Community by Design:

The Role of Collaboration and Interactivity in Fostering Online Distance Education Communities

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Disclaimer

The opinions and analysis in this report are those of the researcher and do not represent the position of the institution whose employees participated in this research, or of any of its affiliated agencies.

Abstract

Online learning communities have been acknowledged in the literature as significant agents in supporting distance education students in achieving their learning goals. However, much of this research has been focused on graduate programs, with less attention to undergraduate or vocational technical college programs. The practice of creating and fostering online communities, as demonstrated by members of online course design teams at a western Canadian technical college, is examined through data gathered in interviews with design team members. Specific factors identified in the fostering of online communities are collaboration and interactivity. Design team members' practice is discussed in light of Anderson's (2003) theory of equivalency, Lock's (2002) guidelines for creating community in online course design, and Garrison and Archer's (2000) approach to distance education course design. As well, the design team practice is reflected upon through the experience of the researcher as a contributor to online course design. The course design practices under study demonstrate an approach consistent with the notion of equivalency and reveal the importance of ensuring quality online interactions in the creation and fostering of an online learning community.

Contents

I. Introduction: The Design Context

Learning communities in online distance adult education courses are considered by many researchers to be a key element of student success in achieving learning goals, and much discussion has occurred around models and instructional design guidelines and structures in order to facilitate and create community (for example, Brown & Voltz, 2005; Anderson, 2004; Luppicini, 2003; Ng & Hung, 2003; Hirumi, 2002; Lock, 2002; Rovai, 2002; Suefert, Lechner, & Stanoevska, 2002; Brown, 2001). However, an examination of the practice of instructional design professionals, particularly at the undergraduate or vocational/technical school level, in facilitating and creating online learning communities for adult distance education students has not been as widely documented, and this lack of examination of practice is one of the weaknesses in offering evaluations or assessments of design processes that assist in the creation of high-quality distance education courses which feature elements of learner support in the form of community (MacDonald & Thompson, 2005; Trindade, Carmo, & Bidarra, 2000). Current practices of instructional design team members at a western Canadian technical college with regard to course design elements that facilitate, create or support an online learning community are documented and examined through the team members' own observations and reflections. The practices of incorporating collaborative work and interactivity, as a means of promoting community, are reflected upon through the views of the researcher, as a technical college instructor and content writer for online courses, as well as through the distance education course design approaches of Anderson (2003), Lock (2002) and Garrison and Archer (2000). The resulting considerations for online

course designers include the need to ensure a level of quality of interactivity that promotes meaningful learning.

In order to set the context for this work, the technical college's curriculum model and development process, and design team structure are described.

Curriculum Process

Curriculum development at the college involves five interrelated phases: analysis, design, development, delivery and evaluation (Curriculum Model, 1999). The process is based upon the development of authentic learning situations which prepare graduates for direct entry into their chosen area of employment. Industry advisory committees assist educators in identifying specific learning requirements that will be developed into course content, activities and assessment. Industry input and requirements drive the process of program design, choice of courses and creation of learning outcomes in specific courses.

Analysis begins the process in order to compile and analyze the information that will guide the design and development of a training program and its component courses. The occupational role, learner needs, the training environment and an assessment of existing training resources are some of the elements of analysis.

The design phase begins with further analysis of the occupational tasks involved in the career position and the employability skills necessary to carry out that job. Tasks and skills are chosen for inclusion in the training program, and courses and learning outcomes are identified. Instructional methods, media and delivery technologies are selected. Specifications for student assessments are developed.

In the development phase, the program is described in detail and courses are outlined through the documentation of learning outcomes and learning steps, which are the components that lead students to achieving learning outcomes. Courses, including face-to-face, online and print distance, are developed for delivery to students, as are the assessments for evaluating student performance. Courseware is field-tested in draft form, if time permits, and revised.

Delivery of courses involves the implementation of the program, and the offering of courses to students, through traditional and web-based methods. Evaluation allows for review of programs and the effectiveness of their delivery, and the possible revision of courses or delivery methods.

Design teams

The technical college employs the course development team approach advocated in the literature (Caplan, 2004; Downes, 2001). The team includes a subject matter expert (SME) who is often an instructor who has previously taught, developed, or is an expert in the course content. Occasionally, the SME is an expert from outside the institution. An instructional designer enables the course content to be delivered in an online format, putting the content into the format necessary for it to be delivered through the existing course management system, and collaborating with other design team members to create learning activities to achieve learning outcomes. The online design team works with course learning outcomes previously written by curriculum developers, and while members of the team may have earlier input in the process of writing learning outcomes, this is not the job of the online design team. Learning steps, while also previously written

by curriculum developers, may be further developed, modified or adjusted by the course design team to fit the online context. The team includes a graphic or visual designer and media specialists who collaborate in the technical creation of the course learning objects. The web developer ensures the delivery of the course through the college's information system. The process is overseen by a project manager, as well as a director of the division responsible for online course development.

Design team members interviewed for this project included subject matter experts, instructional designers, who, in some cases were also online course facilitators, or had taught courses in face-to-face classrooms, graphic designers, and a management representative.

II. Review of the Literature: Designing Community

Moore (2003) decries what he sees as a recent trend by distance education researchers to hastily present published data without providing sufficient context, thereby giving short shrift to the literature review. "I have become very concerned at the common, indeed almost universal assumption that research is nothing more than mere empiricism....The 'literature review' that typically is the second chapter in a dissertation or comprises the opening section of a research article is widely regarded as a chore imposed by convention that has to be got through as quickly as possible before getting to the 'real thing,' which is to gather and report the results of a survey or experiment (Moore, 2003, p. x)." He cautions that "new knowledge cannot be created by people who do not know what is already known, yet what characterizes a great deal of what is

presented as research in distance education today consists of data that have no connection with what is already known (Moore, 2003, p. x)."

Moore's comments serve as a sobering wake-up call, but also as a validation of the necessity of revealing links in the existing literature to the research under discussion. In delineating the function of an online educational community of inquiry, Garrison, Anderson and Archer (2000) discuss a framework which includes what they call teaching presence. Defined as "the design, facilitation and direction of cognitive and social processes for the purpose of realizing personally meaningful and educationally worthwhile learning outcomes (Garrison, Anderson & Archer, 2003, p. 116)," this element of their framework provides a basis for examining the practice of creating or fostering community through instructional design. Carabajal, LaPointe and Gunawardena (2003) note the challenge for online educators is come up with a comprehensive conceptual framework that will assist in carrying out the design of effective online learning environments, including communities. Although the research presented here is obviously not a comprehensive framework, it is hoped it can contribute to the discussion of what this framework will look like. Anderson (2004) also sets out the task of the online course designer and instructor as that of choosing, adapting and perfecting educational activities that use the online environment to best advantage, and by so doing, creating educational experiences that are characterized as, among other qualities, community centred.

The following review first outlines what is meant by an online or virtual learning community, and discusses some characteristics. The benefits of community for the learner are examined. Considerations and recommendations of good practice are outlined

for members of instructional design teams as they work on building online courses that foster community. Finally, the key challenges in helping to foster or encouraging community in online courses are discussed.

Rovai (2002) asserts that the virtual classroom can build and sustain community as well as the traditional face-to-face classroom. An online educational community is defined in terms of what people do together, in order to remove the constraint of geography on the traditional definition of community. The learning community includes the dimensions of spirit, trust, interaction and commonality of expectations and goals, specifically, learning. "Learning represents the common purpose of the community as members of the community grow to value learning and feel that their educational needs are being satisfied through active participation in the community (Rovai, 2002, p. 6)." In making the distinction that learning is the common purpose of the online educational community, Rovai highlights a key focus for the discussion of community in this context. Online communities of practice (Wenger, 2005), also discussed in the literature as learning communities, support learning through engaging participants in defined goals, social dialogue and enculturation to community attitudes (Brown & Duguid, 2000; Hung & Nichani, 2002; Hung, 2002). Daniel, Schwier and Ross (submitted) note that learning communities exist when learners share common interests about gaining knowledge in a domain, and these authors acknowledge the social learning theory origins (i.e., Lave & Wenger, 1991) of the learning community. The community metaphor, more so than the classroom metaphor, gives educators the opportunity to deal with the deep and complex interplay that occurs in online courses. Schwier and his colleagues argue that it is important to distinguish the formal and informal features of virtual learning communities,

in order to better understand and support them. Wilson, Ludwig-Hardman, Thornam, and Dunlap (2004) distinguish the formal features of virtual learning communities with their description of bounded learning communities (BLCs). Bounded learning communities are "groups that form within a structured teaching or training setting, typically a course. Unlike spontaneous communities, BLCs develop in direct response to guidance provided by an instructor, supported by a cumulative resource base (Wilson et al., 2004, ¶1)."

Such communities are the focus of the research discussed here, since the specific steps taken by the course design team are aimed at creating, fostering or sustaining a community that exists within the context of a specific course. Garrison, Anderson and Archer (2003) also support the notion of a delineated context for computer-mediated communication that can create a community of learners at a distance. "For a computer conference to serve as an educational environment, it must be more than undirected, unreflective, random exchanges and dumps of opinions. Higher-order learning requires systematic and sustained critical discourse....Collaborative learning in an educational sense is more than a mindless free-for-all. Interaction must be coordinated and synergistic (Garrison, Anderson, & Archer, 2001, p. 21)." The coordination referred to is part of the role of teaching presence, one of the three elements of their framework for online educational community. Garrison (2000) notes that distance educators share control of the educational exchange with members of the community of learners and are part of that community, and that educators are not solely part of the organizational team of curriculum developers. The other overlapping elements of Garrison, Anderson and Archer's framework are social presence and cognitive presence. Social presence is defined as the "ability of learners to project themselves (i.e., their personal

characteristics) socially and emotionally, thereby representing themselves as 'real' people in a community of inquiry (Garrison, Anderson & Archer, 2003, p. 115)." Cognitive presence is the "extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry (Garrison, Anderson & Archer, 2003, p. 115)."

However, Conrad (2002; 2002a) notes it is sometimes difficult for online learners to define community, even though they have participated in a structured course which included elements built into it to help foster community. Despite this "push" into a community framework, "somewhat like an arranged marriage (Conrad, 2002, p. 5)," she discovered that students defined community as a cohesive group of learners going through similar experiences, supporting each other in crises, sharing knowledge and expertise and networking with each other. It may be difficult for learners to briefly summarize or articulate the essence of the learning community since the heart of it lies in the complex conversations and sociopolitical and sociocultural influences of computer-mediated communications (Luppicini, 2002). The process by which an online learning community is formed depends on the conversations of learners as they first become comfortable communicating with each other online, moving on to acceptance of community members, and then deeper camaraderie (Brown, 2001). The longer the online community is together, the more likely it is that the characterizations of common purpose and "place," for example, studying together on the web, become replaced by emphasis on relationships, interconnectedness, familiarity and reduced formality (Conrad, 2005). Lock (2002) also adopts the idea of community as a fluid process which gains strength over time, fostering and building on interdependence of members who are supportive of

each other and who build mutual relationships. "Online learning communities are networks of social relationships, where engagement and interaction are critical factors within a constructivist learning environment (Lock, 2002, p. 396)."

Indeed, a constructivist setting, where meaning, information and knowledge is shared, constructed and negotiated among community members is often cited as a key characteristic of an online learning community (Garrison, Anderson & Archer, 2003; Granger & Bowman, 2003; Daniel, Schwier, & Ross, submitted; Peterson & Bond, 2004; Lock, 2002; Freeman & Bamford, 2004). The online learning community is also characterized as one which reduces transactional distance between learners and instructors (based on Moore, 1993), creates reciprocal awareness of individuals in the community, includes small group activities and collaborative work, and is large enough to encourage an exchange of a variety of ideas but small enough for meaningful contact and exchange between community members (Rovai, 2002). A strong sense of community is also characterized by deep levels of engagement and dialogue in the class, and feelings of acceptance and worthiness are communicated through long threaded discussions and high-quality participant input (Brown, 2001). Brown (2001) also found that the online learning community is characterized by respect and trust, even though those feelings are transmitted only through computer text.

Wilson et al. (2004) identify seven features associated with bounded learning communities that facilitate their development: 1) shared goals; 2) safe and supportive conditions; 3) collective identity; 4) collaboration; 5) respectful inclusion; 6) progressive discourse toward knowledge building; and 7) mutual appropriation. The collaborative work of the community helps students to learn to use each other as resources and gain a

social context for the material they are learning; as well, online community can reduce learners' sense of isolation and keep them in the course, and can serve as a bridge to experiences of the employment world (Wilson et al., 2004). "In summary, we believe that most courses are richer and more authentic learning environments when learning communities are encouraged and supported (Wilson et al., 2004, ¶13)." Paloff and Pratt (1999) identify similar attributes of what they call highly functional learning communities, including honesty, responsiveness, relevance, respect, openness and empowerment. In a matched study of an online and face-to-face course, Lobel, Neubauer and Swedburg (2005) found online learners were more likely to participate and express themselves, rather than focus on dialogue with the teacher or expert, as occurred in the face-to-face class; the interaction of the online participants also led to the creation of a group entity, a necessary basis for collaborative group work. The supportive and collaborative online community of inquiry can help learners persist in online study, as well as motivate, reduce stress, foster self-directed learning skills and enhance learning through a positive climate of trust (Fahy, 2003; Ludwig-Hardman & Dunlap, 2003). Other benefits of the online educational community include gaining knowledge about the field of practice that is the subject of the course, as well as understanding teaching and learning, and technology, learning time management, and gaining critical thinking skills (Buckingham, 2003). Critical thinking is one of the indicators of higher-order learning that is fostered by meaningful exchanges in an online learning community (Garrison, Anderson & Archer, 2001).

However, for all the learning and affective benefits cited, fostering or creating, and sustaining community can be problematic in an online educational setting. Peters

(2003) highlights the difficulty of computer-mediated communication: "What is missing is the consciously perceived presence of others, their aura, the feeling of being together, which arises in a different manner in every meeting (p. 99)." As indicated by the literature cited above, the sense of community and personal interaction strengthens as learners spend more time together in their virtual communities. However, this time investment may be resented by some learners, who choose distance education because they have time constraints or they do not wish their independence to be constrained (Anderson, 2004). "In short, it may be more challenging than we think to create and sustain these communities (Anderson, 2004, p. 40)." The challenge, however, is worth it, in order to guide learners toward successful completion of their studies and to promote a deep understanding of learners' interactions in order to support their efforts both within and beyond course content (Daniel, Schwier & Ross, submitted).

Blair and Hoy (2006) suggest that a virtual community is more complicated than the term itself indicates, since adult learners now come from a demographic much broader than 18 to 22-year-olds and have many competing demands upon their time. The reality of adult learners requires flexible approaches to instructional design (Blair & Hoy, 2006). An expansion of teaching and learning approaches is necessary to create web-based course design which promotes higher thinking and learning, since knowledge construction and critical thinking do not necessarily occur just because students are interacting online (Kanuka, 2002 & 2000).

The instructional design process is critical to the fostering of online distance education communities (Hirumi, 2002). "Flaws in design are amplified online (Hirumi, 2002, p. 26)." Given this challenge, there are several factors of which instructional

designers and design team members must be aware when attempting to structure online courses in a way that fosters community.

Interactivity is a common theme in distance education that attempts to address and overcome the physical separation of members of the learning community (Saba, 2000). The type of interactivity can vary, for example, posting to discussion boards or student interaction with sophisticated media pieces that allow students to gain knowledge and test skills at their own pace; given these considerations, the designer must choose what's best for a particular audience of learners, in a specific application (Brown & Voltz, 2005). The challenge is that the situation in which the learning resources are to be used isn't always completely known or predictable (Brown & Voltz, 2005). However, other researchers have addressed aspects of interactivity which are important to learners, including a strong affinity to establishing online etiquette (Conrad, 2002a), supporting and encouraging computer-mediated communications that resemble discussion and exchange of ideas rather than recitation (Hillman, 1999; Tu, 2002), shared socially constructed meanings from the course participants' perspective (Vrasidas & McIsaac, 1999), and learner-instructor interaction which is timely (Northrup, 2002; Peterson & Bond, 2004) as well as competent and professional (Bolliger & Martindale, 2004) and supportive (Schwitzer & Lovell, 1999). Active moderator involvement (the moderator is not necessarily the instructor) in community discussions and activities, and community member collaboration are identified as two additional interactivity factors fundamental to virtual learning communities of inquiry (Luppicini, 2003). Brown (2001) suggests a key interactive step in establishing community is for the instructor to initiate a discussion of on-line community as soon as course participants log on, to allow learners to investigate

the benefits of community, and to create a perceived need for community which the course participants will strive to fill. Another practical strategy to encourage interaction of online course community members is to provide opportunities for off-task, student-to-student discussion (Parchoma, 2003). Such activities are part of specific guidelines course design team members can use to incorporate collaborative work and encourage community-building and involvement of learners in online courses (Lock, 2002).

Learner-centred instructional design, which takes into consideration learners' characteristics and organizes activities that are meaningful to them, is advocated as an appropriate approach for designing online courses that encourage community (Parchoma, 2003). Anderson (2004) dubs this approach learning, rather than learner, centred, but supports the same method. Several researchers have outlined learning-centred approaches, to use Anderson's term, with specific steps designed to encourage meaningful, relevant, and collaborative activities for online learners (Caplan, 2004; Hall, Watkins, & Eller, 2003; Granger & Bowman, 2003). Emphasis is on choosing the most suitable approach for the learning context (Trentin, 2002; Seufert, Lechner, & Stanoevska, 2002). Designing online learning communities involves selecting activities appropriate to expanding the community's knowledge, setting out specific tasks for community members in conducting the activity, and crafting rules to encourage sharing and tolerance (Ng & Hung, 2003). Hirumi (2002) also advocates the use of a well-defined systematic instructional design process to help ensure the design and development of effective, community-building instructional materials. The process involves identifying experiences essential for learners in the course, grounding instructional strategies in specified objectives, putting the experiences into the course and defining the interactions

that will carry them out, and selecting the tool by which the interaction will be achieved (Hirumi, 2002). It is critical to know and understand the purpose of the technology chosen for each design element (Shearer, 2003). Designing problems, critical incidents and role plays that mirror real-life applications create opportunities for collaboration and group knowledge-building, and engage as well as instruct the learners (Naidu, 2003; Granger & Bowman, 2003).

So, course design team members must take appropriate steps to design course activities with interactivity and collaboration in mind, and consider the appropriateness of technology, as well as cost (Downes, 2001). The challenge for them is to juggle all of these considerations and come up with a learner-centred product that promotes community (Anderson, 2004). Although this is a daunting task, Anderson (2003) suggests deep and meaningful learning can take place when at least one of three forms of interaction is present at a high level in an online course—student-teacher interaction, student-student interaction or student-content interaction. The "equivalency of interaction" suggests that course designers have flexibility in the steps they choose to take in creating, fostering, encouraging or sustaining community in online courses (Anderson, 2003).

III. Methodology: Revealing the Thread of Collaboration

Nine members of the educational institution's online course design team were interviewed about the design factors that contribute to the creation of community in online distance education courses offered by the institution. The method of analysis

involved, as discussed by Strauss and Corbin (1990), "deconstructing" the content of each interview to reveal concepts and categories, and then analyzing these to determine relationships among categories and resulting themes. The categorization and analysis of the data was conducted in order to identify, as understood by the study participants, the nature of community in an online course context, the course design factors contributing to the creation of community, the measures necessary to improve design teams' abilities to build community into online courses, and issues that present a challenge to the opportunity for students to experience community while taking online courses.

Through this analysis, several themes, or common streams of content, and sub-themes were identified. The first theme discusses the similar ways in which study participants, the design team members, described community in the online context. Sub-themes involve identification of different types of community, the benefits of community, and the barriers to the creation of community. The second theme involves the course design, content, instructional and course delivery factors that contribute to the creation of community. Sub-themes in this category are factors controlled by people (designers, content providers and instructors), and factors controlled by technology. Critical factors in creation of community in online courses make up the third theme. Sub-themes are collaboration, and trust. The fourth theme involves promotion of good practice (Calder, 2000), and techniques and practices that should be used, or used more frequently, to ensure community is an element of online course design. The final theme discusses significant challenges that might have an impact on the creation of community in online courses. While collaboration and collaborative work was identified as a sub-theme in the category of critical factors relating to the creation of community, the concept of

collaboration surfaced in the definition of community, course design elements and in the discussion of the use of techniques and practices to foster community.

The design team's discussion of collaboration and interactivity as key elements in fostering online community are examined in light of Anderson's (2003) theory of equivalency, Lock's (2002) guidelines for fostering community in course design and Garrison and Archer's (2000) approach to distance education course design. The details of this examination and the researcher's perspective on the design team's experience and practice are discussed in the Analysis section.

IV. Summary of the Data

Describing community

The study interviewees, course design team members, identified and described various aspects of community in an online course context. The following is a summary of the interviewees' definition of community and the sub-themes that emerged in defining community.

The design team members explained that the participants in online course communities at the educational institution under study are chiefly the students and the course instructors; the list of participants branches out in some contexts to include wider communities, such as the educational institution, which includes administration, other faculty, staff, other students and graduates, and professional communities which include people working in the field in which students are taking the online course. For example, some courses are designed to include material from "guest" content providers, similar to

guest lecturers in a classroom. However, participants in the online community are likely to be geographically separated. Some participants may be part of the on-campus community while they are taking online courses, others may be at various locations, urban and rural, in the province.

Design team members noted that participants in online course communities share common interests and goals, which include in immediate terms, the course content, and in wider terms, the program certificate or diploma, as well as possible shared interests in a general topic area, similar to Wenger's definition of communities of practice (1998, 1998a). Design team members interviewed in this study explained that community participants support each other through collaborating on course work and sharing ideas through the course discussion board, synchronous chats or lectures, e-mails, and other contact outside of the course. In the experience of design team members, students in online courses create a sense of belonging to the group by introducing themselves through the discussion board, using the discussion board to comment on their colleagues' work or ideas using supportive, respectful language, and sharing information. Design team members observed that the information may be directly related to the course, or may be related to part of the social or professional support network created as a result of participation in the course.

Types of community

The design team members interviewed distinguished various levels, or types, of community that might occur within the online course context, depending on the type of interaction occurring between participants. In the experience of design team members,

when students relate only with each other, for example on collaborative project work or discussion board sessions that do not involve the instructor, a student-to-student community is created. Inclusion of the instructor may bring a different tone to the interactions, so the student group-instructor community was identified as another type by the design team members interviewed. Design team members also described student-to-student interactions that may take the students outside of the online course context, for example, continued interaction of some students as they join their chosen professions and keep in touch socially or professionally. The social community that occurs outside of the course was considered by design team members to be another level or type of community.

Benefits of community

Participants in online course communities can enhance their learning experience through involvement in a community, according to the design team members interviewed. Learning experience, from the perspective of design team members, involves comprehension of course content, and wider "content" that includes social experience and related subject content. For example, students may forget the details of course content but may maintain social and professional contacts made through the course. In the experience of design team members, these networks may be more valuable to furthering students' careers than time-sensitive content.

Design team members explained that enhancement of the learning experience occurs through students supporting one another by "sharing frustrations and successes" and working collaboratively on assignments, and learning from colleagues through this

collaboration. As well, in the experience of design team members, enhancement involves students' learning to broaden their scope of argumentation and move beyond simply posting an opinion, to reflecting on the meaning and application of course content and other students' reflections, and learning, through interaction with colleagues and the instructor, that problem-solving can employ a variety of approaches. Design team members identified a key benefit of community as a wider understanding of course content and a retention that goes beyond recitation of facts. For example, design team members noted that if a student recalls how various comments on the discussion board clarified a particular course topic, a student may find it easier to apply knowledge in the workplace, rather than just relying on information. Another key benefit identified by the design team was that collaboration could occur at a distance, without the need for participants to be in the same location. Thus, the range of possible project partners or sources of information or knowledge on a topic was not limited by location, in the experience of design team members.

Barriers to community

Design team members identified factors that could stall or discourage the creation of community in an online environment. Ironically, in the experience of design team members, some of the qualities which characterized community could also possibly work against it.

Course content was identified by some design team members as a barrier to the creation of a community, in that some courses, like mathematics or computer programming, might be more likely to lend themselves to individual work, and might

attract students who resist a collaborative approach to course work. Other design team members strongly disagreed with the characterization, however. In their mind, course content sometimes presents a challenge to collaborative work, but it is typically possible to include course elements that encourage interaction, such as requirements for posting to discussion boards.

In the experience of some design team members, another major barrier to the existence of community is the online environment itself, which can fall short of the classroom environment in terms of richness and variety. Course design team members must then make a conscious decision to put community-building elements into courses, and these techniques may or may not work (depending on factors which will be identified later in this summary of data). As well, design team members explained that the online environment tends to create the illusion of delivering a course to one student at a time, so the community is somewhat "hidden." For example, it was noted that when instructors receive e-mail from a single student at a time, it is easy to think of the course in terms of one student at a time, rather than envisioning the course as being delivered to a community of several students, who interact with each other and the instructor. Thus, in the experience of design team members, the anonymity that can occur online was seen as a barrier to creating a community of students working together.

Design team members also identified a lack of, or extremely limited, instructor interaction as another barrier to students feeling that they belonged to a community; while design team members noted there are times when it is necessary to let only the students interact with each other without the instructor intervening, it was also thought to be preferable to have the instructor involved in more than just providing a single

evaluation at the end of the course. However, while design team members identified low instructor interaction as a possible barrier, too much instructor interaction—especially through synchronous course tools which required students and instructor to be logged on at the same time—could create too much of a demand on the students' time, in the experience of design team members interviewed.

The number of course assignments, their complexity and the deadlines for these assignments could also work against community, according to design team members. Students might be too busy to interact with each other, or, at the other end of the spectrum, students might be required to interact to such an extent that they could be overloaded by the demands on their time, in the experience of the design team. In this case, some students might come to resent the necessity of being involved in the community, design team members felt. The team members interviewed also noted that students might be reluctant to comment on or evaluate the work of their peers, and may feel they are not qualified to make such assessments.

Technology could also work against community, in the experience of some members of the design team. While the appropriate technology is necessary to deliver the course in a way that allows for and encourages collaboration, students' unfamiliarity with the technology or their lack of desire to use synchronous technology, like live chats, could reduce the desire to be part of or participate in the online course community, design team members explained.

Factors Contributing to the Creation of Community

Design team members interviewed identified specific factors which contributed to or assisted in the creation of community in online courses. The factors can be divided into two broad categories, ones which are controlled by people—subject matter experts, instructors or course facilitators, and course designers and graphic artists—and ones which involve technology, such as the course delivery platform.

People factors

Design team members identified the chief "people-designed" factor as interactivity that encourages or creates large-group interaction. In the experience of design team members, this element can be achieved through a number of methods, including setting up a "welcome" session where students post introductions and or pictures of themselves to the discussion board, establishing course requirements for students to post discussion board comments and questions, requirements for peer review or critique of each other's assignments or projects, and opportunities to participate in instructor-facilitated live chat sessions or synchronous lectures. Design team members suggested small-group (two to four people per group) interaction can be created by requiring students to collaborate on assignments and to join in live chat sessions to discuss group projects.

Design team members described the instructor's role in clearly setting expectations and being involved in the course; instructor involvement was also seen as an important factor that contributed to the notion of cohesiveness and unity among course participants. In the experience of design team members, explanation of expectations

includes describing to students the expected tone and content of online comments—respectful and constructive—explaining, or providing copies of, criteria for grading assignments, providing feedback to students in a timely and consistent manner, and fostering the creation of trust among participants by taking a leadership role in sharing information and employing a respectful, constructive tone. The instructor, it was felt by design team members, should also solicit student feedback or input that could be used to improve the course in future years. In the experience of design team members, students were pleased to offer material that would be credited to them and used as content in future courses; design team members observed that students were thus willing to support the creation of community in future years.

Creation of a rich online environment that takes advantage of available technology and which mimics the level of interactivity that could be available in a face-to-face classroom was also identified as an important factor by design team members. In their experience, the environment can be enriched through discussion forums, synchronous lectures and or chats, videos, audio clips, graphics, concept maps, where students roll the mouse across areas of a picture to reveal information, animations, interactive pieces which allow students to test and review knowledge, blogs, photographs, slide shows, and interactive role plays. Course content, the development budget and production timelines affect the degree to which courses include interactive media pieces, according to design team members. For example, to incorporate an on-line role-play in a course, where students play specific roles in a scenario over an extended time (several days or more), requires the institution's investment in copyrighted software.

Even though several elements were identified by the design team that would add to the richness of the online experience, and would provide information in ways that appealed to various learning styles, it was also felt that students should be able to easily navigate through course material, with elements being intuitively linked. Making the course difficult to navigate or access would only be frustrating for students, and would likely lead them to "drop out" of the community, according to the design team members interviewed. In their experience, ease of use also means flexibility that allows students to take advantage of the online environment. Almost all interviewees pointed out the fact that students take online courses because the time and location limitations of face-to-face courses rule them out as an option for students. Therefore, design team members were unwilling to impose a heavy requirement for synchronous participation, and many preferred none at all. Design team members were also aware of the need to build flexibility into course content that could take into account the instructor's preferences for interactivity. In the experience of design team members, the subject matter expert providing content for a course does not usually end up being the instructor or facilitator of that course.

While interactivity was seen by design team members to foster community, interviewees also mentioned some elements that simply allowed for individual student reflection. In the experience of design team members, if students had the opportunity to write in a journal or examine personal reactions, that chance for self-reflection was likely to provide a basis for thoughtful discussion, comments and interaction with the instructor and peers.

Overall, course design team members felt if was important to have a plan for organizing, designing and delivering course content so that interactivity, collaboration, sharing, relationship-building and support were encouraged in the online context. Design team members identified a thread which ran through all of the techniques that supported collaboration: the necessity for a supportive, respectful, timely exchange of information and ideas that fostered trust among course participants. Trust will be discussed further as a factor in creating and supporting community.

Technology factors

The course management system which is used to deliver online courses at the educational institution is WebCT. It provides course designers with interactive tools such as discussion boards, synchronous chats and e-mail. In the experience of design team members, the purpose of the course tools is to provide channels for student collaboration and sharing of information and the application of information, or knowledge. The practices described by design team members indicate that the course management system provides a framework in which rich course content can be delivered, such as videos, a variety of interactive media pieces and audio clips. The educational institution's portal, which is available to both online and face-to-face students, also supports access to online course content, in the experience of the design team. Wider use of the portal to support course blogs and information sharing was seen by design team members as a method of expanding online course communities. Future student comfort with the use of webcams was also seen by design team members as a technology which could enhance students'

experience of a community in the online environment, since the webcam could more closely duplicate a face-to-face exchange.

Key factors

Collaboration was repeatedly identified by design team members as a critical factor in creating and facilitating online community. The collaboration did not necessarily have to come in the form of requiring students to work together on a joint project, in the experience of the design team. The team members interviewed explained that students can learn collaboratively through the exploration of various topics, including critiques of peers' work, specific questions set by the instructor, discussion of readings, videos, audio clips or graphics, or the discussion of various aspects of framing an argument or problem-solving. The exchange of ideas and information in a timely manner was also identified by design team members as particularly significant to ensure input on issues being discussed, and to keep the course from stagnating. Instructor involvement, as discussed earlier, in encouraging and fostering collaboration was seen by design team members as important and necessary.

Design team members identified trust, and the instructor's role in creating a model for trust, as a common idea running through the discussions on collaboration; although the word trust might not have been used by all interviewees, all identified elements that characterize trust as being key to creation and facilitation of community. In the experience of design team members, such elements include respectful, supportive, well-thought out responses and comments that encourage participation and create a non-judgmental environment. The characterization of community as a support system implies

that online course participants place trust and value in each other's input, according to design team members.

What needs to be done

The need to for course design team members to discover and reflect on what elements of course content, design and delivery were successful in creating community was identified by the team as an area for future work. Whether design team members did this investigation themselves (which some did, informally) or whether that information was gathered for them, team members wished to know for sure what worked previously and why. The comment that there was little time for reflection because they were "on to working on the next course" was often repeated.

As well, design team members talked about the need to determine the audience for online courses. Some team members observed that they struggled to provide course elements in the absence of information about how many students might enroll, where they might be located, what their backgrounds and interests might be, and who the course instructor would be.

Challenges to the community experience

The most critical challenge to the potential for students to experience a rich course in which the instructor takes a key role in creating community was identified by design team members as instructional time. If students are to experience, absorb and learn to apply course content (application being the highest goal), the instructor must be engaged, involved and interested and must provide timely and well-thought-out feedback,

in the view of design team members. If instructors are expected to provide a high level of input and interaction into creating a course community, compensation and hours of work for online instruction become issues which need to be addressed by the institution, commented design team members.

V. Analysis: Community's Collaborative Anchor

The collaborative thread

Design team members repeatedly identified collaboration and interactivity, in various forms, as key elements in building and sustaining community in online courses. The themes of interaction and collaborative work were continuously woven throughout various elements of the data, whether it was a discussion of a definition of community, or an identification of instructional design features that can be included in courses to enhance community. Team members spoke of interactivity as a quality that defines the learning community, and collaborative work as a method of establishing the community:

> "A learning community is the *interactive* (emphasis mine) aspect that occurs not only between the students and the instructor or the facilitator, but among the students themselves." –Participant 8, ¶7, line 1

> "It is vitally important that we try our very best as course designers or instructors to create a virtual or online community where people can *interact* with each other." –9:16:4

> "We (as design team members) try to establish community right up front, (and let it be known) that it is an expectation (in an online course) to *collaborate* and get to know each other." –6:4:2

Study participants identified interactive and collaborative activities as key methods of assisting online learners to achieve the learning goals of a course; these elements, in the experience of design team members, were more likely to help students create a community of learning in their online environment.

> "Instead of simply asking students to read an article by themselves, you can ask them to form groups, perform some reading exercise, write something about it and then post that to an online forum. They can also read the responses and the results from other groups and comment on the others' results. In this way we are fostering online community, so students are not feeling isolated and alone." –9:18:8

> "Interaction is important on a regular basis throughout the course…every learning outcome, they (students) will be interacting in some way, whether it's in discussions or chats or doing things together behind the scenes." –6:4:9

> "Students do better work if they know their peers are going to be reviewing it in addition to whoever is instructing or mediating the course." –3:23:18

The comments of design team members revealed that collaboration was seen in terms broader than student-to-student project-based interaction, with purposeful interactivity as a key characteristic of collaborative work. Collaborative learning could occur as students interacted with each other, with the instructor, and with various elements of course content, such as interactive media pieces that helped build knowledge of course content, and critique-based, problem-based or role play-based assignments, which bring students together to draw on each other as resources; the assignments may also become the subject of further discussion and exchange. Collaborative work, as viewed by the study participants, involved students' interaction with each other, the content, or the instructor; the interaction allowed students to contribute their understanding of the course content, to build on that understanding by gaining the input

of other students, the instructor or the interactive content, and to further develop their knowledge through reflection upon these interactions:

> "You get a collaborative construction of a bigger understanding (as students ponder) 'My colleague said this, but my instructor said something else...Why did they disagree on that point?'" –3:23:35

> "The collaboration aspect permeates most of the assignments...(for example) a role-playing situation that is online, web-based and constructivist. We (the course designers) put the students into a setting and they construct how this is going to end up and how it will unfold...they write the script." –8:8:18 & ¶4, line 14

> "One of the assignments is on antibiotic prophylaxis, so (the students) are going to design (an educational tool for clients) in whatever medium, it could be a web page, it could be a video clip...(that) will be used for the greater good as an educational tool...(The students) upload these videos to the (educational institution) website and they can educate the public and increase the profile of (the institution)...So students have an impetus to do well because they know it's not just for (them)...when they've done it, they contribute to the course." –6:14:55

However, even though design team members viewed collaborative work as a knowledge-building process, they also sometimes referred to collaboration interchangeably with discourse and interactivity (as indicated by some of the previous comments), suggesting a blurring of the distinctions among the various types of interaction. Building course activities that are truly collaborative requires designers to push beyond interchanges and discussion, and to oblige students to reflect on their interactions. While reflection was recognized by design team members as a necessary contributor to knowledge-building, it should be noted the reflective component may be lost if it's left up to the student to reflect on his or her own time, without the aid of a required course activity.

Several authors identify collaboration as a key element in creating or sustaining online learning communities (Lock, 2002; Wilson et. al., 2004; Rovai, 2002; Schwitzer,

Ancis, & Brown, 2001). To summarize their positions, collaboration, while requiring interactivity, goes beyond a simple exchange of ideas or transfer of information, to knowledge-building, where students construct an understanding of the course material that is richer than they previously had; in the best case scenario from a technical college perspective, students gain knowledge that will be relevant to application in authentic workplace situations (Wilson et al., 2004; Brown & Voltz, 2005). As well, collaboration can occur through supportive peer relationships which can exist as a result of the establishment of course study groups, support groups or peer mentoring (Schwitzer, Ancis, & Brown, 2001). While socially constructivist activities like an online role play prod students toward building knowledge together, other strategies used by the design team have the potential to be collaborative, but may not necessarily turn out that way. For example, using content as a discussion point and requiring students to post comments to the discussion board, respond to comments, and to moderate and summarize the discussion, may result in students building knowledge of the course material. However, such a transformation is not guaranteed, since students may continue to stick to their original ideas on a topic and may choose not to reflect on the input of others, unless that reflection is a required element.

Collaboration and the interaction that occurs through sustained communication are essential for meaningful learning in adult education and distance education (Garrison & Archer, 2000; Hirumi, 2002; Rovai, 2002; Jeong, 2003). "Through collaboration and sustained communication the student moves beyond the construction of personal meaning to being exposed to new and different perspectives and the confirmation of knowledge through consensus building (Garrison & Archer, 2000, p. 12)." While constructing

meaning is the job of the individual student, this activity takes place primarily in a social context that features the relationships between the instructor and the students, and among the students themselves (Garrison & Archer, 2000). In a collaborative learning environment, instructors and students work together to make connections, to gain understanding of course material, and to interact with the course content in a way that builds students' knowledge. The learning and knowledge creation that occurs in this environment is called "collaborative constructivism," by Garrison and Archer, where personal meaning and knowledge is a derivative of social interchange and negotiated understanding (2000, p. 43). The repetition of the knowledge-building notion in this label suggests a continuous loop of interaction, with the social interchange being central to students' understanding of the course content, and student comprehension of course content contributing to the social interchange.

Collaboration, as a critical component of meaningful learning in adult education, is also identified as a cornerstone of the online learning community (Lock, 2002; Anderson, 2004). The experiences of collaborative work are participatory (not passive) and involve communication and interaction, all three of which are viewed as elements critical to the fostering and creation of learning communities in online courses (Lock, 2002). The view of collaborative work as participatory, communicative and interactive is an approach shared by study participants:

> "People need to be taken out of their comfort zone to grow. There are some people who don't like to collaborate…(so) there can be options around the amount of collaboration and…students need to know the ground rules around collaboration. We (course design team members) often have the students together design the ground rules for communication in the course so they have ownership." –6:18:6

Giving students the opportunity to agree upon the rules for group communication can assist in creating a collaborative environment online. However, since some students may not place a high value on this activity, course instructors or facilitators would still need to have the option to step in and set out the course expectations and rationale for collaboration.

Collaboration incorporates the thread of interactivity (Hirumi, 2002; Vrasidas & McIsaac, 1999), which study participants explained must be woven into online course design in order for students and instructors to support each other in an online learning community:

> "If they (students) are not going to feel isolated or alone or secluded, you need to build in as many opportunities as possible for them to interact....If you want to build community, then you definitely have to take steps to do that consciously." —8:12:1

> "Good instructional design in an online environment should attempt to mimic the kind of interactivity or interaction that we can easily build into face-to-face instruction. We have to keep in mind that just because our students are not in the same room when we are delivering the course does not mean that we are delivering it to each student individually. Instead, we are actually delivering the course to a community of people." –9:22:1

However, it should be noted that just because interactivity and collaboration can easily be built into face-to-face instruction doesn't mean that face-to-face classrooms are always the site of knowledge construction. While the best classrooms, where a variety of learning styles are acknowledged and social knowledge construction occurs, can be held up as a standard, course designers would also do well to operate from the standpoint that online learning can offer students as many or more opportunities for collaboration and interactivity as face-to-face classrooms.

As critical as collaboration is to the online learning community, it is also difficult to create, support and sustain. In the experience of design team members, students may be unfamiliar with the give-and-take constructivist process that is involved in collaborative work, since much of their educational history may have focused on individual work. Students need to be educated about collaboration:

> "I received emails from...students asking for clarification on what way it was OK to work together. They were under the impression that if they worked together, that was somehow cheating....I think we have to explain to (students) it's OK to work together, and this is why you want to work together, and how it can be helpful to you and how it can be of benefit to you, and explain the ways in which it can improve their learning experience." –4:12:6

The approach described above could become a guiding theme for course design teams; subject matter experts should be made aware of the need to orient students toward collaborative activities.

Students assigned collaborative projects or given opportunities for collaboration may still choose other processes that are not necessarily completed together through dialogue and knowledge-building; in other words, their work may not be truly collaborative (Paulus, 2005). Instead of working together, students may decide to divide up tasks and work individually, although cooperatively (Paulus, 2005). While a cooperative process is interactive, it does not necessarily build toward collaboration or shared knowledge construction, although this could occur if there is an opportunity for reflection, which is either purposely included in the course activity or is an endeavor undertaken by the student independently (Garrison & Archer, 2000). In the view of design team members, the opportunity for reflection can provide students with longer-term applications of knowledge that will serve them in the workplace:

> "(Through reflecting on collaborative exchanges) students build a larger lattice of understanding of what happened and how they are going to transfer that and apply that to the workplace." –3:23:33

> "Another part of the collaborative piece is reflection and peer assessment…as (professionals in their field) they need to critically reflect on their performance and their peers' performance, and how they inter-relate with them for improvement." –6:6:18

Again, reflection requires a conscious decision on the part of the design team to build reflective activities into the course material, rather than leaving this element to the will of the individual student.

Design practice

In creating an interactive, collaborative online environment for students which allows opportunity for reflection upon and achievement of learning goals, a number of considerations must be balanced. Study participants explained their practice in incorporating into online courses elements of interactive, collaborative work which requires a "dynamic exchange" (Hirumi, 2002), in order to foster the creation of a community of learners. The practices are grounded in practicality, given constraints such as the course learning objectives (i.e., what are the key objectives on which the course must focus), course content, available technical media, learners' time, and instructor approach and preferences. Design team members were aware that the responsibilities of involvement in an online course community place constraints on learners, and they were careful to point out that learners should be given some flexibility in shaping and creating their learning community and in deciding their level of participation in the community, approaches shared in the literature (Anderson, 2004; Garrison & Archer, 2000). Given

the repeated occurrence of the themes of collaboration and interactivity throughout the interviews of study participants, the design team's practice of incorporating these elements to foster online community will be examined in terms of Anderson's equivalency of interaction theorem (2003), which relates specifically to creating an appropriate mix of interactive course components in instructional design of online courses. Interactivity is the context in which collaboration occurs, and collaboration is a community-building form of interactivity (Lock, 2002). The application of Anderson's theory to the practice of online design team members interviewed in this study will be reviewed in light of Lock's (2002) recommendations for using the design process to set up the conditions which foster community in online courses, and Garrison and Archer's (2000) "collaborative constructivist" approach to instructional design of online distance education courses.

To set the context for this discussion, Anderson's equivalency theory states that, in online course design:

> Deep and meaningful formal learning is supported as long as one of the three forms of interaction (student-teacher; student-student; student-content) is at a high level. The other two may be offered at minimal levels, or even eliminated, without degrading the educational experience. High levels of more than one of these three modes will likely provide a more satisfying educational experience, though these experiences may not be as cost or time effective as less interactive learning sequences (2003, ¶10).

Lock (2002) brings forward five guidelines for course designers and other educators to consider as they attempt to foster a learning community for students that can be a network of support and assistance in achieving learning goals:

- Designers and instructors must be aware of community in online learning, and see its value; they need to keep in mind the factors necessary to developing online community.
- Course developers and instructors need to reflect on what mechanisms they can create and carry out in order to build communication, collaboration, interaction and participation into online courses. For example, is work in small groups possible? The technology used in the course should support interpersonal interaction and sharing.
- Affiliations and connections need to be sustained not only within online courses, but between courses and beyond the course environment. Community connection should extend beyond the course.
- Educators should weave the concept of learning community throughout individual courses, the curriculum, the institution and professional organizations. Leadership is key in developing and sustaining long-term community learning relationships.
- Designers and instructors should take the opportunity to conduct action research on the development of learning communities, to feed an iterative design process.

The iterative nature of the design process is also stressed by Garrison and Archer (2000). The design of distance education courses should be communicative and collaborative in order to be flexible and responsive to the learning context, and to assist instructors and learners in constructing knowledge together (Garrison & Archer, 2000). The approach described by Garrison & Archer is, given the constraints of time and budget, and the

demands of meeting a multiplicity of student needs, a best-case scenario. It requires a well-funded institution where designers and instructors have the luxury of time reflect on their work, share knowledge and collaborate iteratively so that courses are regularly upgraded and improved. While the approach discussed by Garrison and Archer (2000) is necessary and useful as a standard for good practice, it is also tempered in practice by the many demands on publicly funded educational institutions.

The practice of design team members in this study demonstrate the principles of Anderson's discussion of equivalency, as designers strive to meet the constraints of designing courses that not only fulfill learning objectives and assist learners in achieving learning goals through an online course community, but which also meet the practical considerations of budgetary and work time limitations. The decisions made while seeking to create a mix of collaborative, interactive course content relate favorably to Lock's (2002) guidelines for online course community development, and follow Garrison and Archer's (2000) recommendation of a method that incorporates flexibility in creating online instruction. The design team members' practice seeks to strike a balance between practical, institutional considerations and furthering learning goals through employing collaborative elements to encourage online community, thus demonstrating the application of the notion of equivalency (Anderson, 2003), and acknowledging the critical importance of dynamic interaction and collaborative elements (Lock, 2002; Garrison & Archer, 2000). One design team member noted the importance of the three types of interaction Anderson discusses:

> "(Recommendations for good practice in designing each course) would be to make sure there are built-in interactions suitable to the course—student to instructor, and student to student, as well as interacting with the content." –5:24:1

Anderson suggests that his theory "implies that an instructional designer can substitute one type of interaction for one of the others (at the same level) with little loss in educational effectiveness—thus the label of an equivalency theory (2003, ¶11)." Clearly, for these various interactions to be truly interchangeable, the quality, not just the quantity, of the interactions is critical. For example, reading text online is student interaction with the content, but it is hardly stimulating or engaging in a way that would promote deep and meaningful learning. While the preference of design team members interviewed in this study would be to build all three types of interaction into the course, practical considerations require that they regularly need to make choices about what type of interaction is featured more prominently. Although a theoretical basis for judging the appropriate amounts of the various forms of interaction is not specifically laid out by Anderson, it is useful to look at the practical guidelines for deciding the amount of interactivity which have been articulated by study participants themselves, as course design team members. Such an approach would follow the flexibility and adaptability necessary for the use of good practice in distance education course design (Calder, 2000). As well, Garrison and Archer (2000) note that prescriptive, linear design methods don't allow for the collaborative constructivism that is key to meaningful learning in adult education contexts. "Designers should also consider collaborative constructivist perspectives if meaningful learning and shared understanding is the goal (Garrison & Archer, 2000, p. 186)." The considerations that require the design team to move away from prescriptive approaches include the context of course design mentioned above, as well as the number of students in a course, and the balance design team members must strike when placing the constraints of community upon learners. The considerations that

lead design team members to choose one form of interactivity or collaboration over another, and the considerations involved in deciding the levels of interactivity to incorporate will be discussed. First, Anderson and Garrison's (1998) discussion of the three key types of interaction in distance education is outlined—student-teacher, student-student and student-content—as a framework for the design team members' views on the benefits and or drawbacks of each type of interaction. The design elements identified by design team members are discussed for each type of interaction.

Student-teacher interaction

Anderson's view of interaction in the educational setting is drawn from Dewey (1938) who saw the educational experience as a transaction between the individual and his or her current environment (Anderson, 2003a). "Interaction is the defining component of the educational process that occurs when the student transforms the inert information passed to him or her from another and constructs it into knowledge with personal application and value (Anderson, 2003, p. 130)." Garrison and Archer (2000) follow Dewey's reference to the educational transaction and highlight its collaborative nature. Anderson (2004) notes that student-teacher interaction currently has the highest perceived valued among students. However, this interaction also is perceived by instructors to require excessive amounts of time in an online environment, considering, for example, that students can use e-mail or other electronic media to contact instructors at any time of the day (Anderson, 2003.) "The quality and quantity of student-teacher interaction is dependent on the instructional design and selection of learning activities that maximize the impact of interactions with students and provide alternative forms of interaction when

time constraints become excessive (Anderson, 2003a, p. 134)." Garrison and Archer (2000) point out that designing meaningful interactions involves taking a collaborative approach that allows students some control in shaping the learning exchange, an approach which gives students responsibility for their own learning, a view shared by design team members in this study:

> "Let them (the students) have some choices. Maybe some assignments should be collaborative and some of them don't have to be. Mix it up....Sometimes the instructor wants students to rotate through partners (in collaborative work). It depends what your purpose is in connecting them as a community." –6:4:46
>
> "(The) hope is that one day students will collaborate to build concept maps (of course content.)" –6:6:5

While the purpose of an online learning community may vary somewhat according to course content, it should be noted that the purpose of community in general is to support students in their learning. Thus the guiding factor in giving students input into the learning their learning process could simply be the benefits of creating a supportive network of learners on which students can rely.

Design team members introduced a caution to consider as they seek to create a community that gives students responsibility and opportunity for input:

> "We have to be careful when we create this community of learning that we don't create an atmosphere that if you (the student) don't cooperate, you can't be successful in this course...We don't want to force this community of learning on somebody because that would make his or her learning experience worse. It's a fine line." –4:28:19
>
> "A course can fail if there are too many expectations, and too many discussion forums they (students) are expected to contribute to." –5:16:19

While it's important for design team members to take learners' needs into consideration and offer choices regarding the level of collaboration, it will also likely be necessary for designers to build elements into a course that give students a small "push"

to overcome any tendencies toward reticence. The benefits of online community need to be promoted in a way that helps the student understand the importance of effective participation in collaborative activities.

Lock (2002) reinforces that it is the nature, not the number, of interactions which contributes to a sense of connection in the online learning community. Design team members identified several techniques for creating high quality student-teacher interaction in online courses, and agreed that this interaction is particularly important for students in helping them to join in an online community of learners, and to create the comfort level and personal connections students need to work with each other collaboratively, and to collaborate with the instructor in their learning. For example, several design team members noted that it was important for instructors to get to know students through online icebreakers, where learners are encouraged to post information and introduce themselves through the discussion board. Some design team members have creative methods of doing this, such as asking learners to post a set of "truths and a lie" to see if other learners can sort through the facts and fiction about their fellow course participants. Although this discussion is carried out among the learners, the instructor begins the session by providing information about him or herself, either through an introduction that is a set part of course content or through the discussion board.

> "Especially for the first-time facilitator, it's a very demanding environment to try to keep track of community and community-building, and I think it's everyone's responsibility. I set up the design that supports them (students and instructor) being together, so the learning activities cause them to interact." –6:4:5

The approach described above is likely to be effective in giving instructors a framework that supports their role; this is preferable to a "demanding" framework which may place an unachievable expectation upon instructors to be the sole promoters of

community, when instructors are already involved in teaching course content, monitoring student progress, working collaboratively, and evaluating students.

The instructor can share information about learning activities and collaborative work in a text-based format, or he or she can use a brief introductory audio track or video to help learners attach a voice and a face to the course facilitator. Design team members explained that students appreciated being able to anchor their perception of the instructor to a personal presence, which could be reinforced by teacher-student e-mails, discussion over the phone, or meeting in person, if the student had the opportunity to come to the instructor's office:

> "We put a video, my face and voice, at the beginning of the course....You don't always have the luxury of being able to produce the video ahead of time. But the students liked that, they liked to be able to see my face and hear my voice." –8:12:15

Considering the ongoing advancement of instructional design technology, it could become standard practice to produce an introductory video even on a short timeline, once students are enrolled and a course instructor is assigned. A video could afford the instructor an immediate online presence more effectively than a written message.

However, students' need for instructor interaction is to some degree subjective, in the experience of at least one design team member. The team member noted that in one case students complained that the instructor interacted with them "too much;" regular telephone contact or emails were not necessarily always appreciated by students who felt constrained by time and other course responsibilities. Some students, in the experience of design team members, do not necessarily place high importance on interaction or collaboration with the instructor:

> "I solicit input (from the students), what worked, what didn't, and I get very limited feedback, actually." –4:26:12

> "Instructor involvement to some students...is very important, other students don't care as much." –8:14:9

In recognition of the needs of all students, design team members indicated that they were consistently aware of the time constraints that collaborative work and participation in an online community created for the online student.

> "Time is a critical element. If you put them (students) on overload, that's not going to work either, because they are just going to get frustrated." –8:10:15

> "(Students) are working, they are traveling, so you have to be flexible (about deadlines). That's why they (students) want to take an online course in the first place." –5:18:9

While time is often a critical element for post-secondary students in online courses, it should be noted that part of the job of the design team is to help students see the importance of the various types of interaction that work towards the building of knowledge rather than the simple absorbing of information. Clearly, design team members have competing interests to balance (collaborative work versus the time crunch), however, recognition of students' time constraints should still be framed in terms of collaboration and interaction if community-building is to succeed.

Another important aspect of student-teacher interaction that was articulated consistently by design team members was the necessity for instructors to clearly, concisely and consistently explain learning objectives of the course, specific assignments and evaluation methods. It was felt that in order for students to have a valuable interaction with instructors that would lead to a sense of community and collaborative knowledge-building, the instructors' expectations of student performance must be clearly articulated. The requirements for assignments and the evaluation methods must be well-

explained and posted where students will have access to this material and be able to refer to it easily.

> "Instructors need ways to communicate (expectations and instructions), as well as surveys to find out if anything is wrong with a course. People might think it is the content when it is the instructor not being part of that community."—5:16:14

> "I really push faculty to tell me, 'How are you marking this?'" –6:9:45

Building these types of explanations into the course is part of good design. While the instructor can be afforded some flexibility in setting up student performance expectations, placing community-building at the foundation of the course suggests that designers will have to take steps to ensure that requirements and goals are always clearly articulated.

Timely feedback by instructors, whether it was on work-in-progress, or on completed assignments, must be provided, according to design team members. They commented that in order for students to have a strong grasp of course material and to be able to apply course content and meet learning objectives, the instructor had the obligation to be responsive, available, and interested in students' learning, although they differed on approaches that instructors could take:

> "They (the factors in creating community) all work together, but if you're missing one piece, then creating a community of learning would be difficult. You obviously have to have the (discussion board) tool and a reason for using the tool...but we seem to focus on setting things up and using the tool, and the whole facilitating part and keeping it moving, that's the piece that tends to fall to the side." –4:22:1

> "I usually don't make a practice of going into the discussion area too much and replying. I let it be an area for the students to comment on each other's work....There are all kinds of ways of handling discussion forums, having someone lead the discussion or summarize the discussion, so it's not like everyone talking at once." –5:10:3, & ¶16, line 22

Team members identified design features which assist in meeting these objectives, including providing complete assignment requirements and evaluation criteria and posting these on the course site, setting aside specific times to check discussion boards and e-mail from students, and responding in a timely fashion to student queries or comments, recording assignment evaluation comments by the instructor and posting these to individual students in MP3 format, and providing students with a flexible list of options for instructor contact, including a combination of asynchronous methods such as e-mail, and synchronous methods, such as scheduled online chat sessions or video conferencing. Design team members explained that all of these methods could allow flexible, yet meaningful, student contact with instructors in ways that engaged students and instructors and helped them build relationships with each other that worked toward collaborative knowledge construction. As Lock (2002) suggests, in order for educators to sustain an online learning community, "it is the instructors who must intentionally create a climate that fosters collaboration and interaction (p. 405)." That position is supported by the rest of the instructional design team as it makes decisions about the student activities to include in creating a collaborative environment that encourages students to take responsibility in constructing knowledge and meaning (Garrison & Archer, 2000).

Student-student interaction

Anderson explains that "the act of engaging in learner-learner interaction forces learners to construct or formulate an idea in a deeper sense (2003a, p. 134)." Deeper learning is just one of the many benefits of student-student interaction, including developing trust among learners as they take "risks" in publicly stating their views,

increasing the motivation of students and their interest in courses as they become engaged in the input of not just the instructor's views, but of their colleagues as well, and preparing to communicate effectively in the workplace—with clients, in work teams, and with professionals in other disciplines (Anderson, 2003a). Student to student interaction, participation in activities, communication and collaboration are all key elements that build the online learning communities which serve as a support system to students (Lock, 2002). Fellow students not only model and support learning, they can also create a forum to share and test ideas (Garrison & Archer, 2000). Group work, specifically, can create authentic or workplace-related experiences that can be established collaboratively through negotiated expectations (Garrison & Archer, 2000). "It is important to ensure that activities are authentic educational experiences (Garrison & Archer, 2000, p. 123)." Design team members valued the authentic experiences modeled by group work.

> "In some (professions) (collaboration and community) are absolutely vital. You just die if you don't have the support of your colleagues. You work as a team and the students need to know that (about the workplace) up front....Social skills and social interactions are important. People skills are necessary if students are to succeed in almost any area of life." –8:6:5

> "Just learning to work with one another (in online collaborative groups)...is a part of the learning process and may even (be) more important than the content...because you lose the actual course content, in my experience, after a month or two or three down the road, but what you learned dealing with others hangs on." –1:21:3

Anderson cautions, as well, that "if we do build forms of student-student interaction into our distance education programming, we should ensure that our instructional designs promote student-student interactions that are pedagogically grounded and produce enough learning and motivational gains to justify the restrictions on the students' temporal independence (2003a, p. 135)." His caution is wholeheartedly

supported by design team members interviewed in this study, who consistently described the need to ensure that student to student interaction serves the specific learning outcomes of the course and that it is structured in such as way as to assist students in gaining support from each other to achieve learning outcomes and complete the course.

> "A learning community is the interactive aspect that occurs not only between the students and the instructor, but among the students themselves....Community is absolutely essential because they (the students) are going into a community in their (professional) practice....So that's why we (the design team) built the course around a lot of interaction, we built it into the evaluation and the task elements...I assigned partners and they built their learning community." –8:6:1

Design team members noted that just because there is always a learning component to student-student interaction and collaborative work, this does not mean such interaction is devoid of any social aspects. Rather, in the experience of design team members, the social structures and networking created by student-student interaction might well last beyond the time in which the course is completed, assisting these students in their future professional lives. Future connection among students is seen by design team members as one of the benefits of creating community in online courses—community serves not just the short-term course objectives, which students may well be able to achieve with minimal engagement in a learning community, but it also serves the life-long learning and career preparation objectives of a post-secondary technical educational institution.

> "Half (of the importance of community) is made up of the people you interact with (in a course) and making friends and professional relationships and networking with them. In fact, this might even be more important in the long run, than the actual content of the course you are learning." –1:19:3

Design team members identified several means by which student-student interaction could be effectively achieved in online courses, making the learning of course material more interesting and stimulating for students, and assisting them in building connections with other students that lead to collaborative knowledge construction. Besides having students work on group or collaborative assignments, design team members suggested techniques such as making teams or groups of three students responsible for sections of the course content. For example, students could research an element of course content, interpret key elements of that content, draft and post discussion questions for other students to respond to, moderate the online discussion on that topic, and then summarize and reflect upon the exchange of ideas through a reflective journal assignment or a summary posting on the topic.

> "Students have to complete case studies, post their studies on the discussion board and moderate the discussion. If this is not their case study, they have to complete a peer review of the posted study....They respond to all of the questions...all critical questions they have to know in practice." –6:10:30

> "You can assign an assignment with each student working on his or her own or you can assign a group assignment and you can ask them to post their findings on a discussion forum, even ask them to evaluate each other's work, so that is a kind of interactivity built into the course." –9:26:8

In a similar vein, individual students or pairs of students can be responsible for reading a specific section of a course text, then posting comments on the section to the discussion board, and moderating the discussion of the reading. Both of these methods of student-student interaction are asynchronous and while somewhat restrictive of the students' time—for example, discussions would follow a weekly format, with students required to post on various aspects of the topic within a specific time frame—do provide students with some flexibility in making postings or responding to comments, in the

experience of design team members. Through these interactions and sustained communications, students work together to build knowledge and collaborate in the construction of knowledge that can be used for future iterations of the course (Garrison & Archer, 2000), as pointed out by a member of the design team.

> "By building online community (through sustained student discussions and exchanges) we are actually helping students to extend or expand upon our learning objects which exist in our learning management system." –9:36:1

Overall, design team members felt asynchronous discussion provided an appropriate middle ground in balancing the need for students to have flexibility, which is why many of them choose online study in the first place, with the need for engagement, interaction, and information and knowledge-building with peers.

> "There is always a discussion aspect (to the course) … We (the design team) are building in marks for evaluating each other's work, to post new threads to the discussion related to the content they are studying and to make three replies, three posts to peers, for each learning outcome." –8:8:29

An online role-play was also discussed by study participants as another means of creating student interactions that could be synchronous or asynchronous, and that allowed students to explore complex, multi-faceted topics over a set period of time, through characterization in an assigned role. The level of engagement, topic research and involvement is largely left up to the student, although obviously when students play their roles in more depth, a richer learning experience is created.

> "(One student in the role play) went on the web and found websites on the various (medical) conditions (studied in the role play) and sent them to (other students in the role play)…(Another student) went to a care home and started observing (patients' conditions). We didn't ask them to do that…these students were deep learners." –6:8:78

Design team members also noted the need for students to have the opportunity to contact each other offline, to discuss course issues or to socialize. Again, the social

networking aspect of student to student contact was stressed by design team members as a benefit of online course community which could create opportunities for collaborative knowledge construction that could last well beyond the course boundaries.

Given their recognition of the importance of group work as a model for workplace experiences, and given the rich experiences that students can have in assignments such as extended role plays, design team members should consider the increased use of learning activities that challenge students to tackle topics collaboratively and in-depth. Designers' reluctance to impose too many demands upon students' time may also mean that students are not receiving rich opportunities for learning.

Student-content interaction

Whatever the adult educational setting, most of a student's time is taken up by interaction with course content (Anderson, 2003). The interaction between student and content takes many forms and serves various purposes, such as assisting students to practice skills and concepts necessary to mastering course material, and allowing to students to reflect on and assimilate information and knowledge. One of the strengths of student-content interaction in the online learning environment is that "most forms of student-content interaction can be recorded and displayed asynchronously to substitute for student-student interaction by time or technology-bound students (Anderson, 2003, ¶ 15)." Students can also have control over their own online content, through requesting customized versions of online newsletters, and updated information on research topics, usually delivered through e-mail (Anderson, 2003). However, "the value of the content is dependent on the extent to which it engages students or teachers in interaction, leading to

relevant knowledge construction (Anderson, 2003, ¶28)," an approach consistent with collaborative constructivism in online course design (Garrison & Archer, 2000). Content which brings students together or provides a discussion point for collaborative work is one design mechanism which can build a sense of community in online courses (Lock, 2002). The amount of content must also be appropriate to the course and allow for sufficient time to construct meaning through critical reflection and discourse (Garrison & Archer, 2000).

Design team members identified several ways in which content can contribute to a rich online learning experience for students that enhance their participation in a learning community. Even static images can become the focus of a discussion and shared knowledge construction.

> "This was a logo I produced....we needed an example to show the graphic design process. I took my notes and roughs and scanned them in and showed them the process from concept to the final piece. These were posted in the course and then the students could critique (the work)." –2:23:1

Although the students may interact with the content individually, it can be designed to communicate to students the participation in a wider learning community, which can help them build knowledge through collaboration with others outside their online course.

> "I call (these) community learning activities. (The students) have to go out into the community and choose a client...They prepare their interview questions...and they have to get consent from the client and they videotape (the interview). Then they have to do a reflection on it, they write a report and they have to submit the video tape and the analysis report that they do." –6:8:53

> "I've done a couple of 'Hollywood squares' (interactive media pieces that employ brief video clips of experts or other personalities answering questions) and have tried to utilize people in the fields that the students are taking courses in. It's kind of nice (for students) to put a face to these people."— 7:20:1

Team members implemented online video-clip question-and-answer or quiz-type interactive pieces, which communicated course content through recorded video clips of various members of the learning community, both within the institution and from outside of it. Therefore, students were exposed not only to their instructor's delivery of the course content, but information and knowledge delivered through a series of cameo appearances by learning community members.

> "We have a clip of people who are in authentic situations, but we have students or faculty participate as actors....We really strive toward having that transfer of learning to the practical environment, and how better to do that than with a variety of media." –6:6:27

As well, design team members have looked to experts in the wider community, who demonstrate key skills and learning objectives in the course through recorded video and or audio tracks. For example, a community health practitioner can demonstrate on video how to appropriately conduct a patient interview, with a consenting patient. The video is online, incorporated into the course, and the student is free to review the video as many times as necessary, to reflect upon the demonstration of the practitioner's skill and knowledge. Design team members consistently recommended that content be designed in such a way as to mirror the workplace experiences that the student can expect, thus bringing "real-life" learning to the student as he or she interacts with content on his or her own time, thus allowing student "control" over knowledge construction and creating a collaborative environment (Garrison & Archer, 2000).

> "What (has been) included in the course that will empower students to have some control over their own learning?...(We build learning exercises)...we go into the OR (operating room) and have a virtual tour...the students in the course have an authentic form that is filled out in the OR, and from these videos, they have to do the count (of OR items before a surgery) themselves. It's just like being there." –6:6;11, & ¶8, line 23

One of the approaches advocated by design team members was to present content that opens the window of the wider community to the student, allowing the student personal flexibility to interact with the content. While real people can be used to demonstrate necessary knowledge and skills, designers can also create interactive media pieces. These pieces, for example, allow students to roll over areas with the mouse, revealing relevant information, or allow students to practice skills in simulated tasks like doing a tool and equipment count in preparation for a surgical procedure.

> "The students have to select the OR instrument and then select the category it belongs to, and put it on the table. It's a mock table, and they have to set it up...(Students) can't get enough of it...they can do it over and over again (to learn the material)." –6:8:34

The student may practice the task as many times as necessary through the interactive media piece, and may discuss this task, or the content of a video or audio clip, with the instructor or other course colleagues, thus collaboratively building a common understanding of the content with other members of the learning community. Students themselves can also contribute to the learning of future students.

> "We had three students who were in the course and we interviewed them. Then we waited until the students were finished the course...and we interviewed them again...Now students are hearing from other students who have grown through this experience (of the course)." –6:8:38

> "I found one thing that students appreciated was when I asked them for permission to use some of their artwork, and put it in an area for future offerings of the course as samples (of work) for (future) students to see...(Current students) felt it was really important to be contributing to this course in the future." –5:28:1

Content that invites interaction allows students to build relevant knowledge and can become the focus of further collaborative discussion. However, although the content may invite interaction, there is no guarantee students will take advantage of the

interaction unless the course includes some requirement for personal reflection or discourse with other students. Interactive course content pieces must be to some extent "irresistible" in order to draw students in and help achieve the goal of knowledge-building.

Considerations

In their practice of creating online courses, design team members generally saw balance as a critical guiding principle as they decided on what type and what amount of interaction to incorporate in online courses in order to encourage the development of a collaborative learning environment in the online community. They constantly strived to balance the needs of online students, who require flexible work times and may have limited experience with certain technologies, with their needs as a design team to create an engaging and interactive course within time and budgetary constraints, thus demonstrating their commitment to a learner-centred approach (Anderson, 2004; Lock, 2002; Garrison & Archer, 2000). Members of the course design team interviewed for this study were unanimous in their agreement that text on the screen, while a necessary part of the fabric of online courses, must be supplemented with course content that creates student-teacher, student-student and student-content interaction, in order to create a collaborative, knowledge-constructing atmosphere. The study interviewees identified the major factors which they must weigh as they decide on the modes and the amount of interaction and collaborative elements to include as they create online courses.

The length of the course and its subject matter: Some design team members expressed that it was easier to create an interactive community of learners for a course in interpersonal communication, for example, than it was for a course in computer programming or mathematics. However, other design team members flatly rejected any suggestion that subject matter necessarily limited interactivity, and noted it was then up to the design team to make the course come "alive" online.

> "If these courses are text online...that (isn't) the best learning environment...If you're not going to have a rich environment, why don't you just send out a course pack?" –6:16:14

Course length was an issue, in that team members did not want to "overload" students with expectations for interaction or collaborative work when there were other assignments that had to be completed within a specific length of time.

> "There might (be) so much interaction that there might not (be) time to keep up with it...You have to set definite time limits (on postings for discussions) so you get a response (before moving on to the next topic)." –8:10:13

However, it was generally thought that whatever the subject matter for the course, the discussion board tool was an anchor in providing a means for students to interact, ask questions, and discuss course content, thus assisting them to gain a sense of a learning community within the course and providing a vehicle for collaborative knowledge-building, similar to a face-to-face classroom.

> "The discussion board is the tool that I encourage the SMEs (subject matter experts) to use in every one of their courses." –9:26:1

> "(The discussion board should be similar to) the discussion in a classroom (with an exchange of a variety of ideas)...A good instructor is going to...bring up differing viewpoints, different perspectives, add perspectives." –4:14:9

Again, while the face-to-face classroom can be used as a standard, designers would do well to make clear in their minds that they are thinking of the collaborative exchange that can take place in the best examples of traditional classrooms.

Pedagogical reason for incorporating a particular form of interactivity: No matter what element of the course was used to encourage student-student and student-teacher collaboration, design team members all expressed the need to link the element to the learning goals of the course. Even though activities might seem to have only a social function—for example, an icebreaker session on the discussion board—it was expressed by team members that such activities served the purpose of encouraging the feeling of a course community among learners, thus assisting them in building interpersonal support that furthered their learning goals. As well, a discussion board icebreaker, for example, can serve as an important forum for the instructor to discover the students' course expectations, and to communicate expectations about the course. The instructor is also able to offer reassurance to those who have never before taken an online course, to inform them of what to expect as the course proceeds. Design team members noted that students always have a time budget, and that any demands placed upon them for interactivity online or collaborative work must enrich their learning and maintain the focus on the course learning outcomes. All of these elements fit with Lock's (2002) guidelines for building community through online course design, which include an awareness of community by course designers, a reflection upon specific steps to foster community, and a promotion of community-building.

> "When we design the online course, we have to keep in mind that we want to build community into our course and we want to build a community into our pedagogy." –9:18:3

The promotion of a community—which can support students and give them a medium for collaboration and reaching their learning goals—as a key part of the instructional design process assists students in taking an active part in their learning, and offers one of a variety of strategies to aid their learning:

> "(Part of the) framework for my design is that intentional learning is a student responsibility....I like to give students some options (for ways in which to learn)....I like to have students think about how they have learned." –6:4:10

Again, the opportunities for reflection on learning processes and engagement in community-building must become part of the course design, otherwise students will not likely take these steps on their own.

Time and budget for course design: Every course has a financial budget and a time budget, and design team members were aware of these practical restrictions when creating course elements that encouraged interactivity and community. Again, the discussion board and chat features, basic tools within WebCT, were identified as key methods of allowing students to interact and collaborate online; also identified was free software available to students and course designers alike.

> "The tools are there. I don't think we're using the tools to their full capability." –4:16:1

> "There are so many things that are at our fingertips (through the organization) and freeware out there. CMap is free. Audacity is another one." –6:14:30

Incorporating content into interactive media pieces, or audio or video clips, was done as time and budget allowed, although design team members agreed that it was generally

desirable to include as many of these features as possible in order to enhance engagement and interest among students, and to provide them with more venues for collaboration. It was recognized that highly creative task simulations, for example, could be costly in terms of design time and resources, so ways to reduce costs, such as having multimedia students design an interactive game, could be sought. Design team members also pointed to ways students could interact with content for "free," for example, by conducting web searches guided by specific criteria and presenting the results of their research in a discussion board presentation.

However, it should be noted that time invested in developing creative, interactive media pieces that engage students is worthwhile, not only because students' learning opportunities are enhanced, but also because such learning objects can be used in other online courses or in face-to-face classes, thus enriching the traditional classroom.

Student time: Team members were consistently aware that one of the key reasons for students to take online courses is that they allow students flexibility in terms of time. The study interviewees recognized that many online students are likely working, or are constrained by the demands of taking an on-campus program, and are taking an online course to gain a credit within a flexible time frame. Design team members recognized that requirements for participation in an online community placed limitations on students' time, and they were careful to weigh the learning need for community participation with the student's individual need for flexibility.

> "My thought on course design altogether is really one of simplicity, make things really simple to do. If we are going to want to encourage community, we are going to have to make it really easy. It can't be cumbersome from a technological standpoint or difficult from a time management standpoint in terms of

> synchronization. I think you'll get more buy-in from students if you make it simpler in both regards." –2:33:1

Some design team members also felt it was difficult to pinpoint the audience for some courses, since the courses could be requirements common to various programs. Given some difficulty in envisioning exactly who the students would be and what their needs were, some design team members preferred to incorporate a somewhat lower demand for interactivity than might be indicated by the course subject matter. However, interaction and collaborative knowledge-building through online discussions remain key elements of course design, in order to make use of the advantages of the online environment for flexibility and creativity. Even design team members who took care to point out that some students want only to complete the coursework and do not want to interact with others also noted that interactive elements within the course, like discussion board postings, were important to creating a course that was engaging to all students.

It should be noted that while a simple design approach may entice students to participate, they also need a context in which to operate. The benefits of participating in an online learning community need to be clearly explained to students, as part of the course content, in order to help students appreciate the need for interaction and involvement.

Instructor time: Study interviewees were also aware that activities like instructor-mediated discussions, and requirements for collaborative projects and timely feedback, all place constraints on instructors' time. They were aware that instructors or course facilitators may well have close to full face-to-face teaching loads. Therefore, instructor

time was also a factor which was weighed by design team members when including interactive elements in the course. However, design team members expressed that it was important for the instructor to take an active role in building the online course community, through activities such as welcome sessions and icebreakers, and through being available either online or over the telephone.

> "The facilitator or instructor needs to get in (to the discussion board) and keep the conversation moving....As well, timely feedback to students (is) critical...Most students (in the course that the interviewee facilitated) weren't interested in the grade, they were interested in how they got the grade." –4:14:8, & ¶20, line 3

> "A good instructor...can carry the course, to clarify things, giving timely feedback, and encouraging students along the way." –5:16:10

"Quality teaching" was one of the factors mentioned in creating an online community and a successful online course that helped students achieve their learning goals. Some design team members acknowledged that the implications of quality online course facilitation have only begun to be explored, and that the issue will have to be examined more fully by the institution and its instructors.

Given the expectations for instructors to assist in effective delivery of an online course, it is necessary for the course design framework to support the instructor's many roles. In other words, while student time is an issue, course designers should also consider instructor time, and attempt to balance time demands so that the instructor can take an active part in community-building.

Demonstration of equivalency

In weighing the various factors described above and deciding what elements to incorporate in order to encourage, create or facilitate an online learning community built

on a collaborative environment, design team members acknowledged that different interactive activities could "stand in" for each other, although it was often preferred by team members to have a mix of student-teacher, student-student and student-content interaction, rather than to choose just one. The desire to have a mix of more than one type of interaction was a preference rather than a hard-and-fast rule for the design team, and practical constraints like course subject matter sometimes suggested a time and cost-effective use of one type of interaction over another. It was expressed by study interviewees that sometimes a predominance of one type of interaction was featured, for example, student-student interaction, in courses that were project or collaboration-based, and that these courses were effective in providing learning opportunities for students and helping students reach their desired learning goals, even though there were lesser degrees of other types of interaction.

> "I work on a lot of...courses where they are interacting with the instructor more (than other students), asking questions...whereas if it's a design course, (the students) want to design things and put them up (in the discussion area) and critique each other's work, and talk about their process." –5:6:5

In their design practice, design team members regularly demonstrated Anderson's equivalency theory by taking as their guiding principles flexibility and balance in creating online courses that were interesting and engaging for students, but which acknowledged constraints of students' time and the institution's budget. Garrison and Archer (2000) point to the need for the design process to be iterative, in order to take advantage of the collaborative understanding of course material that is built as a course is taught to various students over time, a point acknowledged by study participants.

> "There are a lot of things that can be done in a learning community that could not easily be done in a fixed learning object....(The course experience) is always

> expanding, it's always changing, it's always evolving because while you teach the same course, at different times, although your learning objects or learning outcomes or learning activities are not changing that much, what's going on in the online community is actually a compilation of what's going on over time." –9:36:3

Anderson suggests that consideration of the equivalency of three key types of online course interaction should be "focused on creating the most cost effective and accessible alternatives that can scale to meet the burgeoning global demand for effective and affordable life long learning opportunities. In most cases, these models will drastically reduce the amount of teacher-student interaction, and substitute it with increased student-student and student-content interaction (2003, ¶45)." However, Lock's (2002) guidelines for building online learning communities based on communication, collaboration, interaction and participation would suggest that instructor involvement remains key to online learning, and that mechanisms to build a collaborative community must extend beyond the course design team to the institution and its framework. Although design team members in this study did not express a conscious desire to reduce student-teacher interaction, and in fact stressed its importance in facilitating the creation of an online learning community, they did demonstrate knowledge and use of equivalency of interaction in structuring courses that take into account practical considerations like limitations on students' and instructors' time, and course design budgets; the resulting courses routinely feature high levels of at least one of the three key modes of interactivity—student-teacher, student-student and student-content—that help to create a constructivist learning environment (Garrison & Archer, 2000).

VI. Conclusion: Quality Interactions

Through the weighing of practical and educational factors, online course design team members demonstrate Anderson's (2003) theory of equivalency, although instructor feedback and involvement remain critical elements for fostering collaborative learning and community, as advocated by Lock (2002) and Garrison and Archer (2000). The examination of, and reflection upon, current practice, can inform and shape future practice of online course design teams at this and other technical institutions (Calder, 2000; Trindade, Calder & Bidarra, 2000; Garrison & Archer, 2000). The decision-making process which occurs as the design team considers the incorporation of elements of course content and structure is guided by the institution's curriculum model, as described earlier, as well as recognition by individual design team members that incorporating elements which encourage a collaborative learning community can assist online students in achieving their learning goals.

In reflecting on the design team's practice from the perspective of an instructor and content contributor or subject matter expert who has contributed to the development of online courses at this institution, it appears some of the decision-making is guided by the goal of creating the same collaborative community of learning approach that can exist in face-to-face classrooms. However, it must be recognized that such an atmosphere is an often unreachable goal for even face-to-face classrooms, where there may be large numbers of students in a class or limited time for delivery of extensive course content. Literature would suggest that online courses may actually be more interactive than face-to-face delivery, since there may be a richer media environment that offers students more

opportunities for interaction with other students, the instructor and the content that is not limited by time or physical location (Shearer, 2003; Rovai, 2002). The strengths of the online environment should be promoted consistently by the institution and its designers so that the strengths are used to the greatest benefit of students and the organization.

The quality of interaction in online courses is also an important consideration for the institution and its course designers. Anderson's (2003) theory of equivalency may provide some solace to instructional design teams who must balance sometimes competing interests—i.e., quality student instruction for reasonable cost—offering a theoretical grounding for the choices they must make in featuring one type of interactivity over another, or in reducing a particular type of interactivity as budgets dictate. Anderson would suggest that as long is there is a significant amount of at least one kind of interaction—student-teacher, student-student, or student-content—meaningful student learning still occurs. Yet the quality issue must be addressed, as design team members recognize, so that course content is deeper and richer than mere text on the screen, and instructor interaction is more than having a facilitator answer e-mail after a week's delay. Quality standards for course interactions should be established by the institution and by designers themselves at a level which requires sustained interchange sufficient for the development of knowledge and deeper understanding of the course material. The creation of community as a social support network for students is important and useful to their learning, but the institution and its designers can make design and development of current and future courses the venue for fostering truly collaborative knowledge-building, through continued reflection on their practice and

sharing of their experience. The institution has a lead role in fostering this relationship among designers.

The learning objective is the basis of each design decision—the design team ensures each specific piece of course content brings the learner further down the road to reaching a learning goal. The pedagogical considerations operate in the context of financial considerations. It is recognized that design teams, or educational institutions, do not have endless supplies of time and money. As design team members noted, there is a particular pace to the design of courses which must be adhered to—there is sometimes a feeling among design team members that it is difficult to reflect on practice because it is necessary "to move onto the next project." However, establishing a minimum standard for quality of interactions in online courses may well save designers time and effort in doing their work.

In discussing their practice of building online community, specifically in relation to interactivity and building a collaborative environment, design team members shared a number of approaches and techniques that could be considered good practice (Calder, 2000)—based on a flexible approach that recognizes institutional constraints and learner needs. Although it was expressed in one interview that building a learning community was not emphasized as a goal of course design, elements of collaborative work, whether it was through students interacting with content, other students, or the instructor, were viewed as important by all design team members. Although the institution's curriculum model does not expressly state community building as a goal of online course design, elements that encourage the creation of a collaborative constructivist learning community are incorporated nonetheless by the design team (Garrison & Archer, 2000). These

elements are included even when design team members recognize that not all students come to online learning with a desire to participate in community. However, design team members agreed that students must be supported in their efforts to learn in an online environment, and a community that encourages communication, interaction, collaboration and participation (Lock, 2002) was identified as a key means of providing learner support (Trindade, Calder & Bidarra, 2000). Several elements identified by the online course design team can be incorporated that will assist in the development of a sense of community and the support of learners for each other. Such elements include:

- Using features which are inherent to the course management system to the best advantage, i.e., synchronous discussion tools when necessary and indicated by the course curriculum and asynchronous tools such as the discussion board. The discussion board tool can be used to introduce students to each other and the instructor, to ask questions about course content, to explore course content by making students responsible for presenting learning/information about a specific section of the content and for moderating the discussion on that section. The requirements for posting must strike a balance with the time demands of other assignments and further the learning goals of the course.
- Using student-student and student-instructor interaction judiciously—in a way that considers both the learning goals of the course and the demands on the students' and instructors' time. Student-content interaction can be created through incorporating interactive media pieces such as quizzes, sophisticated self-tests and tutorial pieces with high-quality graphics that reveal information as the student rolls over with the mouse, and video clips that demonstrate skills essential to the

learning outcomes of the course. Although creation of such elements can sometimes be costly in terms of design time, the pieces can also be re-worked and re-used in other courses and can provide a reliable way to present up-to-date information in an engaging manner. Such elements can enhance learner interest and engagement and maintain interest in the course content, and continued participation in the course community.

- Maintaining focus on the student and the student's successful achievement of course learning outcomes as the centre of all the design decisions in the course. While it must be recognized that students choose online learning because they are physically not able to or choose not to attend classes on campus and because they are pressed for time with employment, educational and family commitments, designers should ensure the use of community-building elements, since these elements enhance and promote the students' learning goals.
- As the educational needs of students are weighed against the practical considerations of course design, the learning goals of the course remain foremost. Elements of course content that may be expensive to build at the outset, but which are simply the most educationally effective way of delivering the material, can make courses engaging, collaborative and interactive, and should be considered routinely for inclusion in the course. Effective interactive content can make efficient use of both students' and instructors' time.

In reflecting on the current practice of the institution's online course design teams in terms of how the practice demonstrates Anderson's equivalency theory, future practice

can be shaped by the recognition that Lock's guidelines for building of a collaborative online community and Garrison and Archer's collaborative constructivist approach to course design require not only a minimum of one key element of interactivity—student-student, student-teacher or student-content—but also require high-quality interactions and instructor involvement appropriate to building and maintaining a collaborative learning environment. It remains for the institution to take a leadership role in ensuring instructor involvement in online courses is provided at a level that creates quality instructor-student interactions.

References

Anderson, T. (2003). Getting the mix right again: An updated and theoretical rationale for interaction. *The International Review of Research in Open and Distance Learning*, *4*(2). Retrieved June 1, 2005 from http://www.irrodl.org/index.php/irrodl/article/view/149/230

Anderson, T. (2003a). Modes of interaction in distance education: Recent developments and research questions. In M. Moore & W. Anderson (Eds.), *Handbook of Distance Education* (pp. 129-144). Mahwah, N.J.: Lawrence Erlbaum Associates.

Anderson, T. (2004). Toward a theory of online learning. In T. Anderson & F. Elloumi (Eds.), *Theory and Practice of Online Learning* (pp. 33-60). Edmonton: Athabasca University.

Anderson, T., & Garrison, D. R. (1998). Learning in a networked world: New roles and responsibilities. In C. Gibson (Ed.), *Distance Learners in Higher Education* (pp. 97-112). Madison, WI: Atwood Publishing.

Blair, K., & Hoy, C. (2006). Paying attention to adult learners online: The pedagogy and politics of community. *Computers and Composition, 23,* 32-48.

Bolliger, D., & Martindale, T. (2004). Key factors for determining student satisfaction in online courses. *International Journal on E-Learning*, *3*(1), 61-67.

Brown, A., & Voltz, B. (2005). Elements of effective e-learning design. *The International Review of Research in Open and Distance Learning, 6*(1). Retrieved January 5, 2006 from http://www.irrodl.org/index.php/irrodl/article/view/217/300

Brown, J., & Duguid, P. (2000). *The Social Life of Information.* Cambridge, MA: Harvard Business School.

Brown, R. (2001). The process of community-building in distance learning classes. *Journal of Asynchronous Learning Networks*, *5*(2) 18-35.

Buckingham, S. (2003). Perspectives on the experience of the learning community through online discussions. *Journal of Distance Education*, *18*(2), 74-91.

Calder, J. (2000). Beauty lies in the eye of the beholder. The International Review of Research in Open and Distance Learning, *1*(1). Retrieved June 1, 2005 from http://www.irrodl.org/index.php/irrodl/article/view/6/340

Caplan, D. (2004). The development of online courses. In T. Anderson & F. Elloumi (Eds.), *Theory and Practice of Online Learning* (pp. 175-194). Edmonton: Athabasca University.

Carabajal, K., LaPointe, D., & Gunawardena, C. (2003).Group Development in Online Learning Communities. In M. Moore & W. Anderson (Eds.), *Handbook of Distance Education* (pp 217-234). Mahwah, N.J.: Lawrence Erlbaum Associates.

Conrad, D. (2005). Building and maintaining community in cohort-based online learning. *Journal of Distance Education, 20*(1), 1-20.

Conrad, D. (2002). Deep in the hearts of Learners; insights into the nature of online community. *Journal of Distance Education, 17*(1), 1-19.

Conrad, D. (2002a). Inhibition, integrity and etiquette among online learners: The art of niceness. *Distance Education, 23*(2), 197-212.

Curriculum Model. (1999). Saskatchewan Institute of Applied Science and Technology. Retrieved June 1, 2006 from http://programs.siast.sk.ca/planning-research-development/links.htm

Daniel, B., Schwier, R., & Ross, H. (submitted). Synthesis of the process of learning through discourse in a formal virtual learning community. *International Journal of E-Learning.*

Dewey, J. (1938). *Logic: The theory of inquiry*. New York: Holt, Rinehart & Winston.

Downes, S. (2001). Learning objects: Resources for distance education worldwide. *International Review of Research in Open and Distance Learning, 2*(1), 1-34.

Fahy, P. (2003). Indicators of support in online interaction. *The International Review of Research in Open and Distance Learning, 4*(1). Retrieved June 1, 2005 from http://www.irrodl.org/index.php/irrodl/article/view/129/209

Freeman, M., & Bamford, A. (2004). Student choice of anonymity for learner identity in online learning discussion forums. *International Journal on E-Learning, 3*(3), 45-53.

Garrison, D.R. (2000). Theoretical challenges for distance education in the 21st century: A shift from structural to transactional issues. *The International Review of Research in Open and Distance Learning, 1*(1). Retrieved June 1, 2005 from http://www.irrodl.org/index.php/irrodl/article/view/2/333

Garrison, D.R. (1991). *Understanding Distance Education: A Framework for the Future.* London: Routledge.

Garrison, D.R., Anderson, T., & Archer, W. (2003). A theory of critical inquiry in online distance education. In M. Moore & W. Anderson (Eds.), *Handbook of Distance Education* (pp. 113-128). Mahwah, N.J.: Lawrence Erlbaum Associates.

Garrison, D.R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, *2*(2-3), 1-19.

Garrison, D.R., Anderson, T., & Archer, W. (2001). Critical thinking, cognitive presence, and computer conferencing in distance education. *The American Journal of Distance Education*, *15*(1), 7-23.

Garrison, D.R., & Archer, W. (2000). *A Transactional Perspective on Teaching and Learning: A Framework for Adult and Higher Education.* Oxford: Pergamon.

Granger, D., & Bowman, M. (2003). Constructing knowledge at a distance: The learner in context. In M. Moore & W. Anderson (Eds.), *Handbook of Distance Education* (pp. 169-180). Mahwah, N.J.: Lawrence Erlbaum Associates.

Hall, R., Watkins, S., & Eller, V. (2003). A model of web-based design for learning. In M. Moore & W. Anderson (Eds.), *Handbook of Distance Education* (pp 367-376). Mahwah, N.J.: Lawrence Erlbaum Associates.

Hillman, D. (1999). A new method for analyzing patterns of interaction. *The American Journal of Distance Education*, *13*(2), 37-47.

Hirumi, A. (2002). The design and sequencing of e-learning interactions: A grounded approach. *International Journal on E-Learning*, *1*(1), 19-27.

Hung, D. (2002). Forging links between "communities of practice" and schools through online learning communities: Implications for appropriating and negotiating knowledge. *International Journal on E-Learning*, *1*(2), 23-33.

Hung, D., & Nichani, M. (2002). Differentiating between communities of practice (CoPs) and quasi-communities: can CoPs exist online? *International Journal on E-Learning*, *1*(3), 23-29.

Jeong, A. (2003). The sequential analysis of group interaction and critical thinking in online threaded discussions. *The American Journal of Distance Education*, *17*(1), 25-43.

Kanuka, H. (2002). Guiding principles for facilitating higher levels of web-based distance teaching and learning in post-secondary settings. *Distance Education*, *23*(2), 163-182.

Kanuka, H. (2000). Review: E-Moderating: The key to teaching and learning online. *Adult Education Quarterly*, *51*(1), 78-82.

Lave, J., & Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation.* New York: Cambridge University Press.

Lobel, M., Neubauer, M., & Swedburg, R. (2005). Selected topics from a matched study between face-to-face section and a real-time online section of a university course. *The International Review of Research in Open and Distance Learning*, *6*(2). Retrieved January 5, 2006 from http://www.irrodl.org/index.php/irrodl/article/view/234/319

Lock, J. (2002). Laying the groundwork for the development of learning communities within online courses. *The Quarterly Review of Distance Education*, *3*(4), 395-408.

Ludwig-Hardman, S., & Dunlap, J. (2003). Learner support services for online students: Scaffolding for success. *The International Review of Research in Open and Distance Learning*, 4(1). Retrieved June 1, 2005 from http://www.irrodl.org/index.php/irrodl/article/view/131/211

Luppicini, R. (2003). Categories of virtual learning communities for educational design. *The Quarterly Review of Distance Education*, *4*(4), 409-416.

Luppicini, R. (2002). Toward a conversation system modeling research methodology for studying computer-mediated learning communities. *Journal of Distance Education, 17*(2), 87-101.

MacDonald, C., & Thompson, T. (2005). Structure, content, delivery, service and outcomes: Quality e-learning in higher education. *International Review of Research in Open and Distance Learning*, *6*(2). Retrieved January 5, 2006 from http://www.irrodl.org/index.php/irrodl/article/view/237/321

Moore, M. (2003). Preface and overview. In M. Moore & W. Anderson (Eds.), *Handbook of Distance Education* (pp.ix-xxiii). Mahwah, NJ: Lawrence Erlbaum Associates.

Moore, M. (1993). Theory of transactional distance. In D. Keegan (Ed.), *Theoretical Principles of Distance Education*, (pp 22-38). New York: Routledge.

Naidu, S. (2003). Designing instruction for e-learning environments. In M. Moore & W. Anderson (Eds.), *Handbook of Distance Education* (pp 349-366). Mahwah, NJ: Lawrence Erlbaum Associates.

Ng, C., & Hung, D. (2003). Conceptualizing a framework for design of online communities. *International Journal on E-Learning*, *2*(4), 60-71.

Northrup, P. (2002). Online learners' preferences for interaction. *The Quarterly Review of Distance Education*, *3*(2), 219-226.

Paloff, R., & Pratt, K. (1999). *Building Learning Communities in Cyberspace: Effective strategies for the online classroom.* San Franscisco: Jossey-Bass.

Parchoma, G. (2003). Learner-centred instructional design and development: two examples of success. *Journal of Distance Education*, *18*(2), 35-60.

Paulus, T. (2005). Collaborative and cooperative approaches to online group work: The impact of task type. *Distance Education*, 26(1), 111-125.

Peters, O. (2003). Learning with new media in distance education. In M. Moore & W. Anderson (Eds.), *Handbook of Distance Education* (pp 87-112). Mahwah, N.J.: Lawrence Erlbaum Associates.

Peterson, C., & Bond, N. (2004). Online compared to face-to-face teacher preparation for learning standards-based planning skills. *Journal of Research on Technology in Education*, *36*(4), 345-360.

Rovai, A. (2002). Building Sense of Community at a Distance. *The International Review of Open and Distance Learning*, *3*(1), 1-16.

Saba, F. (2000). Research in distance education: A status report. *International Review of Open and Distance Learning*, *1*(1), 1-9.

Schwitzer, A., Ancis, J., & Brown, N. (2001). *Promoting Student Learning and Student Development at a Distance*. Lanham, Maryland: University Press of America.

Schwitzer, A., & Lovell, C. (1999). Effects of goal instability, peer affiliation, and teacher support on distance learners, *Journal of College Student Development*. *40*(1), 43-53.

Seufert, S., Lechner, U., & Stanoevska, K. (2002). A reference model for online learning communities. *International Journal on E-Learning*, *1*(1), 43-55, 66.

Shearer, R. (2003). Instructional design in distance education: An overview. In M. Moore & W. Anderson (Eds.), *Handbook of Distance Education* (pp 275-286). Mahwah, N.J.: Lawrence Erlbaum Associates.

Strauss, A., & Corbin, J. (1990). *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Newbury Park: Sage.

Trentin, G. (2002). From distance education to virtual communities of practice: The wide range of possibilities for using the internet in continuous education and training. *International Journal on E-Learning*, *1*(1), 55-66.

Trindade, A., Carmo, H., & Bidarra, J. (2000). Current developments and best practice in open and distance learning. *The International Review of Open and Distance Learning*, *1*(1). Retrieved June 1, 2005 from http://www.irrodl.org/index.php/irrodl/article/view/7/342

Tu, C.H. (2002). The measurement of social presence in an online learning environment. *International Journal on E-Learning*, *1*(2), 34-45.

Vrasidas, C., & McIssac, M. (1999). Factors influencing interaction in an online course. *The American Journal of Distance Education*, *13*(3), 22-34.

Wenger, E. (1998). Communities of Practice: Learning as a Social System. *Systems Thinker*, *9*(1), 1-10.

Wenger, E. (1998a). *Communities of Practice: Learning, Meaning and Identity.* Cambridge: Cambridge University Press.

Wenger, E. (2005). What are communities of practice? *Etienne Wenger*. Retrieved May 27, 2005 from http://www.ewenger.com/theory/index.htm

Wilson, B., Ludwig-Hardman, S., Thornam, C., & Dunlap, J. (2004). Bounded Community: Designing and facilitating learning communities in formal courses. *The International Review of Research in Open and Distance Learning*, *5*(3). Retrieved June 1, 2005 from http://www.irrodl.org/index.php/irrodl/article/view/204/286

Appendix

Interview Guide

The purpose of this study is to determine factors that contribute to the creation of community in an online learning environment. Community is being defined according to Wenger's discussion of communities of practice: "Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly." Specifically regarding education, Wenger says educational institutions need to determine how to organize educational experiences so that learning takes place by learners' participation in communities around subject matters.

1. How long have you been in your current position, and what do you do?
2. How did you come to be involved in online course design/instruction?
3. What is your understanding of the word "community" in the context of online education? Give an example of ways you have created or supported community in the past.
4. In your experience and given your particular role in online course design or instruction, is community important to online education? Why? Describe different kinds of communities that occur in online education.
5. If it is important, identify what factors, from your perspective, help create community in online courses. If it isn't important, what factors are more important in facilitating learning? (Demonstration of course design or components.)
6. Which of these factors is most critical, and why?
7. What do you think should be done to promote/create/build into course design the factors that facilitate online learning?