Articles

On-line Learning For Abused Women and Service Providers In Shelters: Issues Of Representation And Design

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Abstract

The challenge and potential of Internet technology to deliver learning services to increasing numbers of diverse learners who may not be included in formal continuing education settings are beginning to be addressed. *VIOLET* (http://www.VIOLETnet.org), a web site for abused women and their service providers, is designed to provide relevant legal information, an on-line community for support and sharing of experience and information, and on-going updates of legal information and community services. The project emerged out of a unique collaboration among women in

Résumé

On commence à aborder les questions du défi et du potentiel de la technologie de l'Internet offrant des services d'apprentissage à un nombre accroissant d'apprenants divers, ne faisant peut-être pas partie des milieux d'éducation permanente institutionnelle. VIOLET (http://www.VIOLETnet.org), un siteWeb pour des femmes exploitées et leurs dispensateurs de soin, est conçu pour offrir des informations juridiques pertinentes, une communauté en accès direct soutenant et partageant des expériences et des informations ainsi que des mises à jour continues des informations juridiques et des

many local and national communities and organizations and the Legal Studies Program at the Faculty of Extension, University of Alberta. Together they developed a safe space on the Internet for abused women, inclusive of gender, language, cultural, and learning style issues.

A technology that widens access to information may also present barriers to access. In this paper we explore some of these barriers and their implications for the design of information resources and learning environments for abused women. These issues are described using an account of the formative evaluation of the project's web site.

services communautaires. Ce projet s'est dégagé d'une collaboration unique parmi des femmes venant de plusieurs communautés et organismes locaux et nationaux ainsi que du Programme d'études de droit à la Faculté de l'enseignement postscolaire de l'University of Alberta. Ensemble, ils ont développé un espace sécuritaire à l'Internet pour des femmes exploitées où des questions de langue, de culture, de sexe ainsi que de styles d'apprentissage sont comprises.

Une technologie permettant plus d'accès à l'information peut être aussi un obstacle à l'accès. Dans cet article nous explorons quelques-uns de ces obstacles et leurs implications sur la conception de matériel documentaire et informationnel et sur les milieux d'apprentissage des femmes exploitées. On a élaboré sur ces questions en utilisant un compte rendu d'une évaluation formative du siteWeb du projet.

The potential of technology to deliver information to diverse learners who may not be included in formal continuing education settings is beginning to be realized, but it is important for these initiatives to be structured on evidence based practice in the fields of adult education and learning design for the web. This paper describes one such initiative, VIOLET, a web based learning service designed to support abused women and their service providers, especially those who are isolated psychologically or geographically. *VIOLET: Law and Abused Women* (www.VIOLETnet.org) is a

collaborative academic and community venture led by the Legal Studies Program in the Faculty of Extension, University of Alberta, with funding provided by the Office of Learning Technologies, Human Resources Development Canada (http://www.hrdc/rdhc.ca). Although the emphasis was on development (and redevelopment) and use of the web site, the Internet capacity of each shelter received special attention; as a result, funding was achieved for each member shelter of the Alberta Council of Women's Shelters to have an Internet station.

The design and development of the web site and the lessons learned, through formative evaluation, about implementing such a site in shelters are described. The site design process incorporated web based learning theory, the women's ways of knowing framework, and adult learning theory. The strategies that women in non-formal learning environments use when seeking information on the web are discussed; this contributes to the growing body of literature on the use of the web, capitalizes on its unique qualities for learning in a such an environment.

Ironically, a technology that widens access to information may also present barriers to access for women. Some of these barriers and tensions, and their implications for the design of information resources and learning environments for abused women are also explored.

The Information Needs of Abused Women

Abused women have a wide array of needs, expectations, and perspectives when seeking information and they encounter an equally diverse set of barriers to obtaining relevant information. Harris and Dewdney (1994) cited three main reasons for "information transfer failure," especially for battered women. They found that information-seekers typically encounter

- inefficiency in searching due to lack of communication skills, lack of preparation, lack of self-confidence, and lack of experience

- delays in retrieving information once found

- poor alternatives for courses of action, because the information retrieved is erroneous or incomplete.

Additional problems included uncertainty about which help agency to contact; social barriers such as ethnicity, language, isolation, and fear of being "caught"; emotional factors such as stress or depression; financial costs; inappropriate expectations; and institutional barriers (Banyard &

Graham-Bermann, 1993; Campbell, Sullivan, & Davidson, 1995; Harris & Dewdney, 1994). These problems contributed to the growing sense of frustration, alienation, and endangerment felt by information-seeking clients and were further exacerbated by long waiting lists at available agencies and lack of support at others once they were located. Increasing access to reliable, current information via the Internet could reduce some of these pressures.

VIOLET presents three different approaches to information retrieval and learning (described in detail in the section titled "Learning Design"). Grounded by principles of adult education and instructional design for web based resources (Hill, 1997; Jonassen, 1999), learners are encouraged to develop their own understanding based upon their personal experiences and needs. By naming their own experience, women realize they can plan successfully for the future, and this learning increases their repertoire of cognitive skills, going beyond simply being able to understand a legal definition to using the tools embedded in the design to build on and share insights from new understanding in a sociopolitical community. Collectively, this type of learning facilitates personal growth and self-empowerment.

Technology, however, has often been a barrier to learning and to access for women around the world, conceivably contributing further to the stress, anxiety, and depression of women who are experiencing abuse (Ayerson & Reed, 1995–96; Igbaria & Chakrabarti, 1990; Okebukola, 1993). Aware that many computer based resources are gender-biased and have marginalized women technology-users (Campbell, 1999), the VIOLET project partners were determined to develop a plain language, woman-friendly, safe space on the Internet, inclusive of gender, language, culture, and diverse learning styles. To this end, the site design was guided by five intended project outcomes:

1. develop an Internet based learning service to support abused women and their service providers;

2. provide learning opportunities in the area of relevant legal information;

3. develop an on-line community for support and sharing of experience and information;

4. raise awareness of an increasingly knowledge based economy and society;

5. introduce women to, and enable them to work with, Internet technology.

These project outcomes were identified with different wording in the above mentioned monograph (Sy & Anderson, 1999).

WOMEN LEARNING WITH TECHNOLOGY: BARRIERS AND DESIGN ISSUES

The abilities and skills of learners are defined based on their perceived role in society (Magolda, 1992). As the predominant experience in our society has been characterized by the term "malestream," the ways in which women learn may not always coincide with what is deemed to be the norm (Belenky, Clinchy, Goldberger, & Tarule, 1986; Merriam & Caffarella, 1999; Stalker, 1996). The literature suggests that most technology-mediated environments are gender-biased and may ultimately exclude the female experience (Culley, 1993; Knupfer, 1997; Moore, 1986). This process of social domination is an issue of power—power of the representation of, and access to, information. Thus ways of learning and knowing that are not reflected in the design of the learning environment may lead to stress and alienation from the learning experience.

Stress and Technology

Studies completed in the 1990s (Elkjaer, 1992; Reed & Overbaugh, 1993; Shade, 1997; Taylor & Mounfield, 1994) concluded that women experience more anxiety than men in technological learning contexts due to a lack of experience, unequal access, low self-efficacy and motivation, and cognitive and learning styles ill-supported by traditional learning designs. These factors may be attributed to patterns of socialization at home, school, and the workplace, and in the political views and values that they represent. For example, studies of school-age boys and girls have demonstrated important differences in how they approach new learning with computers. Boys persist with a trial-and-error method that encourages manipulation of the keyboard; girls work in groups in a cooperative mode and are less persistent in attempting to learn the new technology (Culley, 1993). Girls and women either appear to see the computer as a practical tool or develop a more holistic view of learning (Anderson, 1998; Spender, 1995), although they tend to have higher anxiety related to computer use.

Abused women have high levels of stress and depression (Campbell,

Sullivan, & Davidson, 1995); introducing them to technology-mediated experience in a shelter could increase their stress. Campbell, Sullivan, and Davidson note that " . . . at any given period of time, both intraindividual variables such as self-esteem, and more contextual variables, such as social support, are related to battered women's depression" (p. 239), an observation that relates to the work on women's lack of self-efficacy in technological environments (Anderson, 1998).

Stress and Learning

Attempting to learn under conditions of acute psychological and physiological stress may lead to "emotions . . . [that] are felt as fear, anxiety, anger and pain leading eventually to a state of distress" (MacKeracher, 1996). Because victims may not be in a state of mind to learn and may find it difficult to communicate verbally, learning in this condition may be distorted or negligible. Abused women may also be characterized as "silent knowers" (Belenky et al., 1986). Having little confidence in their own abilities to make decisions, they "feel passive, reactive and dependent, [and] they see authorities as being all-powerful, if not overpowering" (p. 27).

In this state, the additional and/or prolonged stress of learning may lead abused women to delete or distort new informatio, or to withdraw from the learning environment. A well-structured, guided learning environment, incorporating a variety of modes and experiences with repetition and variations on a similar theme, can encourage patterns of learning to emerge even in stressful situations (Clariana, 1993; Cognition and Technology Group at Vanderbilt, 1993; Santiago & Okey, 1992). Learning strategies that support "multiple channel learning" present information and knowledge-making from different approaches (MacKeracher, 1996). Accordingly, the VIOLET Project focused on stimulating learning by changing the organization and presentation of content, rather than by increasing stress.

Stress notwithstanding, an argument can be made for the introduction of technology as a coping strategy for abused women. Because battered women are often in relationships characterized by extreme imbalances in power and control, access to legal and support information in a safe, non-evaluative context may, in fact empower them. Banyard and Graham-Bermann (1993) note that "there is impressive evidence that access to resources, such as education and income, influences coping, particularly as it is traditionally measured" (p. 308) and that women seem to employ

coping strategies based on negotiation and forbearance, consciousness-raising and conscientization. Therefore, an "emancipatory anticipatory" environment (Chovanec, 1993, p. 72) may support women's ways of knowing that are connected, inter-relational, and collaborative. Inaccessible information sources can be embedded in on-line support structures, and hypertext writing and computer-mediated communication (CMC) may encourage social activism and the building of on-line, activist communities for social justice. These environments may be safer for women than face-to-face environments as they are asynchronous, do not depend on social cues, and can be anonymous (Beaulieu, 1995; Herring, 1994; Herring, 1996a; Herring, 1996b). Accordingly, a number of design guidelines for VIOLET were identified, including:

- a site that protects women users and does not resemble a formal learning setting;

- well-structured information architecture with an intuitive interface design;

- use models that relate to prior experience and knowledge;

- assist women to name their circumstances and, thus, better understand their situation;

- strongly align the task with identified learning outcomes for the project;

- encourage knowledge building that is neither compulsory nor competitive, but enhances the learner's self-esteem and sense of empowerment.;

- provide bias-free, inclusive, multiple forms of representation through several choice points and self-selected paths;

- recognize the varying degree of literacy without losing the context and accuracy of the information;

- present opportunities for early interaction, and self-reflection.

The challenges for VIOLET included overcoming women's early socialization away from technological tools and contexts; exploiting these tools for empowerment and action; developing support structures for individual and group learning and for personal issues of anxiety, stress, fear, low self-esteem, etc.; designing of environments that enhance women's learning and cognitive styles and account for socialization factors; and,

finally, a plan for sustaining the information/activism needs of women in crisis as they return to their communities.
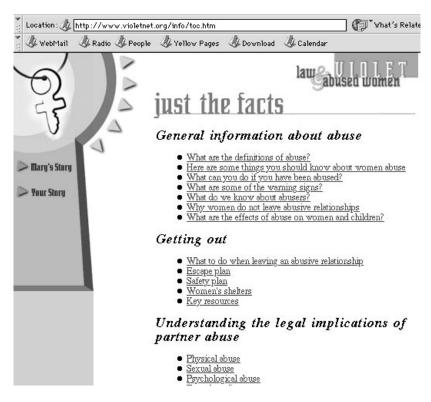
THE LEARNING DESIGN

Figure 1: *Just the Facts*. The title screen for Approach 1.

VIOLET incorporates three design approaches designed to support the information needs of abused women. Each one includes interconnected links to layers of information about wife abuse, legal remedies, and sources of assistance. *Just the Facts* (Approach 1), which is linear and procedurally based, allows the user to review or renew the information as she gains a better understanding of legal terminology and possible remedies. *Mary's Story* (Approach 2) encourages the client to name her experience through a case study format. *It's Your Story* (Approach 3) embeds the information in an authentic narrative that simulates a dialogue between an abused woman

and a service provider in a women's shelter; representing a woman's own understanding of the situation may encourage both deep and new learning.

Just the Facts is based on principles of didactic, procedural learning and provides a rich needs based, referential source of legal information that serves as a resource rather than as a problem requiring action (see Figure 1). Procedural learning is highly structured, individual, sequenced, has a fixed pace, and reflects the instructor's or designer's understanding of learner needs. In this model, "tasks" are fixed, there are right and wrong "answers," and learning takes place at a low level of cognitive complexity. Although it may be necessary as a building block for higher-level learning, in general, learning is more effective if it is practical, situated, context-dependent, and self-paced (Sherry & Wilson, 1997).

I finally made the decision to leave after he hit me again. The police came and **laid charges against him**. The police took me to a nearby **women's shelter**. My children and I stayed there for three weeks.

While I was at the shelter, I found out that he had charged me with kidnapping because I took the children with me. I had to rush to court to get an **interim custody order**.

While staying at the shelter, I looked for a new place to live. I was worried that once we left the shelter he would find us. I shared these concerns with the shelter workers and they suggested that I would need a **restraining order**. A restraining order is a type of **protective order**. They also told me that if I wanted to get a **divorce**, I might need to apply for **Legal Aid** to get a lawyer as I did not have any money.

I was also called to **testify** about what happened the last time he hit me, when the police laid charges. I was scared to go to court and it was awful to think that he would be there too. I was relieved to find out that there were victims' services to help me through the **court process**.

As I was going through this, I had many questions. I found out about **FAQs** (Frequently Asked Questions). It helped me answer my questions. I think I'm now ready to make some decisions about my future.

Does this story sound familiar to you? Would you like more information? Moving the mouse, place the arrow on the words that are coloured and in bold type. Click the mouse and you will automatically be linked to the information you want.

warning sign
abusive
why I stayed
feeling sad and frustrated
affecting my kids

Figure 2: Mary's Story. *An excerpt from Approach 2 that shows the information retrieval process.*

A procedural approach is best suited to a learning style that is verbal and autonomous, or "separate" (Belenky et al., 1986; Mackeracher, 1996), but research tells us that women prefer to learn in connected, cooperative, holistic ways. *Mary's Story*) tries to resolve this tension by providing structured information in a familiar hierarchical interface within a typical story in which semantic links are strategically embedded in the narrative, thus supporting both collaborative and independent work (Hill, 1997). This narrative design may be more effective with women (Inkpen, 1998), as learners can choose to be exploratory and self-paced, and can navigate according to need and interest (see Figure 2).

In VIOLET, *Just the Facts* provides information in a detached, referential context, while *Mary's Story* presents relevant information within a narrative that may or may not relate to the client's situation. *It's Your Story*) however, reflects a situated cognition strategy in which the client may adopt a role within a context that she admits may parallel her own (see Figure 3). In situated cognition, learning occurs as a function of the activity, context, and culture in which it occurs or is situated (Cognition and Technology Group at Vanderbilt, 1993). That is, learning activities are presented in an authentic context. In this case, the learner works through the task in a role that requires a degree of social interaction and collaboration ("I am this person, interacting with another in a meaningful conversation"). As learners engage with the "experts," they build on their own knowledge and understanding until they become experts themselves in the community of practice*.* Ultimately, a design based on situated cognition fully integrates communication strategies such as the sharing of personal experiences of abuse through a listserv or threaded discussion (CMC). A fledgling on-line community has tentatively put down roots as VIOLETForum, Where women can share their stories and discuss their thoughts about partner abuse. To date, service providers are posting information and asking for feedback on legal and administrative policy issues, and abused women are coming on-line to ask legal questions related to their situations. As more women participate, they will encounter multiple perspectives and responses that will extend and elaborate the community and provide support for personal and social action. Social negotiation, according to theorists such as Vygotsky (1978), is essential for this type of deep learning.

Figure 3: *It's Your Story*. The title screen for Approach 3.

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Evaluation Components and Process

This paper details the formative evaluation of VIOLET and concomitant design implications. Since VIOLET reflects a framework of critical feminist pedagogy (Weiler, 1991), the evaluation was designed as a process of participatory action research. In other words, the participants and the project collaborators worked together to identify intended project outcomes, several of which are embedded in social and political action, to examine their own contexts and form personal learning objectives, and to create opportunities to develop a sustained community. This process is progressing in several ways—through VIOLETForum, the redesign of VIOLET, and the evolving design of ROSENet.

In a formative evaluation, data is gathered on the effectiveness and efficiency of instructional materials in order to provide feedback for revision, before the product is released. A traditional formative evaluation process involves three stages:

1. one-to-one evaluation, to test segments or prototypes of the materials. This stage determines if the approach is suitable, identifies early mistakes in interface design, etc.

2. small-group evaluation with a larger, more diverse group, occurring after the first revisions are completed. At this stage, the designers seek to eliminate bias, get a more accurate picture of the target user group, and to test delivery assumptions and appropriateness of interface, interactions, and pacing, and determine learner support needs.

3. field evaluation, with a larger target population, in the actual learning environment. This stage is often referred to as the pilot stage, in which the intended instructional, delivery, and assessment approaches are reflected.

Formative evaluation of the learning design of VIOLET took place in three stages: one-to-one interviews with representative women (not currently in shelters) after they had explored all the approaches; an external review by a design expert; and on-site or field testing with the target users in shelters. In the shelters, the participants/informants were both shelter workers and abused women (or clients), considered as subsets of the

"abused women." Most of the shelter workers had been abused women, and were both empathetic to their clients' information and learning needs and sensitive to issues of power and control. For these reasons, and because of confidentiality agreements, participant comments remained anonymous. Together, these women not only provided insights about design, content, and implementation of the current site, but also identified areas for revision within the sociopolitical context of this project. The project designers are currently involved in a collaborative relationship that includes the Department of Legal Studies at the University of Alberta, the Status of Women and the Office of Learning Technologies on a national level, and the Alberta Council of Women's Shelters (ACWS) and other associations and individuals involved with the problem of domestic violence at the provincial and local levels. This group negotiates content, interactivity, access, dissemination, instructional purposes, and the resource implications for continued development of the site.

Formative evaluation of VIOLET occurred at seven shelter sites and three non-shelter sites, which dealt with family violence, between February 4 and June 14, 1999, and in individual sessions with the external evaluator. Informants/participants were as diverse as the project's target audience and included shelter clients, shelter workers, administrators, legal interns, educators, and government representatives. A typical evaluation session involved an initial orientation for shelter participants, followed by opportunities to work individually or in groups on the site (participation was voluntary). Project evaluators worked actively with the participants; narrative comments, recorded either in writing or by audiorecording, were subsequently annotated by observers. In most cases, an informal focus group was conducted immediately after the working session. The women's remarks were provided where appropriate, or for purposes of illustration. Given the sensitive nature of these environments, the evaluation team rejected the idea of a formal survey.

Materials were examined for the "rightness of fit" of the design to intended outcomes, that is, for the information/data elements incorporated to support learning, the cognitive and metacognitive skills and strategies included; the learner control and support mechanisms provided, the degree of interactivity allowed, and the tools available to the learner for navigation and use of the site. For each component, evaluation feedback was followed by its implications for redesign. This information is summarized in Table 1.

Table 1:   A summary of the evaluation feedback and implications for redesign

Feedback	Design Implications
Diverse learning needs	Multiple representations of content
	Low readability score (5–8)
	Learner options
	Minimal cognitive load
Workstation is in public space; distractions	Headphones necessary if hypermedia used
	Activities should not require intense concentration
	Cooperative activities, child-oriented or family tasks
	Choice to work privately
	Minimal use of large images or media
	Highly engaging material and elements
	Contained activities
Access to Internet	Users need to be aware of download times
	"Cover" activities during loading
	Navigation directions
	Browser default to VIOLET

Inexperienced users	Scaffolding
	Manuals, help available
	Worked examples, models
	Robust design elements
Time constraints	Reduced information load
	Annotations
	Shallow site architecture
No technical assistance	Ways to recover made apparent
	Clear directions written for novices
	Short chunks of information
High stress	Activities designed for success
	No jargon
	Minimal use of technological "frills"
	Headphones
	Orientation before use
	Cooperative use
	Well-structured problems

Evaluative Feedback and Implications for Design

Instructional or Learning Design: Descriptive Feedback

Instructional design is both a process and a description of the pedagogical decisions that structure the learning experience and the materials being developed. The VIOLET project focused on learners' responses to content presentation strategies; type of learner interaction, including opportunities to manipulate and transform information; inclusion of tools and support for cognitive strategies, such as decision-making; adequate opportunities to

practise information skills; and support for individual learning needs and preferences.

Interacting with content is key to learning with hypermedia, because interactivity underlies active learning. Active-learning strategies require the learner to manipulate and transform information (e.g., text) into new knowledge. Cognitive strategies that encourage active learning include discrimination and/or elaboration exercises; embedded questions; manipulating models; applying learning to a new problem or situation; evaluating information, writing, and/or annotating; asking questions; and organizing information into new forms such as databases or semantic maps (Jonassen, 1996). This learning is a desirable outcome for VIOLET because it implies the critical use of information and resources to effect change at personal and political levels.

Since the target audience for VIOLET usually has immediate and specific information needs, an immediately apparent benefit is necessary to convince this group to use technology. A flat, static web site provides no added value over print materials, thus, VIOLET must meet information needs in other ways. Functionality that encourages responsiveness and learner engagement is key to longer-term use, while engagement is enhanced by interactivity related to learner choices and needs.

VIOLET's learning interactivity is found mainly within *It's Your Story*, which contains an ordering exercise based on a role-play and other activities. During the formative testing, participants were intrigued with this approach, although all found the interface somewhat difficult to use. Still, the interface required negotiation and prompted discussion as participants became more confident using it. Participants commented that they learned about alternative ways of assisting clients and enjoyed working with colleagues to answer inquiries from the virtual client.

Comments about this approach reflected the increased commitment of time and cognitive engagement required by active-learning activities. One participant stated she would work on this only at home, without interruptions. Other participants were not satisfied with the activity's limits—they wanted to challenge the "expert's" rankings, seek more information, and ask "Why." Although learners have many opportunities here to go beyond the information given and engage in concept learning, ill-structured, associative environments (i.e., hypermedia) pose challenges and increase stress for adult learners (Cognition and Technology Group at Vanderbilt, 1993), perhaps particularly for non-traditional women learners.

Design Implications

Typically, adults are task-oriented and expect to receive clear directions for completing the task, guided by a hierarchical structure-defined path through the information. A design and cognitive strategy known as "learner control with advisement" provides advice about the optimal path through the lesson, the appropriate lesson sequence, or the optimal amount of instruction (Clariana, 1993; Santiago & Okey, 1992). Advisement may be more frequently sought and more effectively used by females than by males (Clariana, 1993), since there seems to be a relationship between achievement and motivational effects for women. This strategy might have increased the effectiveness of the more open-ended *It's Your Story*.

Schank and Cleary (1994) described the importance of scaffolding through expert coaching in designs like *It's Your Story*. A roster of lawyers and other related practitioners and service providers will perform this function in VIOLETForum, initially reviewing important items for inclusion.

Contextual Components: Descriptive Feedback

In the field evaluation stage, the following conditions were expected: users would have diverse educational backgrounds and learning style preferences; they would work on a computer station at the shelter; Internet access would be by dial-up modem; neither the women nor the workers would be experienced computer or Internet users; users would be under a great deal of stress; the learning environment would not be protected from distractions; and the time available to use the resources would be constrained, both in the short and long terms. In other words, the field evaluation context would reflect the authentic learning environment.

Shelter environment and working context: The test sites, both rural and urban, reflected community needs and resources. Access to VIOLET ranged from relatively open and unrestricted, to controlled and secure. In one shelter, the computer was placed in the entryway; at another, it was in a dedicated education room; in a third, it shared space with the room from which the Food Bank operated on Tuesdays. If these shelters are representative, women cannot expect "anytime" access at them. Also, the policy of shelters may reflect discomfort with open access to information. One shelter director felt that unsupervised Internet use could lead to identifying inappropriate sites. Educating for information literacy, (e.g., issues of authorship, currency, and ethics of information) could be an important

outcome for the VIOLET project, especially as it relates to barriers to appropriate information use identified by Harris and Dewdney (1994).

The evaluators observed that public settings are often distracting and intimidating. Clients with low self-efficacy or anxiety related to technology may feel threatened if forced to work in view of others. Indeed, one worker noted that some clients might consider the shelter environment a respite from violence and stress might not want to "think" and decide right away.

The variety of working contexts in the shelters was a design challenge for VIOLET. Clients stay anywhere from overnight to three weeks (or longer) in a shelter, and during that time, they may be involved in counselling sessions, legal consultation, group support activities, individual activities, etc. They may have children with them and be obligated to participate in activities outside the shelter. Their information needs vary during their shelter stay and afterwards. For example, they may urgently need advice about child custody, be under a great deal of stress upon entering the shelter, and be able to endure only very short Internet sessions. At the same time, shelter workers need VIOLET for their own information needs, to use with a client in formal or informal counselling sessions, for community education, and with telephone clients. Sometimes, workers might be able to devote significant time to VIOLET, but at other times be able to commit only short bursts of attention between intakes or other responsibilities.

Training Sessions: Training sessions varied from shelter to shelter; they were at different times during the day, week, or month, depending on the location and access to the workstation, the staffing depth and expertise, etc. In one shelter, two training sessions were held for the workers as part of a staff meeting. Although the women had been on shift all day and were tired and initially difficult to engage in the training, the evaluator and the participants felt they had managed to learn. In another shelter, workers were continually called out of the training session to provide assistance to clients. Training in these environments is likely best done in group meetings, a rare common time when a large group of workers is available.

There was general agreement that the site was valuable, but finding time to become comfortable with the technology and the site design and to facilitate its use with clients could be problematic. One worker wondered whether "there will be time for the workers because of the way the shelters are run and the time to share with a client . . . [because] we are at war." Time was also a concern in a second group: "We all work under so much time pressure that we're not going to sit down . . . we can't sit down and do

this on our own." This group observed that when the phone is ringing or there is an emergency training time, working with the site would have "low priority."

Another participant described the Internet as "scary," especially for those who hadn't used a computer before. As with all innovations, users must be convinced of the added value that justifies their commitment of time and energy. For example, one participant commented that she would "spend a couple of hours . . . just to see what was there," because it would improve her effectiveness and efficiency when counselling clients. Most workers agreed they would want to become familiar with the site before recommending it to their clients. It is important that innovations are introduced as learning needs arise, and that their use is consistently coached.

In many of the groups, the women—clients or workers—explored the site together. Likely a logistical decision, the data nonetheless revealed support or preference for a cooperative experience. Several workers commented that, despite taking longer, the experience "got richer because we were discussing and all that," and the site was "a better learning tool as a group." They also noted that learning together reduced the stress levels associated with innovations: "Something interesting happens that I noticed when one person is operating the equipment and if they put their guard down for a moment, somebody else will reach over . . . and you really watch when one person feels comfortable, the other person that's sitting there [begins to feel more comfortable]."

Technical Readiness of Users: Experience working with computers generally ranged from "no exposure" to "expertise" with the technology; many had not used a mouse before. The women in the training sessions supported each other in their learning, and the collaborative atmosphere set a very positive tone. The session leader noted that non-users approached the exercise with obvious self-doubts, which is consistent with the research on self-efficacy, but, most of them emerged from the sessions feeling positive about their new skills. Initially, the content of the site is secondary as "the women learn to use the mouse and 'read' the screens."

Design Implications

Individual terminals could increase privacy and relieve the potential stress of revealing personal needs, but this encourages autonomous learning. As women seem to prefer to work in relational ways (MacKeracher, 1996), we recommend a flexible arrangement that allows more than one person to

work with the site at a time (for example, temporary carrels with removable three-sided "borders"). Since physical surroundings may influence women's attitudes towards computers (Canada & Brusca, 1991), shelters should consider locating workstations in aesthetically pleasing, non-technological surroundings. In the end, the learning environment is the natural and continuing environment in which these women work, and ways must be found to shape the information and the technological support around these continuing realities.

This challenge can be met by chunking and sequencing the information content appropriately. A client should be able to achieve her information goal, whether in 15 minutes or in 90 minutes, through evaluating strategies such as modularization, short information bursts, and scaffolded activities. One focus of the formative testing was to assess the preferred or typical working contexts of shelter participants and to evaluate the related scope and sequence of the site (as reported above). *Just the Facts* met immediate information needs best, as specific information could be located and absorbed very quickly, but, users had to locate information within designer-defined categories. A search engine or personal assistant could maximize their time on-line. More complex needs and activities need longer dedicated periods, especially when working in role as in *It's Your Story*. For this approach to be effective, users need to be trained, coached, and supported, which requires a significant and sustained time commitment.

Training and working sessions therfore need to be timed for periods of low activity. Alternatively, one worker might be delegated to deal with emerging shelter needs, or a train-the-trainer solution could be implemented. One participant suggested individual or self-paced orientations in the shelter's office as an alternative. Training designs could range from short introductory sessions to longer sessions devoted to using VIOLET as an education tool. Just-in-time training relates to emerging needs and could be streamlined with job aids such as manuals, training tapes, etc. As learner support is critical for success in technology-mediated learning, developing self-paced, off-line and/or on-line training for maximizing VIOLET could be effective. Access would be improved by wiring the shelters for portable Internet access (a "plug and play" solution) and by maximizing working space. At a minimum, log-on procedures should be streamlined, clearly outlined, and posted. Directions for accessing the Internet and for standard computer operation (e.g., mousing) should be available, if just-in-time assistance is not. Very simple, graphical directions should either be posted or packaged in a robust user manual. The site could

be made the default homepage and always be "up." Cable modems or high-speed connections would eliminate long download times and minimize errors in dialing (the modem). Efforts should be focused on robustness and transparency, and because the users are already in a state of anxiety and stress, they should not be expected to trouble-shoot technical problems.

Cooperative and group activities were a preferred learning style for many participants. Since cooperative work requires a greater time commitment, it must be designed to accommodate time available in each shelter. A range of activities could be developed to be completed in short working sessions to longer terms (days), acknowledging different learning preferences. In terms of modelling technology use and information-retrieval skills, peer educators are quite effective. Shelter workers may have additional needs: self-education and assessment, extended resources that clients can utilize and educational tools to use in counselling or consultation. Because "buy-in" from these individuals is essential if VIOLET is to be supported and recommended, an emphasis on implementation to enhance the worker's job is important. If VIOLET offers a unique experience, commitment to use it will increase despite the inconveniences of time and setting. In fact, during testing, service providers began to refer to VIOLET as "their site," so this emotional and conceptual commitment had already begun, and appeared to be gaining momentum in the post-research training sessions.

Abused women clients, and service providers, may or may not be computer literate, but low-literacy clients had trouble with technical jargon. Several users recognized this and made some specific recommendations, including "explain the lingo with a graphic. For example, when saying 'toolbar,' give a picture of the toolbar." If clients can be partnered, confidence and self-esteem may be enhanced for both. Several comments reflected this outcome, for example, "Even one of the participants who had never used the Internet before . . . was pleased with herself and her ability to master the Internet."

Message Design: Descriptive Feedback

Good message design depends on more than well-constructed text that privileges the verbal learner. Other considerations include appropriate choice of data elements; support for diverse learning styles and preferred perceptual modalities; readability; language use and tone; user control of options such as translation or a glossary; effective use of visual cues and design elements; and inclusivity such as gender, age, and culture.

The target users for VIOLET are widely diverse in terms of culture and values, age, life experience, education, computer literacy, domestic situation, literacy, involvement in domestic violence, etc. To be effective, a resource such as VIOLET must support many different learning styles and individual preferences. Flexible learning options, multiple representations of content, and social interaction can facilitate this goal. Text, although convenient, fast to download, easier to print, and requiring fewer technical skills to access, is not always the optimal data element to use with a diverse population.

Appropriate language use is critical. Tone, form, and readability levels must be matched to intended outcomes (i.e., function) and serve as many readers as possible. Generally, the participants found the language simple and straightforward, although one group, a non-shelter organization that deals primarily with literacy issues, found the literacy level too high. One participant suggested increasing the graphical representations relating to user directions, but most participants appreciated the "everyday language" tone of the legal information.

The comment that key information was "buried" was supported in another group, who suggested that key resources (which were not identified) be alphabetized by city or region. This criticism reflects inefficient information architecture and/or a poor interface design. Although the architecture is hierarchical, there may be too many layers of information for some users (see *Yale Web Style Manual*, 2000). However, there was consensus that the depth of information was so impressive that it could be used in many different ways and contexts. One worker passed on the site URL to her husband to give to his client, "so I didn't ever talk to that woman but I know now she has a lot of really good information. And information that would have taken me a long time to give on the phone."

Workers appreciated having an accurate, comprehensive source of information that was available both to abused women and their partners. "We're getting calls from women in crisis . . . you can go back after talking to the husbands and look at that web site." These participants saw VIOLET's influence as going beyond the immediate client and reaching out to the entire family.

One group discussed the site's inherent biases at length. Differences in cultural contexts were identified related to legal issues, emotional needs, trust, literacy and computer literacy, geographical location, and community values. Apart from the actual content, text does not address these cultural

differences. And, although all agreed that coverage was comprehensive, some topics, procedure, and policies are specific to regions and communities. Other groups wanted more detail about various issues, presumably because their clients' needs related mostly to these topics. Information that one group wanted included was judged by another group to be too volatile.

Participants found the content reliable, realistic, accurate, and properly sequenced. Several appreciated having a back-up information system for both themselves and their clients, as information changes and is too comprehensive for any one individual to know completely. Clients noted that they weren't always confident they had received the best information, so were pleased to be able to compare their understandings with a consistent source. Information "gaps," such as the nature of "spiritual abuse" and the role of shelters as service providers, were noted by the session leaders.

Several participants found the stories "skeletal." One worker felt not enough information was included for her to make a recommendation to her client. One group pointed out that ranking (*It's Your Story*) will be different in each shelter: "There are differences for sure between one shelter and the next shelter that you will find a lot more facts of abuse and discussing around that area, so you will find that ranks generally higher up . . . the ranking could be quite different."

Several women requested a section for men who might be seeking advice or counselling. One woman noted the relationship between mental illness, Attention Deficit Disorder (ADD), and abuse, while another observed that a woman might not want to leave her partner and needed options for helping her partner change, or for helping the family cope. These are political as well as design issues that need to be negotiated.

Design Implications

VIOLET was designed specifically to support "mainstream" Canadian women and was not intended to reflect the multicultural nature of our society. ROSENet addresses the information needs of abused immigrant women and women outside the cultural context of VIOLET. However, the existing content could be revised to reflect the different contexts in which the target audience of abused women live in the province. An advisory group, working as participatory designers in future iterations of the

project, could make recommendations related to content, jargon, unclear terms, complex sentence construction, etc.

Content validity and utility are key to encouraging women to use the site, even if this requires a difficult time commitment. Users must be encouraged to identify key information or information most urgently needed on a personal level; *Mary's Story* appeared to do this. As one participant noted, "And I think if I had more time to go and I just wanted to browse around, I'd probably look at *Mary's Story*." Others spent more time working with *It's Your Story* because they were able to personalize the experience and share it with others. This group suggested revising this story to make it more urgent, for example, by having the abusive partner still in the home. This implies adding more personal stories, including different and more challenging scenarios (scaffolding), and providing opportunities to share experiences, negotiate actions, etc. A method for collecting ideas and new content must be developed; an on-line survey could be utilized as a transition to an authentic participatory and emancipatory environment such as the one Winkelman (1997) described.

Interface Design: Descriptive Feedback

A well-designed interface is intuitive, or transparent. The dictionary interface is a good example because it works well for the underlying content it organizes and represents. In other words, interface both represents and supports message design by making the message accessible to the learner. A good interface allows cognitive effort to be utilized in learning and elaborating new knowledge, rather than trying to locate where it appears on the screen. Predictability, consistency, coherence, transparency, learner-controlled pacing, and a number of other elements (Mok, 1996) characterize good interface design.

Users found the site interface quite intuitive and transparent. Information was well laid out and relatively easy to access, although there were too many levels in the architecture. Participants at one non-shelter site felt that the use of technical jargon (such as "icon") and problems navigating "backwards" should be addressed. One informant complained of too much scrolling, which relates to the extensive use of text. It should be noted, however, that topics are contained within one screen or file, which minimizes navigation errors and load times, and eases printing.

Design Implications

An interface that adapts to learner needs enhances the learning environment and can be accomplished in various ways, including a queryable site map, an alphabetical index, a search engine, or an intelligent help facility. The VIOLET site architecture should be re-evaluated to see if several layers could be collapsed or combined.

A parallel VIOLET site, modelled after the *Yale Web Style Manual (2000)*, might eliminate separate files to facilitate printing, while the main site architecture reflects shorter individual modules that minimize scrolling. Other navigation strategies include "Top of Page" indicators, a site map, and a history, footprint, or bookmarking function.

Conclusions

VIOLET is in the second phase of a planned development of an Internet based resource for abused women and their service providers in Alberta. Currently, the site design reflects an information approach over a learning approach. Although *Mary's Story* was actually the first approach developed, *It's Your Story* could be developed as a comprehensive learning approach that encourages the user to synthesize her own learning in light of the role-plays.

Outcomes: Intended and Unintended

Anticipated outcomes for VIOLET included the following:

- increased awareness, for shelters and abused women, of available information that is current and consistent, legal issues and language, and alternative formats;

- an educational and information service for shelter workers, and a training tool for shelter volunteers and new staff;

- introduction to learning with technology for shelter workers and their clients;

- increased technological literacy for both groups, including the ability to critically evaluate information on-line;

- opportunities for abused women to develop community networks.

In many ways, however, the unanticipated outcomes of the project are more interesting and compelling. As VIOLET is made accessible throughout

the shelters, facilitators need to be alert to the unstructured and powerful uses to which women working cooperatively will put the site.

This project was informed by work in critical feminist pedagogy, in which participatory action research and personal empowerment are embedded, and in adult learning theory, in which a gendered view of instructional design and learning theory was proposed. In this project, these themes are interrelated in theory and practice, and the themes that emerged included personal and technical empowerment using technology to enable naming and sharing of experience, the development of communities of support through cooperative interaction, and the importance of contextualizing projects of social activism in culture, access, and status.

Many groups remarked on the increased personal sharing that occurred while participants explored the site, negotiated control of the mouse, figured out the interface, and evaluated the content. Many times, a user choice resulted in an extended conversation about personal concerns for children, or the family's economic situation. One participant noted that simply working with the site comprised a counselling session.

The experience of working with technology to obtain information encouraged women to move "toward their own independence, their own safety." If "one of our main concerns is that women tend to be left behind with technology," then an experience like VIOLET "puts them up to speed . . . because a lot of the women who are leaving and now maybe are looking more seriously or for the first time at getting into a workplace, and what is the most obvious feature of today's workplace? . . . a computer." It was generally agreed that VIOLET provided a "circuitous way . . . of introducing it into their experience so that they see how non-threatening it is and within their grasp of obtaining the capability to operate it." Although some participants doubted that VIOLET would provide a "burst of validation of those women who are in denial or minimizing their experiences," sharing experiences in person or on-line opens up the possibility of social or personal action and unites clients in a community of shared concern.

Not only does VIOLET offer control in using technology, but it also empowers "because then they're actually doing something and they're looking for solutions, they're looking for answers . . . because it's active participation." In addition, being in an abusive relationship is isolating: "loneliness is such a huge part of their life, that if you get them focused and get them active they feel less isolated." A globally accessible site devoted to wife abuse is also potentially affirming since "just the fact it's there on a

computer is validating for women. Like if you're getting it out there in more forums, taking it out of the closet, that's good."

Perhaps most encouraging was witnessing how VIOLET encouraged the transformation of acknowledgment into personal action. During one training session, a client was able to name an incident in her life that is considered abusive and not acceptable in an intimate relationship. Prior to her "flight," her partner locked her in the basement of their house for several days, letting her out only to use the bathroom facilities on another floor. She did not realize that this action had a name or that it was abusive. The definition of "confinement" was a revelation to her, confirming that this type of behaviour was abusive and her decision to leave her abuser, even though her own family members were not supportive, was correct.

Future Directions

If use of the VIOLET site contributes to the inclusion of women in an information society, then opportunities are present for extended training and support of women's use of technology. An Internet-capable computer in the shelters allows the development of further information projects and training opportunities. VIOLET can be extended to support learning cells and on-line forums that will provide support and opportunities for activism for abused women and service providers.

The situated cognition approach reflected in *It's Your Story* is generative as it is based on collaborative discourse within the system (Schank & Cleary, 1994). Typically, the instructor designs an infrastructure for constructive discourse and negotiation of meaning among learners (Sherry & Wilson, 1997), often through CMC. Jonassen (1996) describes CMC as a "mindtool"; it is both a communicative and cognitive process requiring critical reflection and elaboration of information and understanding among participants. Collaborative learning has powerful emancipatory potential because personal political stories raise many important controversial issues about relations, power, and representation, which are critical issues in working with abused women in shelters. Ideally, a carefully indexed library of cases and solutions, representing new knowledge, begins to evolve as more stories are added and become available for participants' use.

Hypertext invites collective writing activity, and the political power it could encourage among abused women in shelters and in the wider community is exciting to contemplate. One such project was described by Winkelman (1997), who used personal narratives to create a community in which individuals worked with others in the same situation towards

common, "multi-accented" goals (p. 26). Hypertext is the tool of choice, as the reader becomes the co-creator of the text by choosing a personal path through the links, establishing her own semantic links. In Winkelman's project, Sheila, an abused woman in a shelter, told her story in a series of conversations with Winkelman, who posted them to a restricted newsgroup. Through women's participation in this newsgroup, Sheila's story was continually refashioned or reinvented in every retelling. Sheila herself became transformed, seeing her story through new eyes as she participated in the "second level narrative" (Borland, 1991). She became "available to an electronic hermeneutic as readers discover, interpret, reinvent, and release her story" (Winkelman, 1997, p. 29). This accounting of a political activity reflects case based learning design, in which personal stories provide examples of experience and practice in which we participate (through conversation) and from which we learn. Cyborg writing enables social activism, through "language that exposes androcentric oppression and constructs alternative consciousness" (p. 30).

The extension of VIOLET's design into this area requires further study and implementation, as access is of major concern when developing computer based resources for women. In addition, the learning task involved in CMC is quite complex, for both learners and facilitators. Since this design would involve a degree of social activism, political concerns are a significant barrier to immediate implementation of case based learning in this project.

Ideally, VIOLET will be available to all abused women in the province through public access terminals placed in relatively safe environments such as libraries, community centres, grocery stores, doctors' offices, postoffices, etc. These points of access are considered safe because the source of the originating request is anonymous and the project continues to work towards providing this access. However, implementing this goal is more expensive and complex than locating stations permanently in shelters. Since many abused women neither physically reach shelters nor have equal access compared to men, the project leaders are strongly committed to this goal. Presently, women may access information through a shelter by telephoning a crisis worker who can provide both current and relevant legal information and advice as well as the site URL and recommendations for its use.

Women's learning styles appear to be relational and cooperative; cooperative learning is a complex strategy in which process is made explicit and participants identify, articulate, implement, and reflect on goals related

both to cognitive and affective outcomes. This type of learning reflects principles of social constructivism, which aligns with women's ways of knowing. These social negotiation skills must be taught explicitly in order to realize the model's effectiveness for developing higher-order critical thinking, and thus may require the development of related training activities for shelter workers. This will be a longer-term goal for VIOLET.

Expanding the clientele and purpose of the site to include resources for the family members of abused women, including children, was not an intended outcome for VIOLET. Several participants noted that VIOLET facilitates discussion and could be used as an anchor for family counselling; the project leaders will need to evaluate the value of this intriguing extension to the project.

VIOLET can provide the foundation for a knowledge base containing stories related to abuse and related issues, which can then be used by abused women, related agencies, program developers, and scholars. An on-line forum has excellent potential for developing and maintaining a network of abused women, their supporters, and other related individuals. Not only can it support both an educational and political community that, in sharing, discovers its own voice, but it can also serve as a growing knowledge base for its participants. Issues needing resolution before this phase include safety and access. In addition, forums of this nature are most effective if facilitated, again requiring a substantial commitment of resources. Research questions related to these initiatives include the following: To whom would this knowledge base be accessible and for what purposes? How would potential participants be encouraged to contribute, or even be made aware that they might?

Learning Designs that Support Women

The VIOLET project has been presented in a feminist context. In other words, we acknowledge that technology is a social construct that has, to date, disenfranchised women, and that gender as a social construct has not existed comfortably alongside technology. VIOLET plans to use technology to empower abused women by providing access to essential information, models of decision-making, and membership in a community of social activism. The research on learning attributes, such as motivation, inform this framework and influence the site design. A stance of critical pedagogy was used to design an emancipatory environment in which women have a voice, and in which they can participate in safety. It meant telling women's stories of abuse through their own voices. Winkelman (1997) refers to a

strategy of cyborg politics, "a politics that makes joyful use of technology" (p. 19) to encourage social change.

The decision to build project goals around a web based strategy seems dichotomous, but we believe there is value in helping women use technological tools in active, safe, and emancipatory ways. This goal presents VIOLET with a learning design challenge—to reflect women's learning needs and objectives, to empower rather than perpetuate inequities in access and attitude, and to sustain relationship and action within the community of abused women and their service providers.

The emancipatory power of the Internet lies in bringing women together in communities across national and cultural boundaries, enhancing women's creative potential, and extending and redefining the identity of the gendered self. Because anyone can publish on the Net, it is also the first platform for the stories of the silenced and marginalized, providing a forum in which these groups can publish sources of information never before available to the wider public.

In on-line environments for social change, the cultural context in which knowledge is produced is examined with the questions *Whose authority?* and *Whose knowledge?* as critical lenses. These environments will encourage abused women to use their own feelings, intuition, and imagination as resources and strengths for learning as they work towards self-empowerment.

END NOTES

[1.]   ROSENet (www.rosenet-ca.org), funded by the Alberta Human Rights Education Fund, is a collaborative project of the University of Alberta Legal Studies Program and Changing Together (a centre for immigrant women), to develop a web site by and for immigrant women who have experienced abuse, and their service providers.

[2]   "Ill-structured," as used here, refers to the structure and potentially acceptable resolutions to the problem presented. For example, the problem "Solve world hunger" is ill-structured, while the problem "Determine the better long-term investment outcome between paying off a mortgage or maximizing RRSP contributions" is well-structured. Ill-structured environments are emergent and definable by the learner, possess multiple solutions and paths, or no solutions at all, present uncertainties, offer no guidelines for predicting outcomes, or multiple

criteria for evaluating solutions, and require learners to make judgments and to defend their positions with personal opinions and beliefs. (see Jonassen, 1999, p. 129).

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Katy Campbell est Directrice associée et conceptrice principale de matériel pédagogique au département de Academic Technologies for Learning (http://www.atl.ualberta.ca) de l'University of Alberta. Elle s'est jointe à Academic Technologies for Learning en 1996 après avoir pris son expérience, d'abord à la Faculté d'Éducation du State University of New York College à Genesco (1993-95), et ensuite, brièvement, comme conceptrice de programmes d'enseignement à distance à Keewatin Community College au Manitoba au Canada.

Ses intérêts actuels en recherche comprennent les interactions homme-femme/technologie et les questions de conception de matériel pédagogique qui en résultent, la métamorphose des membres de la faculté par l'intermédaire de la conception collaborative de matériel pédagogique et, la vie et l'exercice professionnel des concepteurs de matériel pédagogiques.

San San Sy is Associate Professor in the Legal Studies Program at the Faculty of Extension, University of Alberta. She received her Education Specialist and her Master's Degree in Instructional System Technology from Indiana University. Her professional interest and experience includes instructional design in non-formal education in the area of law using a variety of technologies, training community groups in the use of the Internet and knowledge management. In conjunction with other partners, she has developed and implemented the concept of Access to Justice Network (ACJ*Net* – www.acjnet.org) and many other web sites for non-formal learning. Her applied research is in the area of legal information needs of women and immigrants, their learning needs using technology, and the use of Internet for non-formal learning.

San San Sy est professeur agrégée avec le Programme d'études de droit à la Faculté de l'enseignement postscolaire de l'University of Alberta. Elle est éducatice spécialiste et a reçu sa maîtrise en Technologie de systèmes didactiques d'Indiana University. Son intérêt et son expérience professionnels comprennnent la conception de matériel pédagogique en milieu d'éducation non-formelle dans le domaine juridique en utilisant une variété de technologies, la formation de groupes communautaires pour l'utilisation de l'Internet ainsi que pour la gestion des connaissances. Conjointement avec d'autres partenaires, elle a développé et mis en oeuvre la notion d'Accès à un réseau juridique (ACJNet – www.acjnet.org) et plusieurs autres sitesWeb pour l'apprentissage non-formel. Ses recherches appliquées se font dans le domaine du besoin des femmes et des immigrants pour des informations juridiques, leurs besoins d'apprentissage non-formel en ce qui concerne utilisation de la technologie et de l'Internet.

Kathleen Anderson is a Ph.D. student in the Faculty of Education, University of Alberta, Educational Policy Studies, Adult and Higher Education. Her main interests include gender issues and technology and her experience has included instructional design for both face-to-face and on-line learning environments for adult learners. Research Associate for the VIOLET project, she is also the current University of Alberta Coordinator of the Learning Enhancement Envelope, an Alberta Learning initiative to increase access to the adult learning system in Alberta through the effective use of learning technologies.

Kathleen Anderson est étudiante au doctorat en Études des politiques de l'éducation et en Éducation supérieure et aux adultes à la Faculté d'Éducation de l'University of Alberta. Ses intérêts principaux comprennent les questions homme-femme et la technologie. Son expérience comprend la conception de matériel pédagogique pour des apprenants adultes en milieux face-à-face ou en direct. Attachée de recherches pour le projet VIOLET, elle est aussi Coordonnatrice du Learning Enhancement Envelope de l'University of Alberta. Le Learning Enhancement Envelope est une initiative albertaine liée à l'acquisition du savoir, qui a fait augmenter l'accès au système d'apprentissage des adultes en Alberta en utilisant efficacement les technologies d'apprentissage.

VIOLET received the CAUCE 1999 Award of Excellence.