Course Tools (WebCT) platform. WebCT is an educational software program used for online learning. The program features opportunities for interaction, including private e-mail, a chat room for synchronous small-group discussion, and a bulletin board for public asynchronous discussion. As used in Cardiac Care on the Web, the bulletin board

feature enabled all students—whether enrolled in one or more modules—to dialogue with all other project participants.

DESCRIPTION OF THE STUDY

The purposes of the study were 1) to assess the capability of an online learning environment to facilitate scholarly discourse among nurse-learners, and 2) to examine the overall appropriateness of the noted learning environment in enabling learning in a highly specialized content area.

STUDY DESIGN

The study included formative and summative evaluative components and had two phases (Phase 1 and Phase 2). Demographic data, as well as quantitative and qualitative information about various online communication tools (chat, threaded bulletin board discussion, private and group e-mail), and the nurses' responses to the overall learning setting were collected in each phase. Data were collected using questionnaires, interviews, focus groups, and participant contributions to the online discussion forum (the bulletin board). This paper focuses on and presents the analyses of the students' contributions to the discussion forum, as this was where scholarly discourse about cardiac nursing occurred. Brief overviews of the study's two phases follow.

Phase 1

There were 74 participants in Phase 1. Of this original group, 37 completed Phase 1; 16 responded to "before" questionnaires, while 11 of these 16 completed follow-up questionnaires. Interviews were conducted via telephone with 12 of the 37 students who withdrew from the program in order to gain insight into their experiences and their reasons for withdrawal. Similarly, 4 of the 16 students who completed the Phase 1 questionnaire were chosen at random for in-depth telephone interviews.

Phase 2

Phase 2 involved 18 nurse-learners. The 10 learners who finished Phase 2 completed an open-ended questionnaire; data were also collected through an in-depth focus group interview with a selected group of 6 nurse-learners. Questions ranged from experiences of getting online, to the effectiveness of the discussion forum as a learning tool, to changes in thinking about and approaching nursing practice.

The Participants

Study participants ranged in age from 20 to over 40 years of age. They were predominantly female, with equal numbers working in full- and part-time positions. Although mostly from rural and remote communities, participants came from a wide geographic array of communities, including Hamilton, Ontario; Nanaimo and Cranbrook, British Columbia; Gander, Newfoundland; and Whitehorse, Yukon.

REVIEW OF THE LITERATURE

Following is a discussion of some of the literature that contributed to our understanding of online scholarly discourse in a distance education environment.

Third-generation Distance Education: Communication and Delivery Benefits

Distance education is now in what has been called its third generation (Kaufman, cited in Moore, 1989). This form of distance education, contrasted to earlier forms, promotes and enables communication in a dynamic and two-way fashion: between the learner and the instructor and among other learners. Boosted by the rapid growth of Internet technologies in the last decade, distance education now offers effective and user-friendly ways of communicating and networking for learners and their instructors living in urban, rural, and remote settings. Some of these ways include course e-mail, bulletin board postings/discussion forums, and chat rooms (Billings, 1999; Bonk & King, 1998; Cragg, 1994a, 1994b; Harasim, Hiltz, Teles, & Turoff, 1996; Phillips & Santoro, 1989).

Internet-based learning also facilitates the use of multimedia resources to enhance learning (Bonk & King, 1998; Harasim et al., 1996). For example, multimedia-based learning resources such as clinical databases, simula-tions, and actual case studies can be experienced via the Internet and used to assist students in their preparation for real-world practice (Billings, 1999). In addition, use of Internet-based communication tools in areas such as the health sciences may enable what Schön (1983) called reflective practice or praxis, that is, a place where theory and action meet (Johns, 1996).

Distance education in its various forms offers students flexibility and convenience in choosing when and where they wish to study (Billings, Connors, & Skiba, 2001; Billings & Rowles, 2001; Bonk & King, 1998; Cragg, 1994a, 1994b; Guernsey, 1998a, 1998b; Harasim et al., 1996; Hiltz, 1986; Phillips & Santoro, 1989; Ryan, Hodson-Carlton, & Ali, 1999; Spaniel, 2001). However, Internet-based learning enables this flexibility and independence in unique ways. For instance, through the use of online tests, students can assess their knowledge of curriculum that is forthcoming in a course as well

as curriculum they have already studied. In both situations, students experience flexibility and ownership of their learning. Internet learning can likewise enable development of an individualized learning plan by which a student can move as slowly or as quickly as she or he likes, spending less time with familiar material and more time with new content skills. A summative assessment—also delivered online—could then be utilized to determine content mastery (Billings & Rowles, 2001).

Internet-based Education and General Pedagogical Issues

Although the fears and frustrations of Internet learning have been extensively documented (Billings, Connors, & Skiba, 2001; Cragg, 1994a, 1994b; Phillips & Santoro, 1989; Ryan, Hodson-Carlton, & Ali, 1999; Spaniel, 2001), there is growing evidence that learning to use technology offers greater benefits than any possible technical difficulties. Strategizing to overcome inherent technical problems increases a student's general proficiency with computers, as well as other problem-solving skills (Conry, 1998; Cragg, 1994a, 1994b; Landis & Wainwright, 1996). In a study evaluating graduate nursing students' perceptions of more traditional classroom teaching methods versus course delivery involving the Internet, Ryan, Hodson-Carlton, and Ali (1999) made two important discoveries. Internet-based learning technologies were effective not only in the delivery of content but also in the provision of opportunities to integrate nursing knowledge with computer technology and improvement of technical and writing skills. Although Armstrong, Gessner, and Skott-Cooper (2000) have stressed that Internet-based learning technologies can be successful modes of delivery of educational content (see also, Abrahamson, 1998; Billings & Bachmeier, 1994; Schlosser & Anderson, 1994), research into the effectiveness of Internet-based instruction in facilitating scholarly discourse is only beginning to emerge. What is emerging appears to be largely positive in impact and merits further research into the area.

Academic Thinking and Writing in Internet-based Education

Because Internet-based education includes a varied spectrum of occasions for the exchange of ideas through written communication, there is increasing interest in its potential for enabling students to develop their skills as critical thinkers and as discipline-specific writers. Research into the benefits related to formal teaching of discipline-specific writing falls into two main camps. The first includes those who believe that students are denied authentic voice if they are required to use specific writing conventions taught in formal and quasi-formal ways; the second includes those who maintain that discipline-specific writing conventions should be taught to enable students to enter fully the discourse of their respective disciplinary communities (Elbow, 1991; Russell, 1991). It is this latter group that has rec-

ognized the potential of the Internet for instructing students in the practice of discipline-specific writing.

On the subject of how students learn to do discipline-specific writing, Colomb (1988) suggested that students need models as well as many and varied occasions to practise the discipline. Colomb further maintained that explicit teaching is integral to the process of empowering students to participate in the communities they encounter.

On the other hand, Freedman (1993) suggested that the explicit teaching of writing conventions is less important than the instructor's role in "setting up facilitative environments" (p. 237). Freedman further argued that students need considerable reading experience "in the discourse of the discipline, along with attention to their anxiety level, motivation, and intention" (p. 238).

Given an online learning setting, whether one supports directed teaching of discipline-specific writing conventions or belongs to Freedman's school of thought is inconsequential. Indeed, both philosophies are important and relevant in an Internet environment. The Internet learning environment offers both opportunities for modelling discipline-specific writing and occasions for doing discipline-specific writing. The online learning environment, depending on choices made by the instructor, can therefore support the learning of discipline-specific writing in its many and divergent forms. For example, it facilitates writing done according to highly prescriptive criteria and conventions, as well as writing of contrasting genres in contrasting disciplines. These different possibilities are important in continuing nursing education where careful utilization of relevant nursing literature and critical thinking about nursing issues within the written context are cornerstones of scholarly discourse and, in turn, theory-guided, evidenced-based nursing practice.

Summary

In summary, Internet-based learning offers post-secondary educational opportunities to overcome the obstacles of geographic isolation; it provides flexibility and control over learning; it facilitates communication and networking among learners; and it offers pedagogically sound teaching and learning methods. Internet-based instruction can further stimulate development of critical thinking, technical skills, and discipline-specific writing skills, as well as promote active and independent learning (Kanuka, 2002).

What the literature does not reflect is whether or not online learning is an appropriate and effective means of "setting the stage" for scholarly discourse in specialty nursing areas. Given that Internet-based learning is growing in its popularity for nursing education, it is crucial to examine nurses' responses to this environment. The generation of this type of knowledge

has implications for the development of quality online educational programs for nursing professionals working in remote areas and for those leading busy, complex lives in urban centres.

ANALYZING DISCUSSION FORUM DATA

The data from the online discussion forum were coded and analyzed for themes. A constant-comparison approach was used to explore the experiences, questions, and concerns of students regarding scholarly discourse and the general learning environment. The goal was to provide an accurate description of the learning being studied (Cresswell, 1998; Morse & Field, 1996). Each investigator read verbatim bulletin board postings independently, with the goal of revealing themes.

Data reduction involved clustering the data by using words, phrases, and sentences written by the participants. Initial reduction involved careful reading of the verbatim discussion to determine tentative abstractions. The researchers met to discuss their independent abstractions after the bulletin boards had been reviewed. Categories began to emerge inductively as the investigators discerned particular abstractions. To ensure consistency of the analysis, abstractions of the data that were not agreed upon were maintained until saturation was reached. Discussion continued until consensus was achieved; at times, this required that the researchers return to the original bulletin boards and re-read them. Final synthesis of data involved identifying patterns and themes that reflected critical aspects of the experience of the students; this data included illustrative comments (Cresswell, 1998; Morse & Field, 1996).

DISCUSSION FORUM RESULTS:
ONLINE SCHOLARLY DISCOURSE

Analysis of the data from the discussion forum (bulletin board) revealed a major theme that we called "creating online scholarly discourse." Key to this scholarly discourse were participant comments that revealed evidence-based thinking and discipline-specific writing about cardiac nursing. In addition, participant interactions (student to student, professor to student and vice versa, project co-ordinator to student and vice versa, technician to student and vice versa) were analyzed over time (at the beginning and end of Phases 1 and 2). From these interactions, three sub-categories related to participant interaction emerged: moral, academic, and technical support. Specifically, moral support refers to support offered as general encouragement; such support may or may not have been connected directly to matters of curriculum. By comparison, academic support refers to instances when

learners and others involved in the study (the professor, the project co-ordinator) extended assistance related to an academic or content issue. Finally, technical support was assistance provided to the learners as they worked with the Internet setting and encountered technically based challenges.

Examples illustrating evolution of online scholarly discourse, as reflected by evidence-based nursing practice during Phases 1 and 2, follow. Examples are supported by discussion excerpts exemplifying moral, academic, and technical support.

Evolution of Evidence-based Practice

This section presents the progress of the same Cardiac Care on the Web participant at three different points in Phase 1: at the beginning, at the approximate midpoint, and at the end. In the early posting, the nurse, like many of her colleagues, used the discussion forum to introduce herself, her clinical expertise, and her expectations of the course.

> I finally found my way to the site. I work in the CCU just north of Toronto. Most of my nursing background is in surgery but, four and a half years ago, I transferred to cardiac care and love it. We are now the regional centre for our area so things are rapidly changing. A very exciting place to work right now. I completed an online course last month on health care relationships and can't believe I'm doing this again but it looked too good to turn down. Good luck to everyone.

As Phase 1 unfolded, the same student began to share her theoretical and experiential knowledge around cardiac nursing issues. As well, she regularly responded to comments and questions raised by her course mates. This is the case in the excerpt below.

> We use Lovenox for most of our cardiac pts. Studies have shown that show it is as effective as continuous IV heparin infusion in treating unstable angina and MIs. I think it's great. More convenient for pts as well as staff. We do not do the cbc q3days though most of our pts are only with us for an average of 4-5 days unless they are waiting for angioplasty or CABG. This seems to be the treatment of choice.

Although the student's posting noted above does indicate her awareness of nursing literature and her growing confidence in developing and expressing strong opinion, it does not reveal deliberate and careful utilization of nursing literature in development of opinion. Notably though, as Phase 1 drew near its close, this same student began to recognize the need to incorporate references into her online contributions. She also began to speak about nursing not only from an experiential focus but also from a theoretical perspective.

Watson's Theory of Human Caring states that care and love are the most universal, the most tremendous, and the most mysterious of cosmic forces: they comprise the primal and universal psychic energy. Ten carative factors include: 1) Forming and acting from a humanistic-altruistic system of values 2) Enabling and sustaining faith-hope 3) Sensitivity to self and others 4) Developing helping-trusting, caring relationships 5) Promoting and accepting the expression of positive and negative feelings and emotions 6) Engaging in creative, individualized, problem solving caring process 7) Promoting transpersonal teaching-learning 8) Attending to supportive, protective and/or corrective, mental, physical, societal and spiritual environment 9) Assisting with gratification of basic human needs, while preserving human dignity and wholeness 10) Allowing for being open to existential-phenomenological and spiritual dimensions of caring and healing which can not be fully explained scientifically through the western mind of modern society. Here is a web site re nursing theory: Http://www.ualberta.ca/~jrnorris/nt/theory.html

The student's progress in Phase 1 was indeed substantive; Phase 2 witnessed her further development in two especially important areas. First, having established her confidence as an online learner in Phase 1, she assumed a mentoring role for newcomers to the program, as reflected by the following early contribution to the discussion forum in Phase 2.

It sounds like some people are having some difficulty getting started. I hope I can offer some encouragement. I found it easier to print off the reading work from the computer and have it in my binder so it was portable and easy to read anywhere, like in bed before I went to sleep. Not quite as exciting as a mystery novel. Those books will have to wait a few months! As I'm reading through I am looking for topics to further research for the two assignments. I have tried to pick topics I don't know a great deal about. I found it has helped to do some reading every day and tried not to get behind. Otherwise you feel overwhelmed. Also getting yourself familiar with the course web site makes things easier. I hope some of this helps. Stay positive. It is a great way of learning!

The above posting underscores the student's realization that she has much to offer her online course mates and also points to her awareness of the need to do ongoing research into topics that attracted her attention as she completed her reading. Thus, in the following text, the student shows integration of relevant research into her posting and increasing understanding of the writing conventions of nursing.

Wolff-Parkinson-White Syndrome (WPW) also known as pre-excitation syndrome is a condition involving episodes of tachycardia caused by an accessory pathway in the atrioventricular conduction system. This extra pathway bypasses the normal conduction delay at the AV node, causing re-entry, a form of supraventricular tachycardia. This occurs in 4 out of 100,000 people and is one of the most common causes of tachyarrhythmias in children. Some of the symptoms may include palpitations, light headedness, fainting, dizziness, shortness of breath, chest pain or tightness. These symptoms can occur in any degree of severity, with a progressive increase in frequency. On examination, a patient's heart rate will be over 150 and can be as high as 300, BP normal or low, ECG will show delta waves. This is a slurring at the beginning of the R wave and is caused by the impulse travelling along the accessory pathway causing part of the ventricle to receive the impulse earlier and begin to depolarize before the rest of the ventricle. The PR interval is shorter and QRS wider than normal. Treatment is aimed at reducing the episodes of tachycardia. This can be done with a variety of medications including adenosine, amiodarone, digoxin, verapamil, beta blockers or other antiarrhythmic drugs. If these are unsuccessful, cardioversion and occasionally pacemakers can interrupt the re-entry cycle. With electrophysiology studies the accessory pathway can be located and ablated. This is usually a cure. References: 1) Alpert, J., & Francis, G. (2000). *Handbook of Coronary*. Philadelphia: Lippincott, Williams & Wilkins. 2) Wood, S., Froelicher, E., & Motzer, S. (2000). *Cardiac Nursing*, 4th Edition. Philadelphia: Lippincott.

The above samples from the online discussion forum reveal a dramatic evolution of evidence-based learning by a single student over time (beginning, middle, and end of Phase 1; Phase 1 versus Phase 2). Equally striking in the discussion forum data was the evolution of scholarly dialogue by a group of students about a specific issue. The following short excerpts demonstrate how nurses in Phase 1, given some gentle guidance by their professor, explored the topic of lipids and cardiac health. Note how the discussion was initiated by one of the students who realized that her learning colleagues represented a wealth of knowledge and experience to be tapped. As well, note the direction provided by the professor and the inclusion of references to nursing literature as the discourse unfolded.

Student #1

Does anyone have any information regarding doing lipid profiles on fresh MI patients? I am curious as to whether this is being done, whether it is a new trend, and how valuable the information is. If you have some personal experience or have come across any journal arti-

cles relevant to this I would certainly appreciate hearing about them. Thanks.

Student #2

I don't have any info on lipid profile but at work we routinely do lipid profile on any patient admitted to CCU so it is not just on MI and angina pts. MASTRAK is now tracking LDL on all cardiac admissions. This is indeed a major risk factor for heart disease and needs to be treated medically if elevated.

Professor

Hi, Lipid profiles haven't generally been done on fresh MI's because the process of heart attack can give false results. In fact, the information I have is that they will show to be falsely LOW. Unless the tests have changed, this is the main reason that I know of for not doing the profile. My experience is that they were done at the first out-patient visit (1-2 weeks post discharge). At this point, the patient was feeling well and could be engaged in the diet-exercise change process.

Student #3

"The Canadian Guidelines for Cardiac Rehabilitation and Cardiovascular Disease Prevention," 1st Ed., Nov 1999, indicates in the guidelines: 5.10 Acute MI should have fasting lipid profile measured on admission or within the first 24 hours, in those patients without this lab work, fasting lipids should be delayed for approx. 2 months post MI (Grade B LEVEL II recommendation); 5.11 In all hospitalized patients with IHD/CHD, post MI, unstable angina, post-PTCA, post-CABG, Ischemic CCF. Fasting lipids should be done prior to discharge and immediate pharmacological therapy is recommended for pts with LDL>/= 3.2 mm/l or TC/HDL ratio >/= 4.0 (Grade B Level I recommendation).

Professor

Thanks for posting that. It is really helpful. I guess the reduced stays have influenced this decision. Still, it follows very much a medical model in that it treats this only from a pharmacological perspective. Diet changes, as you well know, are so much more than that. Perhaps now we can address what "LOW FAT" diets in the hospital constitute. We always insist on this for our cardiac clients. Two years ago, this meant about 30% of the calories came from fat (some low fat diet!!). What about other sites? Ask the dietician what "low fat" means in your institution.

Student #2

> This info is from the *Canadian Journal of Cardiology* Feb 97 Volume 13
> Number 2, regarding dyslipidemia and coronary artery disease. The
> link between the two has been established through research and clini-
> cal trials. It is not disputed there is a general need to lower the average
> cholesterol level. Evidence shows this management remains suboptimal
> and that a gap exists between expected and observed medical practice.
> The article goes on to say that pts who are high risk are being under
> medicated with cholesterol lowering agents. As advocates for our
> patients we need to draw MD's attention to elevated lipid levels,
> educate our pts about the risk factors. Treatment appears to be cost
> effective.

Professor

> Great info. What really works is a family approach. I know what the
> literature states. My concern is that patients are so sick while in hospi-
> tal and have a lot to absorb . . . how much do they remember . . . not a
> lot. There needs to be a strong link between what we start teaching in
> hospital and what is done in the community. Do you understand what
> I am saying?

Support: Moral, Academic, and Technical

The change in the quality of discourse among the nurse-participants in both
phases can be attributed to a number of variables. Of particular note is that,
as the nurses became more comfortable with the online learning setting and
with each other, the action within the online discussion forum increased. As
well, it became more focused on cardiac nursing and less focused on techni-
cal challenges. Based on these observations, we suggest that the increased
traffic on the bulletin board and greater focus on cardiac-related issues over
time were due, in some measure, to the nurse-learners' experiences of differ-
ent kinds of support, including moral, academic, and technical support. We
also suggest that although moral and technical support are especially impor-
tant early in online experiences and become less important as the experi-
ence unfolds, this does not indicate that these kinds of support are of lesser
importance than academic support. Rather, when such kinds of support are
extended early in an online experience, learners move more quickly to dis-
cussion about content issues than they might otherwise.

  Below are excerpts taken from the bulletin board that illustrate the kinds
of support that the learners experienced from each other, their professor, the
project co-ordinator, and the technician during Cardiac Care on the Web.
Although the roles of each of these players clearly differed, in many cases

the three types of support were extended in a single message. The following example shows the type of support students typically extended to each other, as well as the blending of different kinds of support.

> I can relate to your frustration with this man. We occasionally come across the same problem. Recently, I looked after a 43-year-old-man who was readmitted 2 days after discharge following an inferior MI. Even though he did have proper education and he did not go home and start doing heavy lifting, he did re-infract. He was indeed in denial and, hopefully, after the second time some of what we thought we taught him has sunk in. We can give all the information but the pt has to be willing to make some lifestyle changes.

In addition to identifying with each other's clinical challenges, the learners regularly shared their discoveries of relevant learning resources.

> Here's a site from our government for the Canadian population: www.canadian-health-network.ca. There was an article in *The Canadian Nurse* about it. It is a good site to give out as it has basic health-related issues, preventative measures, prescription drug information, etc. I checked out the cardiac portion of it and thought a newly diagnosed cardiac patient may very well benefit from it.

From a cardiac nursing 'content' point of view, the individual who figured most significantly in the online interaction was the professor. The purpose of the following passage was to encourage interested participants to examine up-to-date nursing literature about women and heart disease instead of speaking from experiential knowledge, but the professor's moral and emotional support of the group of learners is also very clear.

> There is some really exciting research going on in this field. You might want to try to get to a library and look at some articles on this subject. This would be an excellent chat topic and you could get into the literature. To help you along, I'm going to the library today. I'll find some easy to read, key research articles and post the references. Great to see you all enjoying this process.

As the person who knew all parts of the metaphorical puzzle of Cardiac Care on the Web, the project co-ordinator also played an important role, although not at the content level. She was, therefore, a critical liaison for the learners as they navigated the terrain of continuing education and nursing, as well as many of the technical aspects of the online learning environment. Noted below is a posting by the co-ordinator as she assisted the participants with their concerns about academic writing.

Some of you have expressed concern about the written work for your modules. Two thoughts: if you are interested, I can forward you a package of writing support materials I prepared for other Laurentian students taking distance courses. If you are interested, email me, and I will make arrangements. Another option is to contact Laurentian's Centre for Academic Writing. This Centre offers a support program for students who are preparing their written work. If you live in the Sudbury area, the program works on an appt. basis. If it is not possible to come for an appt because of distance and/or other factors, you may be able to fax materials to the Centre for review. The best thing to do—either way—is to call the University and discuss what is available. Enjoy the weekend!

Another person who played a behind-the-scenes but critical role in the project was the technical support person. Although his primary role was to provide clear and non-threatening technical instructions to participants, he also extended general encouragement in a warm and engaging way, as indicated below.

I have just received an email asking me how to print a message that is in the bulletin board. We had covered this in our bulletin board pages that we mailed you. Or, so we thought. We overlooked a little something. The bulletin board screen is divided into three sections: one to the left with your options, one on top with the message subjects, and one on the bottom with the current message you are looking at. If you try to print, the computer will only print one of the sections out. Which section you ask? The section you last clicked with your mouse! So, if you want to print a message that you're looking at, click anywhere (on white) in the section where the message is. Then print it. Hope this isn't too confusing. PS: Thanks to one of your colleagues for pointing this problem out.

DISCUSSION OF THE DISCUSSION FORUM DATA

In both phases, the interrelatedness and positive impact of moral, academic, and technical support were apparent through the interactions posted on the bulletin board. The evolution of evidence-based discourse grounded in nursing research and practice and presented through varying levels of discipline-specific writing was equally clear. Although these latter components were thought to be indicators of online scholarly discourse, the former components—those related to support—were considered necessary to "setting the stage" for scholarly discourse. Additionally, recognition by the Cardiac Care on the Web team of the need to make certain adaptations between the

two phases ensured that the Phase 2 setting facilitated scholarly discourse in a more significant way than did Phase 1.

Importantly, a number of formative changes based on the Phase 1 experience were made to the online learning environment in Phase 2 in order to enhance learner success in Phase 2. Although both the participants and the professor regarded Phase 1 to be a successful learning experience, a number of areas appeared to require adjustment. Specifically, these areas included providing participants with: 1) models of academically focused, nursing-related discussion postings; 2) writing supports in print and online formats; 3) tips on citing and referencing according to the standards of the American Psychological Association (APA); 4) tips on critiquing Internet articles; and 5) increased time and training for both students and faculty to become at ease with the learning setting quickly. Items 1 to 4 were incorporated into an existing online orientation module for Cardiac Care on the Web; item 5 occurred throughout Phase 2. Although the Cardiac Care on the Web team deliberately increased the training of students and faculty involved in the online environment, further development and research are required in this area.

In Phase 2, then, given the continued efforts of those involved to extend support to the learners and to implement the outlined changes, the discourse community was characterized by a higher level of evidenced-based thinking about nursing practice and better discipline-specific writing than in Phase 1. The project also demonstrated that teaching and learning the conventions of discipline-specific writing are possible in online environments. By its very nature, the Internet offers instructors practical ways of teaching and encouraging writing. For instance, the asynchronous nature of discussion boards and forums can facilitate teaching of writing conventions independent of time and geography, while the public nature of discussion boards and forums tends to motivate student writers to reflect carefully on their ideas, and their expression of them, before posting. E-mail and discussion boards can likewise support writing that occurs in stages and/or involves peer and faculty commentary.

These approaches are in line with the views of both Colomb (1988) and Freedman (1993); they emphasize the importance of discipline-specific writing but differ in how they believe students can achieve this skill. Specifically, the well-constructed and managed Internet learning environment can offer instruction in discipline-specific writing in formal and less-formal ways. The cardiac project has also shown that the opportunities for reading and writing and exchange of ideas about specialized content areas such as cardiac nursing are "virtually" limitless.

CONCLUSION

Cardiac Care on the Web has significantly affected how online education is progressing at Laurentian University. It has uncovered the character of online scholarly discourse in highly specialized content areas such as cardiac nursing, and it has identified the conditions under which such discourse can best be achieved. Having established that Internet-based instruction can facilitate scholarly discourse distinguished by evidence-based thinking and practice, our next goal is to move a step forward to the facilitation of learning that, in addition to being evidenced-based, incorporates strong reflective thinking.

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