Reflections on the Implications of Technology-Mediated Learning: A Teacher Educator Perspective

Sal Badali
University of Regina

Abstract

In this paper, I report on how my practice was influenced by redesigning an existing introductory teacher education course that included an online component. The purpose of the study was to explore the degree to which integrating technology affected my professional relationship with pre-service teachers and with sessional seminar leaders who taught the seminar portion of the course. The findings indicate positive benefits associated with the information technology. Two major themes characterizing my experiences are discussed: (1) relationships with students (seeking personal connections, engaging students in learning, and maximizing communication and expectations) and (2) relationships with seminar leaders (being an administrator and being a supporter). Overall, results indicate a number of issues: students embrace the technology as a way of learning, the electronic component of the course benefited face-to-face contact among students and instructors, and the online features of the course encouraged cooperation among students and instructors.

Across most university campuses, there is a growing trend around the use of technology to support instruction and learning. It is widely assumed that developments in information and communication technologies (ICT) are fundamentally transforming and improving higher education (Advisory Committee for Online Learning, 2001). It's one thing to have the technology available; it's quite another for university professors and instructors to know how to use it effectively to engage students in learning. While it may be tempting to simply attach technology to existing courses, Gaver (1996) and Kirschner (2002) highlight the importance of paying careful attention to the process of technology design and implementation.

At the University of Regina, the Educational Professional Studies (EPS) subject area provides a developmental core of compulsory courses in the Faculty's Teacher Education Programs. EPS courses attend to the professional development of students becoming teachers by attending to, in part, an exploration of specific skills and strategies for teaching. All EPS courses contain a field component for practice and reflection. EPS 100 is the first course pre-service teachers take which is to help them learn about the nature of inquiry into their emerging thinking and practices. Students ($n=150$) attend weekly large group presentations and small follow-up seminars ($n=30$) which engage them in

planned and spontaneous activities. I coordinate the course and contribute to large group presentations, but sessional seminar leaders assess student performance.

A primary reason for doing this research was to help me improve the quality of a required introductory teacher education course and to heighten the preparedness of prospective teachers. In this article, I report on how my practice was influenced by redesigning this course, which included an online component. My main focus was to explore the extent to which integrating technology affected my professional relationship with student teachers and sessional colleagues who were responsible for the seminar portion of the course.

Overview of Relevant Literature

Let me begin by introducing a few key terms from the ICT literature that are relevant to this study. Wilson (1996) characterized “technology-mediated virtual learning environments” as relatively open computer-based systems that promote interactions and knowledge sharing among learners and instructors. A primary goal of “web-based learning” is to emphasize self-control, to promote diffuse thinking models and viewpoints, and to encourage independent thinking among learners (Hill & Hannafin, 1997). Advocates of e-learning (e.g., Henning, 2005) have recognized the benefits of incorporating ICT as a complement to face-to-face lectures. Akar, Ozturk, Tuncer, and Wiethhoff’s (2004) evaluation of “collaborative virtual learning environments” (CVLE) focused on learners’ perceptions of the technical and social qualities of CVLEs. They argued that course designers and systems developers should build technically robust CVLEs with proper social infrastructure. Hannafin’s (1992) research into “technology-enhanced student-centered learning environments” focused on promoting cooperation among students in problem-solving contexts. Technology-enhanced student-centered learning environments are meant to promote interactive, complementary activities that enable individuals to address unique learning interests and needs from multiple perspectives and levels of complexity.

Researchers have explored the manner in which learners acquire knowledge and understanding in technology-rich learning environments. According to Edwards (1995) and Jonassen (1992), effective environments encourage individuals to solve problems by using available resources and tools. The learning environment encourages complex interactions among a learner’s prior knowledge, perception of events, intents, actions, observations, and reflections (Land & Hannafin, 1996). Learning is a dynamic process of “reflection-in-action” (Schon, 1983); these types of approaches promote social constructivist learning principles.

There is a pervasive view in the higher education literature that technology can effectively support constructivist learning environments (e.g., Hannafin & Land, 1997; Harasim, 1999; Hiltz, 1994; Rogers, 2000; Twigg, 2000). Research has recognized the value of approaching instructional design through a number of learning-centered principles that focus on cognitive, metacognitive, motivational and affective factors, and individual differences (Lambert & McCombs, 1998). Good practice in undergraduate education involves interactions and active learning and is organized to support a range of learning preferences (Chickering & Gamson, 1987); it also includes a variety of instructional materials (Brown,

2000). For technology to play an effective role in this process, it must be widely integrated with pedagogical practices and institutional infrastructure (Bates & Poole, 2003; Daniel, 1996; Richey, 1997). This means that technologies should be chosen appropriately, based on their features (Laurillard, 2002) and their use to support specific learning outcomes (Gandell, Weston, Finkelstein, & Winer, 2000; Sharpe & Bailey, 1999).

Among several constructivist design models (e.g., Bednar, Cunningham, Duffy, & Perry, 1995; Hannafin, Land, & Oliver, 1999; Wilson & Cole, 1991) Jonassen's "Constructivist Learning Environment" model is widely used to design and develop instruction for computer-based learning environments. In his model, Jonassen (1999) lists several design principles that can be used to develop what he terms the "constructivist learning environment." These design principles are: (a) Create real world environments that employ the context in which learning is relevant; (b) Focus on realistic approaches to solving real-world problems; (c) The instructor is a coach and analyzer of the strategies used to solve these problems; (d) Stress conceptual interrelatedness, provide multiple representations or perspectives on the content; (e) Instructional goals and objectives should be negotiated and not imposed; (f) Evaluation should serve as a self-analysis tool; (g) Provide tools and environments that help learners interpret the multiple perspectives of the world; and (h) Learning should be internally controlled and mediated by the learner (pp. 11-12). Keeping these principles in mind, ICT designers must pay close attention to content boundaries and the types of knowledge to be learned to create multiple pathways of inquiry and self reflection.

Proponents of technology-mediated learning environments usually suggest that the technology can eliminate barriers through increased convenience, flexibility, currency of material, student retention, individualized learning, and feedback over traditional classrooms (Hackbarth, 1996; Kiser, 1999; Massey & Zemsky, 1995). Although much of the literature emphasizes the potential value of internet technology in education, there are drawbacks. For example, students may have feelings of isolation (Brown, 1996) or experience frustration, anxiety, and confusion (Hara & Kling, 2000). According to the research of Maki et al. (2000), an individual's learning effectiveness, and interest in the subject matter may be reduced. It is important to highlight that the main difference between technology-mediated learning and traditional learning environments is the shift of control and responsibility to the learners.

Methodology

In Zeichner's (1999) review of the new scholarship in teacher education, he notes that studying one's own practice is perhaps the most significant development in the field of teacher education. Since that pronouncement, research has explored the strategies and benefits of self-study and other narrative approaches (e.g., Calderhead & Gates, 1993; Dinkelman, 2003; Griffith, 2002; Guilfoyle, Hamilton, Pinnegar, & Placier, 1995; Hamilton, 1998; Knowles & Coles, 1995; LaBoskey, 2004; 1994; Loughran, 2005; Loughran & Russell, 1997; Russell, 2004; Valli, 1992). Teacher educators who explicitly reflect on their own work and share their thinking and decision making processes with student teachers is powerful because of the potential to influence pre-service teachers. If pre-service

teachers are unable to connect new knowledge with prior knowledge, then it tends to have little impact on their teaching practices (Olson, 1993, 1995). Because of this, I was determined to challenge my students, to make explicit connections among course themes (e.g., teacher identity, reflective practice, and issues pertaining to diversity, inclusion and anti-oppressive education), and to use technology to enhance student learning.

Over the last 5 years, I have been carrying out an inquiry into my own teaching practices. I concluded an earlier study (Badali, 2004, 2005) by highlighting the merit of long-term reflective practitioner dispositions in understanding complex pedagogical classroom issues. The research reported here reflects an intentional and systematic inquiry into my practice and is part of a continuous work in progress. In this project, I reviewed my current practices, imagined the possibilities, experimented with alternative instructional online delivery models, and reconsidered my impact on students' learning. I have been examining the way in which learning to use my own creative abilities has helped me foster a more accepting, open teaching style, and a classroom environment in which self-expression and creativity can flourish and students' knowledge is respected. I continued to adapt McNiff's (1995) action research framework: Why do I do the things I do? Why am I the way I am? How do I improve my work for the benefit of others?

In this article, I describe how the course was redesigned for internet delivery using a web-based management tool (WebCT) adopted by the university. I drew primarily upon a detailed reflective journal (April 2004-April 2006) as well as a Weblog and notes pertaining to the process of modifying EPS online seminars, course materials, and assignments. Because there appeared to be no noticeable differences among groups of students and the sessional instructors were the same, I treated 2 years of data as a whole. I routinely made weekly point-form journal entries on the order of 2-3 pages. Keeping a journal was useful because it enabled me to build on the everyday occurrences. I was able to compare my own personal and professional development, document my perceptions over time, and expose both successful and unsuccessful routes of my learning. I found that writing regularly in a journal was somewhat liberating because I tended to be less self-censoring if it was part of a routine.

In the journal I noted the date, the contextual information, subheadings which indicated how I felt, prompting thick descriptions of events. In analyzing my journal reflections, I began by reading them several times to identify issues and concepts related to the degree to which integrating technology affected my relationships with pre-service teachers and sessional instructors who taught the seminar portion of the class. For each theme, I developed phrases or codes that seemed to capture the essence of each entry. During this process it became obvious that some themes should be deleted, combined, modified, and others added. With the codes and frequencies, I formed a tentative structure of key themes and sub-themes. I then began writing the manuscript, going back to the journal entries to elaborate upon the themes and gather representative quotations. As the writing process continued, I adjusted some themes and modified quotations to represent more accurately the content of my reflections. At the end of the process, I re-read my journal in its entirety to satisfy myself that I had in fact presented the information fairly and accurately.

Findings and Discussion

The introduction of WebCT into EPS not only redefined course content, but also reshaped and expanded relationships among students and instructors. Two major themes characterizing my experiences are described next. I begin by describing the extent to which my relationship with student teachers was altered (seeking personal connections, engaging students in learning, and maximizing communication and expectations). Second, I explore how my relationship with sessional seminar leaders changed after introducing WebCT (tension between being an administrator and supporter). I remind readers that although I present each theme separately, they are not mutually exclusive from one another.

Theme 1: Relationship with Students

Seeking Personal Connections. After examining the data I collected for this study, it was clear to me that the newly created WebCT component of EPS profoundly altered my relationship with students. In previous “traditional” teaching settings, I had derived satisfaction from the face-to-face interactions with students in part because I was interested in their development as teachers but also because those interactions helped me assess the degree to which the course was meeting their needs. The following journal entry summarizes my initial feelings after implementing WebCT.

I feel removed and distant from my students. I guess it is partly to do with the large class size but I really miss the more personal one-on-one contact. I find myself going out of my way before and after class, hoping to engage students in conversation. It's like I'm looking to be reassured about the course. (Journal: October 2004)

However, over the last two years, I have become more comfortable in working with students online. I now define my relationship with students more broadly to include both face-to-face and online contact.

Developing and maintaining professional connections with students meant encouraging relationships on multiple levels. Later, I will say something about the enhanced relationship between seminar leaders and student teachers and between myself and seminar leaders. For now, I think it's important to highlight the diminished personal contact I had with student teachers after developing WebCT. It is a different type of relationship when communicating in an electronic format. When I know students through their physical presence in a typical class, I come to know their names, appearance, and other specific pieces of information depending on the student. Participants in online classes are usually not personally known to the professor in the same way.

I find it somewhat frustrating responding to student teachers that I don't have a mental picture of....It seems so impersonal. I'm left wondering who this person is. I only know as much about them that they wish to share. Perhaps, this is a good thing in that it forces me to respond to the issue at hand and not be distracted or influenced as much by

assumptions or pre-conceived notions I might have of the student.
(Journal: October 2004)

It is worth noting that some online conversations were more productive and open. Perhaps students are more forthcoming and confident to say what they really want when they communicate electronically. I can only speculate at this time, but perhaps WebCT reduced or blurred some of the power differentials between professor and student.

Engaging Students in Learning. When I redesigned EPS, I focused on creating integrated assignments that promoted critical inquiry into student teachers' prior knowledge, experiences, beliefs, and attitudes about teaching and learning. I was guided by the notion that good practice encourages cooperation among students. Simply stated, I believe that student learning is enhanced when they work together. For example, electronic discussion groups were important because students could not always be physically together. The threaded discussions on WebCT were an excellent tool in generating insightful discussion and analysis about course issues and topics. When I examined the archived messages, it was clear that face-to-face discussions were extended online.

I am most surprised and pleased with the depth and level of engagement found in online discussions. I'm drawn into these conversations.... However, I have to be careful not to spend too much time online.... I'm curious about what is being discussed but I need to be careful I don't over step my role; I'm not the one who evaluates their performance. I need to leave much of this to the seminar leaders.
(Journal: November 2005)

In an introductory course such as this, I think it's really important to focus prospective teachers beyond traditional notions of curriculum, teaching methods, classroom management, and assessment and evaluation. I contend that it is important for teachers to know something about how the world has changed since they were students. For example, there are more children and youth living in poverty, technology and the internet has become commonplace for more people, teaching for social justice and equity is central to many teachers' practice, and Aboriginal and minority rights are part of the national discourse. Based upon archived student teacher postings, my journal entries, and documented notes of meetings with sessional instructors, it is clear that WebCT was a useful tool in helping prospective teachers identify and compare their thinking about teaching and learning with their classmates and within existing research bases.

The reflective analysis assignment illustrates how WebCT may enhance student teachers' ability to focus on matters beyond themselves and on the learners and communities in which they might ultimately work. Each person submit four papers during the semester in response to open-ended questions I post online (e.g., issues pertaining to diversity, equity, inclusion, Aboriginal education, role of the teacher, working with parents and other human service providers). The purpose of the assignment is to help pre-service teachers explore issues raised by the textbook authors in relation to their beliefs, attitudes and prior and current experiences about teaching and learning. There is both an

individual and collaborative component to the assignment. Before coming to seminars, students complete assigned readings and individually record their general thoughts and reactions. They describe key issues that are important to them as well as compose questions that arise from the readings that they want to discuss further with members of their discussion group. By a designated date, pre-service teachers post their response to other members of their online discussion group. At that time, they respond to each other's postings, knowing that their assigned seminar leader and I will be monitoring the discussions.

Students are doing a good job of being responsible for their own learning as well as supporting other people in their group. It's clear who the leaders are.... I wonder if these same qualities and behaviors are observable in non-online conversations. (Journal: January 2006)

When compared to the previous non-online version of EPS, I've noticed that students were better prepared to engage with their peers during seminars. Because of the online preparation, seminar leaders and I saw better quality and depth of analysis in students' work. The use of technology was clearly a positive factor in promoting responsible citizenship among members of discussion groups. One of the ongoing issues that seminar leaders and I discussed was our desire to identify problems associated with poor academic performance and intervene to support learners as necessary. Therefore, I made every effort to make course expectations more transparent than in previous EPS classes. In addition, new collaborative roles were observed in all student teams as they adjusted to the online component of the class. In some ways, they became more resourceful as team members used multiple ways of communicating with peers and instructors (e.g., email, phone calls, discussion groups, face-to-face meetings). Students also became more independent problem solvers. I observed many instances of students asking other students for clarification or help when in the past I would have been the first and likely only person they would have contacted. This points to a positive change in the interaction patterns caused by the online features of EPS. There was also some evidence to suggest that some students emerged as leaders within the small groups because of the electronic requirement of the course. I observed in some students a greater ability and willingness to engage others in their learning.

A commitment to respecting students' diverse talents and learning styles was a guiding principle reflected in how I developed the online component of EPS. Learning was enhanced when I implemented a variety of strategies that respected students' prior knowledge, attitudes, and beliefs about various issues related to teaching and learning. Although there were several activities and assignments, students had some choice in the type of seminar online activities they participated in. For example, some students explored curriculum and community-based materials and programs, others critiqued educational websites and created annotated bibliographies. In some ways, WebCT became part of an expanded learning community for students; one that helped them in their transition from student to beginning teacher.

Many students have done a really good job of floating their ideas or “works in progress” to members of their discussion group. I’ve also been impressed by the number of times that students, on their own volition, use the online feature of the course to support one another.... It’s not a formal expectation that I have for them. (Journal: March 2006)

I’ve observed that it takes little time for most students to trust one another. Once they understand what is expected of them, they tend to get down to work.

The seminar leaders and I have endeavoured to make everything as transparent as possible for students without taking away the spontaneity that is required for creative problem solving in seminars. Being comfortable in offering and accepting constructive criticism is a difficult lesson for many of these students to learn. (Journal: February 2005)

Although it is beyond the scope of this paper, I see merit in exploring ways to extend this initial online learning community throughout their entire teacher education program.

Maximizing Communication and Expectations. A key feature of good teaching is the ability of an instructor to communicate high expectations to learners (Chickering & Gamson, 1991). Not only has WebCT been useful in encouraging students to think about issues from multiple perspectives but students can compare their own performance to other people’s online postings.

The other day, a seminar leader told me about a problem he was having with one of his students. It’s difficult, he said, for some students to recognize that their work is sub-par. The seminar leader directed the student to his online discussion group, where examples of assignments were posted. The seminar leader felt good about using other students’ work to emphasize how this particular student could improve their own work. (Journal: January 2005)

I have already noted the degree to which students supported other students but it bears repeating here. From the start, students appeared comfortable in going online to discuss their reactions to presentations, readings, assignments, etc. Students were not anonymous and they knew seminar leaders and myself would be monitoring the discussions. As other people added their voices to the conversation, it was common to have a string of 10 to 12 responses. I would say that this is more than occurs in most typical classrooms and the conversations were also permanent, in the sense that there was an archived record over the semester.

Based on WebCT survey results, an assessment of archived student postings, and seminar leader and course coordinator observations, it is clear that the majority of students embraced the use of technology. Although almost all students reported being comfortable with the technology, I did not anticipate the initiative and enthusiasm that many students exhibited in their discussion groups. I was pleasantly surprised not only by the number of postings by students but by

the depth of understanding embedded in their interpretations and critiques. From both a student and instructor perspective, the online discussion component was a positive feature of EPS. It modelled the practical advantages of working together within a supportive professional community. Based upon a close examination of student teacher discussion group postings and the graded portion of the reflective analysis assignment, students who posted frequently online had a positive influence on the entire group. However, there was no evidence to suggest that they learned more or benefited the most from the online component of the course.

Based upon replies from students on the WebCT course survey, students reported spending a great deal of time online. However, some students that I would classify as “independent and task-oriented” were frustrated because they were “tired of working with others,” not wanting to always “defend or share” their thinking with their group. A few students said,

Just tell me what you want! There is so much material to cover in this course, so many assignments and expectations. It's hard to get other members of my group to post things when they are required to. (Email from student teacher, March 2006)

This type of comment is not particularly surprising given the time press issues many student teachers face in trying to balance personal and professional responsibilities. Nevertheless, I had high expectations for authentic collaborative practices among students, and I was disappointed and frustrated when some students seemed only interested in how fast they finished an assigned task.

Theme 2: Relationship with Seminar Leaders

Being an Administrator. WebCT impacted my relationship with seminar leaders in a number of ways. First, when initially planning the seminar I remember feeling uneasy because I was being more prescriptive and managerial than usual. As a result, the online seminar content and delivery method was more structured after implementing WebCT.

I'm afraid of losing control of the course. I don't know what to expect from seminar leaders who are used to doing things like they have always done. This is going to be a big change for them. Will they embrace the use of technology in working with each other and pre-service teachers? I feel like I'm caught in the middle, unsure of how much freedom I should give them. Sometimes, I feel more like a high school department head than a professor ... and to top it off, they perceive me as the boss! (Journal: June 2004)

Second, because seminar leaders had less discretion in what and how they taught, one of their greatest strengths was minimized; the experiential knowledge they possess about K-12 education and their credibility with student teachers.

How much flexibility should I incorporate into the seminars? Not knowing how this is going to play out, I think I might be giving too much structure to weekly seminars, I'm worried that I might be stifling seminar leaders' creativity and spontaneity in working with students. I

will have to re-visit this after the semester to see what changes need to be made. (Journal: May 2004)

The third way in which WebCT impacted my relationship with seminar leaders relates to their relationship with student teachers. Seminar leaders were asked to be more facilitative and constructivist in working with students. One seminar leader noted:

The weekly seminars are currently set up to challenge students to think about the type of teacher they want to be and need to be. I spend less time now “teaching” things like instructional strategies and classroom management, and spend more time responding to student teachers’ beliefs and attitudes. It seems like more of a seminar whereas before it would be fair to say it was more of a laboratory setting. In some ways, students see me less as the “expert” and more as an experienced colleague who can help them on their journey. (Email from seminar leader, April 2005)

The online course component of EPS encouraged cooperation among student teachers. For example, the learner-centered model employed in EPS was enhanced by technology because team-based projects contributed to the larger learning community. Electronic communications lessened barriers among student teachers, discussion group postings encouraged spontaneous idea exchanges and encouraged perspective taking, and the peer review processes enabled student teachers to refine and defend their positions. ICT also promoted a solid professional relationship between students and instructors. Instructor-student face-to-face contact remained a key aspect in the teaching/learning process. WebCT was useful in helping student teachers take the information and place it in meaningful contexts. For example, teacher candidates were exposed to a greater range of content than had previously been possible (e.g., websites, resources, community agencies policy). The technology component fostered additional contact between students, but it was a vehicle for student-instructor interactions (e.g., web-based question and answer sessions, email distribution lists, bulletin boards). Seminar leaders told me that students became more involved in course work because they saw the value of working together and they knew instructors were actively monitoring their progress throughout the semester, not just grading their assignments. In addition, WebCT enabled students to access instructors, web sites, and peers at their convenience. Overall, WebCT encouraged students to be more active and responsible for their own learning. Finally, WebCT alleviated some time press and workload issues for seminar leaders and myself. Given that seminar leaders held sessional appointments, it was often problematic finding meeting times that would satisfy everyone’s schedule.

WebCT is like a virtual meeting place for the five of us. Our online discussions are more concise than typical face-to-face conversations. I’ve found it unnecessary to have weekly face-to-face meetings because we are able to sort out most issues online in a timely fashion. (Journal: October 2005)

Although integrating technology was rewarding, it was also difficult and time-consuming work. I under-estimated the amount of time to re-design, maintain, and sustain the course. The re-design was in some ways a collaborative process; seminar leaders and initially personnel from the Centre for Academic Technologies were asked for advice and feedback about seminar content, choice of instructional strategies, and technical support issues.

Being a Supporter. Much of the support I provided to seminar leaders related to administrative and instructional-related issues (e.g., attendance policy, grading norms, case study methods, and field experience expectations). Sometimes it was necessary to offer support to specific seminar leaders. For example:

I've just met with a seminar leader because I'm concerned about the grades being awarded. I was a little unsure of how forceful I needed to be in getting the instructor to realize the grades were just too high. We talked about standards, expectations, and criteria. My approach was to listen, respond to, and then provide positive examples to illustrate expectations. I think we both left the meeting feeling good. (Journal: February 2006)

The second and perhaps most important type of support was the informal support that seminar leaders offered each other. They were consistently generous in sharing teaching resources, as well as being there for one another when things didn't go as well as expected.

I'm particularly impressed with one of the sessionals who has taken it upon himself to be a "leader among leaders." He is duplicating and sharing materials for the others, encouraging informal coffee meetings, etc. I appreciate him taking the lead, and that he keeps me in the loop. So far, so good! (Journal: September 2005)

In this context, being a supporter meant sharing power with team members. I'm more interested in mutuality and support than a "top-down" approach to leadership when fulfilling my role as course coordinator. At this point, I've become more comfortable in the ambiguity and complexity associated with the online component of EPS. By giving up a significant amount of daily control and sharing power, I've come to trust my colleagues more, we've developed clear and effective communication strategies to serve the needs of our students, and we've developed a strong foundation from which to move this course forward.

Final Thoughts

This study has been a fulfilling journey in helping me to reflect upon who I am and what I do as a teacher educator. My work over the last number of years highlights many of the ambiguities and complexities associated with teaching and learning in a university context. Incorporating ICT into this introductory teacher education course helped student teachers access many practical resources that satisfied their demand for "recipe technical solutions," but the online dimension of the course also engaged them in thinking about their ethical and professional responsibilities as future teachers.

Working with ICT has made me more vulnerable to students, thereby contributing to feelings of self-doubt. Reflecting on this project, it's clear that I'm most vulnerable when I problematize my own K-12 teaching experiences and when I relate some of the struggles in constructing this course. I often share my reflections with them during classes and on the weblog in the hope that they will see the value in questioning their own practice with the intention of fostering a more inclusive and dynamic learning environment. I sense that students appreciate and benefit from my effort to be transparent about my practice, but I still feel vulnerable.

A fair question to ask is whether the online component of the course results in better prepared teachers. I would say that individuals engaged in collaborative reflective practice are better positioned to understand the ambiguities associated with teaching and learning. The online component of EPS prompted new and worthwhile activities that challenged students' prior knowledge, attitudes and beliefs about various educational issues. Prospective teachers, seminar leaders, and I also benefited from seeking help from peers. I want students to understand that we have a personal and professional obligation to take seriously our own professional development.

Our future challenge will be to make informed decisions about the role of ICT in teacher education and in post-secondary institutions more generally. To what extent should ICT be part of all courses? What's the best way to support the faculty who develop and teach these courses? Can universities afford the human and financial resources to make ICT central to a post-secondary education? In contemporary university cultures, it's easy to be seduced by technology but I believe it is incumbent upon all teacher educators to create and sustain teacher education programs that meet the needs of prospective teachers, as well as the children and adolescents in K-12 classrooms.

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