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Online Learning: From Information Dissemination to Fostering Collaboration

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In this article the trajectory of an online course in which graduate students collaboratively investigated and shared their personal experiences with respect to adult development is described. For this study, naturalistic inquiry was used to gain a holistic view of this semester-long course and to identify the specific emergent issues that characterized course dynamics. Using open, axial, and, to a lesser degree, selective coding, the following three issues were selected for further discussion: (a) flexibility of course to accommodate participants; (b) co-construction of meaning through the sharing of personal experiences; and (c) the expression of vulnerability and personal growth. This course provided evidence that online courses can support deep learning about content, open sharing about personal experiences, and the development of a sense of camaraderie among participants. Students readily shared their feelings, critically examined course issues, extended their support in helping peers, and embraced many of the challenges of taking an online course. Implications are that benefits of online courses extend beyond the time and

> place independence they provide for participants, but also include the reflective and social environment they can foster. Additionally, in terms of developing environments to support interactivity, especially with respect to human-human interaction, it may be that less is more.

Over the last decade we have witnessed an explosion of the use of the Internet for supporting distributed education (Berge & Collins, 1995; Gilbert & Moore, 1998; Santoro, 1995). The Internet, and specifically the World Wide Web (WWW or Web), creates exciting opportunities to make information available to large numbers of users residing at distributed locations and who work at different times. As such, there are numerous courses and even entire degrees being offered online—referring to those courses taking place by way of a computer network (Berge, 1999; Bonk & King, 1998; Dehler & Porras-Hernandez, 1998; Herrman, 1998; Koble & Bunker, 1997; Simonson, Schlosser, & Hanson, 1999; Strong & Harmon, 1997). One frequently cited reason for the development of these online courses is the increased availability of educational opportunities to users who, if required to be at a particular location (e.g., university classroom) at a particular time, would not be able to take the course. Less frequently given as a rationale for these courses is that the learning climate that develops online is more supportive in terms of promoting reflection, intimacy, and community than are those climates that emerge in the traditional classroom learning environments (Sheingold, 1991; Spitzer, 1998). In fact, it has been argued that courses taken online are impersonal, superficial, misdirected, and potentially dehumanizing and depressing, with online courses actually disrupting the student-instructor interaction that creates a "learning community" (Nissenbaum & Walker, 1998; Trinkle, 1999).

The online dialogue being examined in this study, however, suggests that students were willing to be vulnerable, were engaged in deep learning, and indeed felt a sense of camaraderie with their online collaborators. It is the goal of this reporting of the data to engage readers in the course trajectory, helping them to develop a contextualized understanding of the course experience and, in the process, a contextualized appreciation for the potential of online courses to situate learning and for contributing to personal growth. While some researchers of online courses and distance education have taken the position that research in this area should focus on conducting controlled studies that can demonstrate cause and effect and result in predictive models (Merisotis & Phipps, 1999), we are not arguing for a particular path to be taken in the development of online learning environments or

even for a particular tool in this regard. In this online course only very simple interaction tools were used (e-mail, threaded message boards, chats), with the focus being on using computers to support human-human interactions as opposed to human-computer interactions.

Two researchers studied a graduate level course focused on "the study of contemporary adult life with emphasis on the individual in the context of the field of professional practice of adult education" (Class Syllabus, 1999). Using naturalistic inquiry and the constant-comparison method (Glaser & Strauss, 1967), the researchers examined all course postings and interviewed the instructor and a subset of students to develop a robust account of the course. We begin with a description of online courses, highlighting relevant previous research and then discuss this research in relation to adult education. A description of the research and course context then follows, illuminating three emergent issues that were central to, and framed, this reporting of the data. These findings are then discussed in terms of how the course design supported a sense of community, providing a backdrop for a broader discussion of the educational implications of online courses.

ADULT EDUCATION

The need for providing learning experiences and supportive climates for adults is important in the increasingly complex and frenetic American society. Adults are challenged by new life patterns with multiple careers (and the transitions in between to negotiate) and with fewer stable social structures to rely upon (Hudson, 1999). Adults are living longer and so are their parents, which brings additional stress at different points in the life span. As the past becomes less helpful as a guide to living in the present and more unreliable for the future, adults feel less secure about decisions and perhaps less confidence in their ability to make good choices from the bewildering complexity of career, family, and personal life choices open before them. A central challenge for educators is to support the emergence of environments for adults to participate in their own learning with respect to those issues that are integral to their lives. A central goal of this research was to empirically examine one such online, learning environment.

Malcolm Knowles described a conceptual framework for facilitating adult learning 30 years ago with the exposition of his worldview perspective he labeled andragogy. In contrast to pedagogy, the teaching of children used in K-12 education, andragogy is based on the relationship between learner and facilitator in which it is the facilitator's responsibility "to provide a caring, accepting, respecting, helping social atmosphere" (Knowles,

1984, p. 17). Knowles described an andragogical design process for adult learning as characterized by seven elements. Pratt (1993) summarized the elements of the process: "(a) climate setting, (b) involving learners in mutual planning, (c) involving participants in diagnosing their own needs for learning, (d) involving learners in formulating their objectives, (e) involving learners in designing learning plans, (f) helping learners carry out their learning plans, and (g) involving learners in evaluating their learning" (p. 19). The emphasis on andragogy is not, however, intended to imply that adults as opposed to children should be taught in this manner. When adult education is discussed, it is not simply referring to education that brings adults up to some chosen mark of formal schooling; instead, it is referring to educational experiences that are intentionally designed to address adult issues, needs, and strengths (Darkenwald & Merriam, 1982; Grattan, 1955). Although our theoretical perspective has much overlap with other learning theorists (e.g., Bruner, 1986; Dewey, 1963; Vygotsky, 1978), highlighting Knowles' (1984) seven elements of andragogy illuminates important themes that have characterized much of the adult learning literature (Feuer & Geber, 1988), and illuminates the pedagogical commitment of the instructor who taught the course being researched in this paper.

While not all adult educators accept the distinction between pedagogy and andragogy, many agree with Knowles emphasis on the freedom of the adult learner to become a more self-directed learner and autonomous individual, and the power of the human agency to overcome social structures and individual circumstances in pursuit of learning to effect life change (Caffarella, 1993; Stoney & Oliver, 1998). In fact, and consistent with other learning theorists (Bandura, 1986; Schunk, 1989), it is our belief that all learners should be encouraged to become more self-directed learners. However, learning and motivation are not constructs residing solely in the mind, and we argue that human behavior should be described in terms of a reciprocal interaction among individual and environment (Barab, Cherkes-Julkowskie, Swenson, Garrett, Shaw, & Young; 1999; Gibson, 1986; Resnick, Levine, & Teasley, 1991). Since learning occurs as part of a social, physical, and cultural context, the learner acts and is acted upon by the environment (Goodenow, 1992).

A central conviction underlying our perspective is that learning is a social act best supported through collaborative interplay among human beings—an interplay that can be effectively supported through the use of tools (Bruner, 1985, 1986; Resnick, 1987). This view of learning is consistent with Lev Vygotsky (1962, 1978), who considered meaning to be a cultural construct and who argued that learning is a social process involving collaborative activities. The social environment is central in providing

alternative views and other information that individuals can use to test the viability of their understanding and in building the body of propositions that constitute "knowledge." Savery and Duffy (1995, p. 136) argued that, "collaborative groups are important because we can test our own understanding and examine the understanding of others as a mechanism for enriching, interweaving, and expanding our understanding of particular issues or phenomena." Therefore, an important goal for online learning is to support learners in making their ideas public, providing opportunities for them to build and refine meanings based on their own experience and that of their peers (Scardamalia & Bereiter, 1994). While the introduction of innovative and complex technical structures can support educationally useful human-computer interactions, the focus of this research was on building a story of what can happen when technology is used to support human-human interactions.

ONLINE COURSES

In contrast to traditional "delivery" models of education frequently associated with correspondence or mass communication models of distance education, current visions of web-based instruction and computer-mediated communication support more "participatory" models of education (Barab & Duffy, 2000; Barab, Squire, & Dueber, 2000). In these participatory learning environments, students are not receivers of someone else's information and imposed meanings, but instead are actively involved in the creation of their own understandings and meanings (Barab, Hay, Barnett, & Keating, 2000). It is toward the development of increasing participation, not simply information dissemination, that many online courses are now directed (Berge, 1999; Bonk & King, 1998; Gilbert & Moore, 1998). Online education can involve both synchronous (real time, e.g., chat groups or video conferences) and asynchronous (e.g., discussion groups, mail groups) communication, as well as one-way informational postings (articles, documents, videos) that can serve as objects for supporting interaction. There has been much discussion with respect to the "technical" dimension of distance learning. However, less often discussed is the equally important "human" or social dimension to these environments (Gilbert & Moore, 1998; Spitzer, 1998). The focus of this research was on this social dimension, and it is this aspect that is highlighted in this brief discussion of online learning environments.

Those who are skeptical regarding the potential of web-based instruction to support robust interaction are usually referring to supporting both social and instructional interactions (Gilbert & Moore, 1998). Skeptics believe that web courses will not be able to duplicate the perceived social

attributes of face-to-face instruction, or the adaptive interaction with instructional content that an effective teacher can encourage during face-to-face instruction. However, there has been much research that has found cognitive achievement of online, distance education to be comparable with traditional education, and in some cases superior to it (Barker & Platten, 1988; Barry & Runyan, 1995; Beare, 1989; Kabat & Friedel, 1990; Ritchie & Newby, 1989). It is the contention here that computer-mediated communication tools create new opportunities for distance education courses and have the potential to facilitate increased instructional, as well as, social interactivity.

With respect to research regarding synchronous interactions, there has been some research suggesting less overall interaction in text-based than in face-to-face communication (Lebie, Rhoades, & McGrath, 1995). However, research comparing asynchronous interactions with face-to-face interactions has found more promising evidence of robust interactions in asynchronous text-based communication (Johnson, Argaon, Shaik, & Palma-Rivas, 2000; McDonald & Gibson, 1998; Mikulecky, 1998). In fact, many educators have suggested that asynchronous computer-mediated communication actually promotes reflective and critical thinking due to the fact that it allows time for reflection and revision of postings that are perceived as having more permanence than the spoken word (Boyd, 1990; Dehler & Porras-Hernandez, 1998; Harisim, 1989; Jaeger, 1995). The interactions can be of a more open and personal nature due to the "anonymous" feel of text-based communication, adding a social component to class dialogue (Harasim, 1990; Mikulecky, 1998).

In one study, Mikulecky (1998) carried out an exploratory examination in which he characterized the student discussion of web-based and campus-based adolescent literature classes. In general, he found that both courses had high degrees of student participation, addressed practical teaching problems, linked class content to personal experience, and made links among different class materials. With respect to differences, Mikulecky (1998) concluded that: "in addition to engaging in lengthier and arguably more thoughtful discussion, web-based students seemed to get to know one another better and treated one another with more warmth and dignity than did students in other contexts" (p. 96). He credited the lengthier and more thoughtful discussion to the fact that students could pause and reflect and refer to other resources before responding. He also hypothesized that the "staring faces of 20 classmates can limit self-disclosure, and the adamant face of someone speaking a strong opinion can discourage others who might disagree" (p. 97).

In a research study conducted on a graduate-level, computer-mediated course, McDonald and Gibson (1998) combined Henri and Rigualt's (1996)

content analysis model for analyzing computer transcripts and Lundgren's (1977) model of group development as a basis for devising a coding scheme to examine course interactions. A primary focus in this research was to understand the percentage of postings that were interpersonal, and the types of interpersonal communication. Findings suggested that 50-75% of course postings were interpersonal with postings coded as *solidarity* (giving or offering help, show of affection, warmth, liking, trust, closeness, unity, or cohesiveness) or as *openness* (expressions of feelings and self-disclosure) constituting 60-90% of all interpersonal postings. Further, the three different groups they researched were remarkably similar in the linear trends of group development over time, indicating a potential pattern of group development. When they compared their findings with those models and findings described by researchers examining face-to-face interactions (Lundgren, 1977; Schutz, 1983), they concluded "that people meeting, discussing, and collaborating as a group via computer conferencing have similar interpersonal issues, at comparable stages and proportions, as reported in the literature for face-to-face groups" (p. 20). In addition, participants formed cohesive, functioning groups with affection, measured as openness and solidarity, found to be central to their interactions throughout the course. In our study, rather than focusing on coding percentages of interactions with respect to particular categories, the focus was on examining the overall course trajectory and on using naturalistic inquiry to identify and situate for the reader the central themes that characterize course dynamics. What makes these findings of interest is the depth, quality, and intimacy of course interactions, and the fact that they all occurred as part of text-based online communication.

THE COURSE CONTEXT

Participants

The course setting was a graduate-level computer-mediated course taught in the Fall of 1998. The class consisted of 34 students, 23 female and 11 male, ranging in ages from 27-56. Most were taking the course as part of the requirements for obtaining a master's degree in Adult Education. About one-fifth of the course participants had no prior exposure to the technology used in the course, another fifth were extremely technology competent (i.e., were using the Internet as an everyday part of their work and personal life), and the remaining students had limited computer literacy and web-browsing

experience. Several students were beginning a graduate program after a long hiatus during which they had been working or raising a family.

Course Structure

The course environment was set up entirely as an online Website that was password-protected and included nine separate areas each consisting primarily of a threaded, online discussion board: Course Homepage, Announcements, Calendar, Syllabus, Questions, Discussions, Readings, Roster, and Help. The course was arranged in chronologically progressive steps to be completed by the course participants. These steps, called modules, were assigned specific time periods within which course participants would engage in activities for that particular module and ranged from topical discussions to the posting of online articles and URLs (Table 1). There was an initial meeting and a closing meeting in which students communicated using a video-based conferencing system. Aside from these two video-based meetings, all formal course contact took place using the asynchronous and, less frequently, synchronous conferencing tools. The course conferencing tools included a threaded message board and a chat space, both of which were created for this course.

The Course Homepage provided a brief overview of the course objectives and provided links to the eight course modules. Associated with five of the modules were threaded, group discussion areas in which all students could share their work, and for Module Three there were eight small group discussion areas and one entire class area where they would share the outcome of their small group work. These modules defined all course expectations, and the discussion areas and seven available chat areas constituted the virtual spaces where interaction would occur. The instructor in the Announcements message board posted any changes to these expectations.

In addition to the discussion groups associated with each module and the Announcements message board, there were also two other virtual spaces where asynchronous discussions occurred. The Questions space was a message board where students posted questions to be answered by the instructor or other students, with 85% (over 100 postings) being answered by the students. If participants preferred to ask questions in a private setting, the instructor invited questions via electronic mail. There was also In The Hall, which was a "general discussion area" where students made 122 postings about topics including assignment questions, technology concerns, off-task socializing, and posting of various resources. Also important to note was the Roster area in which student pictures and biographies were posted.

Table 1
Course Message Boards

Name of Message Board	Postings	Purpose of Message Board	Location in Course
Announcements	46	Instructor posts one-way messages to the participants	Whole course 9/1/98 - 12/21/98
Questions	113	Participants are invited to ask questions of the instructor. Both participants and instructor post responses	…
In the Hall	122	General course discussion, as well book summaries	…
Class member Bios	39	Assigned responses in which participants posted autobiographical sketches	Module 1 9/1 – 9/14
URL Reviews	87	Assignment responses in which participants posted and reviewed three relevant web sites.	…
Module 2 Discussion	63	Responses to assignments presented in Module 2. Most postings discuss course readings and an autobiographical timeline exercise	Module 2 9/15 – 9/28
Research Article Summaries	34	Participants post reviews of relevant articles	…
Register for Module 3 Chats	37	Participants register for chat times	…
8 Theorist Groups	104 (total postings for all eight groups)	Eight separate message boards that served eight small participant groups These groups responded to an assignment on adult education theorists. Each group investigated one theorist and used a message board to collectively produce a paper on a theorist.	Module 3 9/29 – 10/12
Theory outlines	14	Participants discuss theoretical frameworks presented in the course	…
Module 4 Discussion	29	Participants compare and contrast two theorists presented in the course	Module 4 10/13 – 10/26
Register for Module 6 chats	39	Participants register for chat times	Module 5 10/27 – 11/9
Module 7 Discussion	32	Participants provide feedback to the instructor on various aspects of the course	Module 7 11/24 – 12/7

Course Content

Central to the instructor's pedagogical commitment, and consistent with notions introduced by Knowles (1984) and other adult educators (Darkenwald & Merriam, 1982; Grattan, 1955; Feuer & Gerber, 1988; Pratt, 1993), the course was designed to support the participants in becoming more self-directed learners in which they took responsibility for their own development and change. An interesting and unique feature of this

course was the interrelationship between the course content and the circumstances of the participants taking the course. In this way, there was much overlap between the course "content" and the course "context," with the participants studying adult development and learning as they were experiencing the same phenomenon. In one student's words, "We are a study in adult development ourselves! In this class, I could read Hudson [an adult development theorist], reflect on my own life, then go to class or a chat, and see others in different situation." Also consistent with notions central to adult education, the course was designed to be flexible and to support participants in the investigation of issues and the building upon experiences particular to their own lives.

Briefly, those assignments that relate to presented data, are overviewed. The course began with students posting autobiographies in module one, followed by URL reviews of three sites and the completion of a personal learning contract with the instructor. Students were then expected to complete a timeline assignment in which they filled in a posted timeline with their own personal events, and read the first chapter of a book by Hudson, *The Adult Years: Mastering the Art of Self-Renewal*. In this opening chapter, Hudson relates an emotional story in which he discusses being paralyzed as a child and what he learned from that experience. Throughout the chapter, he interweaves his abstract conjectures about the process of adult development with case examples to illuminate, among other topics, notions of embracing change and notions of age as they relate to adult development cycles. It was the timeline assignment and chapter one of the *Adult Years* that served as the focal point of the second module discussion. In other modules, they posted and discussed individually selected research articles and books they read, had small group discussions around group projects, and in the last module they posted course reflections. In addition, students also had a final assignment in which they carried out a research project, which could be presented and submitted in various forms.

THIS STUDY

For this study, primarily naturalistic inquiry was used to gain a holistic vision of the semester-long Adult Education course (Guba & Lincoln, 1983; Scriven, 1983; Stake, 1983). At a general level, the goal of the research was to develop a rich account, thick description, of the course happenings (Geertz, 1983). Two researchers who were not involved in the teaching or grading of the course examined class assignments and took notes on the

readings to better understand and trace course content through the discussions. Computer conferencing, with the automatic archiving of course transcripts, provided a rich data source with over 1000 individual messages. With the exception of two video-conferencing meetings, private electronic mail exchanged between participants, and some portions of the live chats, all interaction among course participants was recorded in the transcripts.

Although we examined archived discussions after the course ended this process involved immersion in the course activities over the semester, reading all class postings, and completing the assignments so that we might gain an "insider" perspective" on the course experience (Emerson, Fretz, & Shaw, 1995). We found in the research meetings that, similar to class participants, this participation changed our understanding of adult development in general, and the understanding of our own development in particular. Therefore, in describing the data, we interject our interpretations, which came to serve an important part of our course analysis. Our member checks with students and the instructor suggested that reading the postings and completing class assignments did provide us with a "feel" for course activity, group dynamics, and the perceived sense of community among class members.

Meetings between the two researchers, the course discussion groups, researcher notes, student assignments, and interview data were used to develop what the anthropologist Clifford Geertz (1983) referred to as an "experience-near" perspective on course activity. Rather than imposing pre-existing hypothesis on the data, our interpretations were grounded in the data and systematically worked out in relation to the data. Through this process, the data and the emergent hypotheses interact in a dialectic fashion, reciprocally informing and being informed by the other (Glaser & Strauss, 1967; Lather, 1986), and allowing us to develop heightened sensitivity to the research issues (Erlandson, Harris, Skipper, & Allen, 1993). During the research meetings, we deconstructed our own assumptions, developed audit trails, and verified the credibility and trustworthiness of the interpretations.

The process of data analysis began with the entering all of the data into the qualitative software package, *NUDIST*, a database program that allows the researcher to code, analyze, and sort chunks of text based on emerging categories defined by the researcher. The analysis proceeded through three stages—open coding, axial coding, and, to a lesser degree, selective coding (Strauss & Corbin, 1990). Open coding refers to the process in which the multiple sources of data are "fractured," broken down, and grouped by similarities into categories of related phenomena. Consistent with the constant

comparative method of analysis (Glaser & Strauss, 1967), this process involves asking questions of and making comparisons among the data and the theory to generate emergent categories. The next step, axial coding, involved combining the categories from open coding in novel ways to (a) identify category characteristics, (b) develop propositions about category connections, and (c) identify the central phenomenon or core category (Pachhiano, 1998). This process involved applying a "coding paradigm" and checking, testing, and verifying the analyses through shifting back and forth among the existing data and the collecting of more data, posing additional questions, and refining hypotheses (Strauss & Corbin, 1990). Guba and Lincoln (1983) described this as a "hermeneutic-dialectic process." In their description, it is *hermeneutic* because it is interpretive in quality and *dialectic* because it seeks a Hegelian synthesis through a process of comparison and contrast of divergent views (Erlandson et al., 1993).

Continuing the hermeneutic-dialectic process, selective coding involves moving beyond the presentation of static codes to understand the contextualized process in which the coded incidents occurred. This process, in which the theory is made dynamic, allows us to determine why a particular incident "occurred, what conditions were operating, how the conditions manifest themselves, and with what consequences" (Strauss & Corbin, 1990, p. 168), allowing us to develop an appreciation for the process of learning in this particular course. In this discussion, we began the selective coding process, however, much of that level of analysis and theory generation process is part of our ongoing research in which we have just begun examining subsequent iterations of the course to test and saturate emergent theories. In this reporting of the data our goals were more conservative, focusing primarily on open and axial coding with the intention of developing an empirical account of course dynamics and providing evidence that the identified themes occurred.

Although our focus was on "what" occurred, in this examination and presentation of the data we do move beyond the presentation of static and abstract codes, contextualizing our categories for the reader in terms of the events through which the identified issues emerged. More specifically, we identified what we perceived to be significant themes and then traced their development over the course, sharing the data, our interpretations, and the importance of the data more generally. In triangulating these interpretations we examined multiple sources of data (class discussions, artifacts produced by course participants, required readings, and interview data) as a means of increasing the credibility of interpretations derived from naturalistic interpretations (Lincoln & Guba, 1985).

RESULTS

The Hermeneutic-Dialectic Process of Identifying Patterns

Given that it was the intention to track "knowing-in-the-making" and not simply students' final summaries (Latour, 1987), grounded categories from the data were generated first and then we traced the historical development of a particular category (technical understanding, perspective on life development, discussion surrounding the birth of two course members' child) over the entire semester. Open coding of the 1027 class postings resulted in the identification of 53 unique categories. From here, the process of identifying the core course issues, axial coding, involved applying the hermeneutic-dialectic process to identify the central themes cutting across these 53 emergent categories.

Two researchers examined the 53 codes and the associated postings looking for common themes. Once each researcher identified common themes, they were then discussed until both researchers had complete agreement in the category synthesis. This involved developing category descriptions, examining additional examples, and then revising category descriptions and adding new data until each node had been tested and sorted into a particular emerging category. This process can be thought of as analogous to how the quantitative researcher uses squared multiple correlations to identify underlying factors, with common codes and associated postings being combined based on shared attributes. However, this process was different from factor analysis in two important ways. First, the overlapping variance was not a computerized calculation but was based on human interpretation and discussion as examples were compared to evolving category descriptions. Second, unlike factor analysis in which factors are hypothesized to cause the particular items, we view the emergent issues as reciprocally defining and being defined by the particular categories. Said another way, the emergent issues and the categories stand in dialectic relations with neither having ontological status over, or previous to, the other.

From the original coded 53 categories, axial coding led to the identification of three emergent issues that were central to the course experience and that have changed our way of thinking about the potential of online courses to support learning[1]. It is important to note the methodological rigor from which these issues were identified and substantiated. Although in this paper we simply present a subset of the 1027 examined class postings to contextualize the identified issue for the reader, each of the three emergent issues was associated with a minimum of 183 class postings, all of which

were more than three sentences in length. It is also important to note that the over 1027 course postings were not the result of one or two enthusiastic students, or because of course requirements—students were only required to make six postings. Approximately 84% of students posted 25 or more times, 38% posted 50 or more postings, and 13% posted over 100 times. With respect to the emergent patterns, three issues for which we will present supporting evidence for their occurrence in this course are:

- The flexibility of the course to accommodate participants with varying backgrounds and interests (183 postings)
- The co-construction of meaning through the sharing of personal experiences (232 postings)
- The expression of vulnerability and personal growth by participants (386 postings)

The results section is presented in terms of contextualizing the reader in the course trajectory as it relates to each of the three emergent issues that characterized much of the course experience. With an eye towards understanding the emergent issues, it was not the explicit focus to examine pretest and posttest changes in student acquisition of content knowledge. Instead, the focus of this reporting of the data was on capturing the course trajectory, of which learning was an essential feature. While interviews with the instructor and examination of final projects clearly suggested that deep and meaningful learning took place, the focus in this reporting of the data was to understand and illuminate issues related to course flexibility, co-construction and contextualization of meanings, openness, and the emergence of a sense of community.

Emergent Issues

In the results section, the three emergent issues identified through the data analysis process are discussed. The goal in this section was to use samples of the data to illuminate and contextualize the particular issues that were identified. For each of these three issues these data samples were selected from the 183-386 course postings that were coded as associated with that particular issue. It is important to note that many of the postings were complex and loaded on more than one issue, and in this presentation of the data we frequently selected examples because they allowed us to illuminate

the maximal amount of categories in the least amount of journal space—using examples under one issue that clearly have association with another issue. In presenting each of these issues, we arranged example postings chronologically so as to allow the reader to participate in the course trajectory. Although some researchers have pointed out that "calendar effects" influence activity patterns in online courses, (Levin, Riel, Miyake, & Cohen, 1992, 1989; Fishman, 2000), this research focused more on the content of the online interaction than on features of the interaction itself.

Flexibility of Course to Accommodate Participants With Varying Backgrounds and Interests

An important component of the course story was the flexibility the course afforded class participants. This flexibility pertains not only to aspects of the course itself, but provided an opportunity for the participants to personalize course assignments, negotiate shared meanings with one another, and accommodate participants with varying backgrounds, experiences, interests, and goals. This notion of flexibility in the course was evident in the class members' autobiographies, the learning contract, the book reviews, and in the final project. Beginning with autobiographies, the instructor provided an opportunity for the participants to get to know each others' backgrounds and interests. The participants were asked to write one or more paragraphs about themselves and submit a photograph to be posted on the course web site. In post interviews, students continually told us that this initial posting created a sense of openness and collegiality that continued throughout the course. This section was of particular interest to the researchers because it gave us insight into the backgrounds, experiences, interests, and goals of the participants and thus allowed us to track the inclusion of these aspects in the participant's projects and discussions.

One participant, a clinical dietitian, posted in the class member biographies that she had an interest in working with adults suffering physical and emotional ailments.

> I spend most of my day working with older adults who have had a stroke, surgery, cancer, broken bones, etc. I really enjoy it and the challenge of working with people who may have many mental and physical impairments that may have a possibility of being rehabilitated. My days are about educating adults (residents and nurses alike). I know that this class will be very helpful to me, because I'd like to do more nutritional types of education, one-on-one and in groups.

Other students discussed their academic interest in gender issues, assistive technology, or socio-economic level, among others, with each of the students mentioning their idiosyncratic interests.

Early in the course, participants were asked to complete a learning contract in which they submitted a learning plan that took into account their particular situations and experiences. In this contract, participants were asked to define learning outcomes they individually hoped to achieve, identify understandings and competencies they individually wanted to develop, and areas in which they individually hoped to increase competency during the course. The instructor explained the learning contract by posting the following in the course syllabus: "The learning contract is an opportunity for you to individualize the course to your particular needs. Define as many Learning Outcomes as you need to make this an effective, valuable and successful learning experience in adult development and learning."

During the modules, students were able to research topics of personal interest and then expected to share these with the rest of the class. For example, on the initial Website review, students located sites that were connected to their particular interests. In the following posting, Drew shared this explanation after posting his site: "These all seem to be valuable resources to educators. Critical thinking has been of great interest to me and I have looked at a lot of Websites. This one, though, is one of the neater ones I've seen."

This theme of students selecting URLs, research articles, books, and even theorists based on their individual interests, was echoed throughout the course. Another example was during the assignment in which participants wrote a 1500-word summary of a book on adult development that they selected. One participant displayed an interest in gender-related issues and selected, *The Season of a Woman's Life* (Levinson, 1996). In her summary of the book posted on a message board as part of module six, she remarked,

> I chose this book in an attempt to better understand myself and to learn of some of the research available on gender issues since I knew that was the general area I would explore for my final project. It turned out to be an excellent choice as it re-affirmed many of the feelings I've experienced and gave some insights on the career-motherhood issue I'm addressing in my final project … Daniel Levinson seemed to have developed a genuine love and respect for women. I only wish I could have a cup of coffee with Mrs. Levinson and ask her the same questions that were asked of the women in the book to see who Daniel Levinson really was. He thought in the 60's that the world was on the verge of a revolution in the area of eliminating gender

> splitting but although many things have improved some of my younger friends tell me they are still dealing with many of the same gender issues both at work and at home. For me the resolution of the gender issue has to come from within as men and women begin to understand who they are and what they want from life and how to respect other people regardless of their gender.

The instructor also fostered an environment of flexibility by encouraging the use of different tools as means for communication. Sensitive to the fact that an online vehicle for course delivery would be new to many participants (and that this course was being offered online for the first time), the instructor attempted to mitigate technology anxiety and frustration by allowing for flexibility in means for communication—as evident in the below posting.

> Please don't feel intimidated by this technology. It is part of the digital competencies, which we all have to develop to be effective in the future. I also hope that those of you who are more experienced and comfortable with these tools give suggestions and positive feedback to those who are less experienced so we develop a supportive climate in our Online Learning Community.

The instructor then went on to suggest e-mail, telephone, fax, asynchronous web conferencing tools (message boards), and synchronous web conferencing tools (chat rooms). Several participants chose to fax their final projects, and one student chose to e-mail his final project.

When focusing on adult learning, a central concern is how to balance school and other life commitments (Cross, 1981; Schlossberg, Lynch, & Chickering, 1989). It is the ability to reduce this tension that for many adults is what is so appealing about online courses. This is because adult learners, who have so many additional life commitments, have difficulty travelling to a centralized location (a classroom) at a particular time each week. Online learning environments allow students to log in from anywhere at any time and still participate in class activities and group collaborations. Many students expressed that this was afforded by the course, for example, when one student was having difficulty with conceptualizing "what counts as research," she posted a question to the instructor. The instructor then responded with a description about what research is and listed some online resources to learn more, supporting another student who logged on and viewed the dialogue.

> Thanks, for the question and the response. That is specifically why I logged on this evening, to see if I could figure out what kind of research article might apply and where, if at all, I go to find such a thing online. I did know about the scholarly journals and publications but was unsure of where to find them other than to physically visit the library. Thanks again! My weekend just became a lot more flexible!

Students were able to take advantage of the course structure so as to maximize their time and then fit in other life commitments. In fact, after reviewing this article as part of our member-checking procedures, another student stated: "The flexibility of the course and the instructor understanding that work and family responsibilities occasionally caused an assignment to be delayed were two factors that made distance learning a viable option for me." However, on other occasions, this tension was not so easily resolved with students finding it extremely difficult to balance other life commitments with course challenges. For some students the flexible and evolving course structure directly clashed with their need for structured usage of time. When one student posted the difficulties she was having meeting the evolving course expectations, other students identified with her overwhelmed feelings:

> Student A: I'm with you. I work two jobs plus school plus family. Planning time is difficult enough without having to find the time at the last minute.
>
> Student B: I have to plan ahead too. I have a very busy job and four classes. Requires some planning.

Students completed the final project or paper in which they described a small research project using one of the following research methodologies: interview process, a sample population, focus group, or case study. Again, the participants could choose the topic or focus. Students acknowledged their appreciation of the course meeting their individual needs.

> Student A. This class made me more aware of the differentness of adult learners at the same time as it emphasized the sameness. The class participants each have very different backgrounds, yet we have experienced many similar situations. And at the same time, we have each learned different things from those similar situations. I know that comments from my classmates, particularly during the discussion postings, have caused me to reflect. I've learned from my classmates, as I hope they have learned from me. I've felt a freedom to share personal items that I would not have in a face-to-face classroom.

> Student B. I really appreciate being able to tailor my learning process and take a very active role in the experience. I am a self-directed person and prefer much of my learning to be that way.
>
> Student C. The structure of d505 was more independent and flexible yet I never felt that I was on my own.

Several researchers have noted the benefit of allowing for course flexibility in teaching adults and for allowing adults the opportunity for self-directed learning (Litzinger & Osif, 1993; Merriam, 1993; Tough 1979). In particular, Knowles (1970, 1980) stated that an essential element of adult education is allowing learners to apply content to their own lives and situations, and to allow them to construct their learning based on their own experiences. At the same time, there should be consideration for the particular needs and experiences adult learners bring to the learning situation. Adult learners may be balancing careers, family life, and other commitments while taking on a new learning situation. Consistent with our findings, adult learners also tend to be highly motivated and use their life experiences to more readily make connections between learning and "real world" situations than do younger learners.

Co-Construction of Meaning Through the Sharing of Personal Experiences

Drawing on the data, we observed continual occasions in which students compared the readings, their personal experience, and the experiences of their peers to co-construct meanings about course content. Focusing more directly on notions of age and change, students completed the timeline assignment and read the Hudson book, and then discussed their interpretations. A central point in the readings and in student dialogue was the notion of change. Some students took comfort in Hudson's discussion, especially the fact that through his research he had found change to be a continual part of the life process.

> My favorite concept from this chapter is that the adult version of the American dream is 'that our fulfillment is grounded in our ability to live with all types of change without stable containers'. My 'stable containers' have been shaken many times and occasionally destroyed and each time I have overcome [or barely survived] one of these seemingly insurmountable obstacles, I gained new confidence that perhaps I really could 'make it' as an adult in a sometimes hostile world.

Another student stated, "I was also relieved to see that I am not the only one struggling through adulthood." However, still another student stated:

> As for the first chapter, I was very interested in Martha's comment when she said after she read the chapter she felt like she wasn't the only one feeling this way. I almost had the opposite reaction. My reaction was 'oh, no, is this going to happen to me?' I feel like my life has direction right now and it's somewhat scary to think that it won't always be this way.

The first student then responded to the above comment, contexualizing these comments in terms of notions of age and experience differences so central to adult development theory.

> I think that Gertrude's statement that she had the direct opposite reaction to mine has a direct correlation to age and lifestyle. I think the more you age, the more possibilities you see are out there, and the more likely you are to have experienced numerous types of changes. For example, I've been married for 20 years, have two sons - ages 18 and 13, had a pre-college career, and now am in a post-college career.

An examination of these postings suggested that, for these students, what was fundamentally curricular and what was fundamentally human were of the same fabric. Later in the dialogue, after many of the older students had discussed what they identified with in the reading, a couple of younger students shared their feelings.

> One thing that struck me about Hudson chapter 1 and the time line is that I am still relatively young compared to many in this class and therefore I do not have multiple decades of life experiences to draw on. I am 28 and my wife and I are having our first child in less than three months. My life is in many ways a contrast to those who have been married 30 years and have had five or six children and multiple careers. Having stated this I still feel that Hudson's "cyclical pattern" holds true for me also….

Another younger student agreed with him, and pushed on notions of change:

> I am in the same kind of situation as you. I am 27 and getting married next year, so I am a little bit further behind on the major life events timeline. I have to agree with your comments on change… I think that those who find it difficult to live in a dynamic world/environment struggle to find fulfillment."

It is in this manner that students learned from each other's idiosyncratic backgrounds and experiences. Through these postings, students experienced the theory as personal and, it is argued, therefore meaningful.

Students frequently expressed a willingness to share resources and support each other. For example, when Sam was leaving for a conference about online learning, he posted the following message:

> If anyone has an interest in web-based learning and is evaluating training delivery or management systems, let me know. I am attending the online learning conference in CA this week and am swamped with information I would be happy to share.

Students then posted what they would like, for example:

> One concern I have is the accessibility of online learning formats. … By accessibility I mean: (1) online students need computer hardware which exceeds their financial capabilities; (2) online web sites are not "entirely" accessible for screenreaders, etc. for individuals who use assistive technology to access the Internet; and (3) many adult learners needs understandable tutorials built into the online course.…Are any of these items being discussed?

Sam then reflected on these points and acknowledged the frequently neglected importance of Michael's concerns, illuminating how peer collaboration facilitated evolving understandings.

> You bring up several valid points... From what I have seen so far this week, the assumption is being made that the hardware for education is already available to the student. While this slant does lean strongly towards private industry and not the university environment, I have heard a number of folks from schools talking about this, and the common thought is that online education can only be offered to those who do have access to the technology.…In regards to those who use assistive technology, this has not really been discussed at all. From what I have seen, because this industry is still in early stages of development, until standards emerge, I don't know that focus will shift to this.

On occasion, this public sharing of ideas become intense and even hit "sore spots." For example, one student was commenting on the role of family in determining the child's experience.

> Hi Kate! Just wanted to wish you a Happy Birthday a few days late!...I really agree with your statement about the loss of family life in a more

> structured environment. I think it accounts for many of the problems that society is facing with each generation of children, who in turn become adults. I have been very fortunate in my life to always have a nurturing and stable family life. In turn, I have tried to pass on those values to others in any way that I can. Our past so influences our future.

However, another student who was also a parent, found the statement potentially a declaration of her bad parenting.

> Rohany's response hit a rather 'sore' spot with me (although I'm in no way 'flaming' her for her opinion, I just want to add some things)…Not to go into too many 'gory' details, but I feel that I have provided nurturing and stability to my family, however, I currently have a nearly 18-year-old son who is serving time in the Department of Corrections and has been for 9 months. Before that, he was home only 8 months after spending a year in DOC. For three years he has stolen, lied, cheated, burglarized, cost us sleep and cash, and been in detention centers more than at home I think there is more going on with our youth today, that often transcends even nurturing and stability. I wish I knew what it was, but I'm seeing this same type of scenario replayed time and time again with families that I know are good people. What is causing this decline? And if our youth are experiencing all this, why should we feel surprised when our lives feel disrupted?

In response, the first student referred to another concept discussed in the readings.

> Sometimes it is the influences of society outside of the family realm that push a person into making a decision that alters their life, sometimes forever. I guess that it goes back to that old question—'Is it Nature or Nurture?' that influences us the most. It has to be both, but why are some children influenced to such a deeper level. Sorry I hit a sore spot—my thoughts are certainly with you and your family. It has to tear your heart out sometimes.

This pattern of students contextualizing course content (e.g., theories about age, gender differences, embracing change) in terms of their human experience continually repeated itself throughout the course. It was through these interactions that students were able to develop a contextualized appreciation of theory and its limitations. It is very different to read a theory described as an abstract construct in a book than it is to hear others share how it has worked in their lives. This course aspect, in which participants learned from their classmates personalizing of the readings became for many the most useful aspect of the course.

> Student A. As much as I enjoy expressing myself and my views, I enjoyed reading what others had to say, particularly when someone would express an idea that came from beyond my own experience. This was a good way to remind us that there is always more than one way to look at things and that our perceptions are colored by our personal frame of reference.
>
> Student B. The sharing from each person when they found something interesting and helpful on a web site or in a book has been wonderful. There has been more interaction on the Web than there probably would have been in a lecture type class.

Consistent with these notions of meaning as situated through contextual experience, currently many educators advocate for learning environments that engage learners in active participation—not simply knowledge acquisition (Barab, 1999; Barab, Hay, & Duffy, 1998; Roth, 1998; Sfard, 1998). If one believes that meaning is not an objective property inherent to an object or word, then it becomes essential that instructors support interactions through which students have the opportunity to contextualize the "content" to be learned. For example, when learning about the role of age in adult development, it is essential that instruction moves beyond simply telling students about a series of pre-defined cycles to which each individual is then expected to fit their idiosyncratic experiences within. As the above data illustrate, a central aspect to this course was students' contextualizing meanings about course content through the sharing of their personal experiences.

The Expression of Vulnerability and Personal Growth by Participants

The art of self-renewal and push toward continual change and development served as the central message in both of the course texts. In this section, evidence is provided that course postings and sharing was about intimate matters of self, and contributed to personal growth. Although there was some personal sharing in the autobiographical posts, for example, discussing how these are times of change and confusion, it was not until Module 2 that the intimacy became pronounced. It was clearly apparent when one student posted:

> I've gotten more self-awareness from reading this first assignment than I thought possible. Perhaps it's somewhat egotistical of me, but I've thought for a long time that I was the only one—or at least one of only a few—who felt this overwhelming despair, over-whelmed ness, lack of control, overwork, etc. etc. Now I find out that I'm totally normal (no comments from those who know me...).

From this posting, students began to share intimate life occurrences, relating them to course assignments.

> Student A: What I couldn't believe about the reading was that at 26 years old I feel like a lot of the people he exampled! Sometimes I find myself wondering if this is all life has in store for me and I will never be able to grow from this point on. It's a very scary realization! Let's hope I'll continue to grow and change!

> Student B: The Hudson readings helped me better understand the frame of mind of previous generations. Society seemed so involved in doing their part in making us a leading nation. Now, I feel that we still are involved but on a totally different scale wit h global economy and communications. I'm so used to coping with change because I've really not known any other way. But, at times, I wish for some stability to be able to 'catch my breath'. Do any of you ever feel this way???

Reflections on life choices then became a common theme, for example:

> The prologue and chapter one in Hudson was very interesting. I find that I can relate to many of the items discussed in the reading. I have had a few false starts in my life. I am now beginning to look very hard at exactly where I want to go from here. Quite frankly I'm not sure. I enjoy what I do, and I believe that I am a vital part of the goings on at my job; however, I find myself wondering do I really want to spend the next 10 years of my life in accounting. I am at the point in my life (age 35) where the next couple of major life choices I make will need to be the right ones (or so I think). I dread the idea of being age 40 or over and still looking for what I really want to do. I can identify with a lot what is discussed in the reading.

It is in the last statement that we begin to see students expressing self-perceived growth. This theme became more apparent as we examined course postings over the semester. These student insights, as did our own appreciation of the richness of course postings, resulted from the interaction of course assignments and through life experiences—not through any of these in isolation. In fact, when we initially examined the dialogue we were somewhat discontented in that the content of discussion seemed personally revealing but had little to do with learning course content. However, as we immersed ourselves more thoroughly in course assignments we began to appreciate the connections between course content and life content.

> I didn't do the timeline until after I had read the readings in Hudson. It was interesting to me that Hudson equated his quite literal physical paralysis with 'those paralyzed by the experiences of life in our time.'

> And yet, I didn't make the connection until I had done my own timeline that I had actually lived through a prolonged period of just such a paralysis!

One common theme was how students made sense of previous life events.

> I was surprised by the types of things that had obviously made an impact—or not—in my life, both good and bad. Like, I remembered a single time that my Dad took time to spontaneously visit my 'single girl' apartment; but I forgot (for a while) my high school graduation. I was extremely disappointed that I could remember so few 'great' things but could easily remember so many 'bad' things.

In relation to how people perceive traumatic life events, students shared about their perception of these changes over time. As students' postings were examined, the authors were reminded that if adults are willing to embrace the process of self-renewal, these events become further lessons allowing them to continue on their journey as changing adults.

> The first time I used this tool was in a class on dealing with change after I was job eliminated due to the sale of a division of our company. I did the time line adding a few things that had impacted my life and rating them. Then I put the time line away. Pulling it out a few years later, I re-did the activity and found I was able to add more items and change how I felt about some of them. It seems that distance changed the perspective… What originally might have been viewed as a negative, with a little distance from the time of the event now might be seen differently.

Following this thread, April posted:

> I have found also how distance can change your perspective about a seemingly negative event. Many times I have wondered why I was being challenged by some difficult situation only to look back years or months later and see the positive impact it had on my life.

And another student agreed:

> I couldn't agree more! And because I started noticing the positive effects from the distance of several years or months, I soon adopted the philosophy that something good would/could come from those events I found negative. Marvin's 'don't worry, be happy' school of thought. When in the depths of anxiety, grief, whatever, I have been able to say

> to myself, 'yes, this is bad and feels bad now, but you have lived through other things and survived, you can make it through this.' To me, that is the meaning of 'having faith.'

Students then began to incorporate aspects of self-perceived change into their postings, although initially these postings only reflected their ability to return to the challenges of being a student after an extended hiatus. This was a challenge for some of the older students who had not taken a university course in over a decade and certainly had never taken an online course.

> Student A. The semester was certainly full of interesting encounters for me, not only those with students and [the instructor] during…cat sessions and web discussions, and with course assignments and readings, but meeting myself as a student once again was also very interesting (and at times, frustrating and amusing). I found that even after 20 years away from the student role, I very quickly fell back into the pleasure of academic learning, and my tendency to be highly self-critical (for better and for worse) reappeared as well.

> Student B. This course has been like a journey on the high seas for me. It started off with great enthusiasm…Not at all like some of the boring class time I remember from 30 years ago…I must say that in the beginning I was overwhelmed. With little computer experience and not having been in the classroom as a student for ten years, I certainly felt like I was barely keeping my head above water. [However], it all has served a purpose and this is what one should expect from a graduate level course.

Over time these postings slowly transitioned to adult learning in general and finally to one's own means of living in today's world, again severing the lines between course and life content.

> Another aspect of adult learning I will take from this class is the importance of self reflection and slowing down to analyze where we are in our life cycles...I am only 32 years old and was very nervous about returning to higher education I can only imagine what someone in their 50's must feel.

> Or

> As I reflect back over the last four months, I am amazed at what I have learned and at what a different sort of class this has been. Using new

> tools such as the web site and the Internet made me very apprehensive at first. Can I do this? … I read somewhere that courage is fear plus action and that you won't always feel comfortable and safe while taking action. With that in mind and with this class under my belt, I am much better prepared to understand the fears and motivations of the people that I train.

This change was not simply a comfortable event, but frequently occurred through frustration as students let go of cherished values and life perspectives.

> Student A. At times this course has left me uncomfortable, but in a good way. It has left me recognizing that I need more exploration of myself, my past, present and future and how they're intertwined; how those experiences, resolved and unresolved, are affecting my teaching of other adults and my own learning…I've felt a freedom to share personal items that I would not have in a face-to-face classroom.

> Student B. This course has shown me an aspect about my life that I did not consider. Hey, I need to slow down and consider 'waking up to life'. I have found that I am a unidirectional learner. Academic achievement coupled to being a workaholic has blinded me from other aspects of life, such as family and spiritual relationships. I think back to my past life cycle events or spirals and know my current personality was tacitly learned from my father. This is not to say this is a bad thing, but learning or self-actualization may require compromise and/or make changes in order to live a fuller or more complete life.

This personal growth was around life issues and around understanding of course content, although, to reiterate, most growth involved the interaction of both.

> Student A. Prior to this class, I never really thought about things that happen in certain age groups. I had thought about it from a physical standpoint, and knew that some of that would be reflected psychologically; such as worrying about becoming unable to take care of themselves. But I never really thought in terms of adults going through certain 'stages' or 'phases' in their lives relative to their ages. This was a new concept to me, but it does make sense. I have seen some of this already in some of my classes working with adults. The people in different age groups seem to approach the learning differently, based on where they are in their lives, and what they hope to get out of it.

> Student B. I have been aware of adult learning theories, but never adult development. Hudson's book opened my eyes to a new way to

> look at adults. While I am just beginning the cyclical patterns that Hudson describes, I am now able to view this life cycle as a developmental cycle and not from a purely physical aging cycle. While the book helped bring out information, I have found that my peers have been my most valuable resource in the class. The threaded discussions of their real life cycles and situations have truly given me appreciation for Hudson's and other theorists' hypotheses.

Finally, evidence of the intimate and transformative nature of the course is captured in the instructor's final posting.

> Everyone has shared in the intellectual AND caring aspects of this community. Thank you all for helping me learn more about and to trust this process …This has been an important learning experience for me as we make this transition to web-based courses. I will build on this experience for future iterations of D505 and D506 next semester.

The examples here illustrate that learning and identity development are inextricably intertwined, with personal growth and becoming knowledgeably skillful being part of the same process, with the former motivating, shaping, and giving meaning to the latter, which it subsumes (Barab & Duffy, 2000; Lave, 1993, 1997; Wenger, 1998). Said another way, learning is personal growth and personal growth is learning. When we are referring to personal growth here, we are referring to the maturity of thought processes as they relate to issues of the evolving self (Csikszentmihalyi, 1993). Just as younger learners develop from simple to complex thinking, adults can and do continue to mature in their thinking throughout the adult years (Hudson, 1999). The way we think affects our moral judgment, character development, interpersonal relationships, self-concept, and how well we function in our environment (Billington, 1996).

CONCLUSIONS/DISCUSSION

Consistent with other findings on online courses, significant portions of course dialogue were centered around interpersonal issues (McDonald & Gibson, 1998; Harisim, 1989, 1990; Spitzer, 1998), and the discussions involved deep critical and reflective thinking (Boyd, 1990; Jaeger, 1995; Mikulecky, 1998). Clearly, the course supported the emergence of a positive, caring, non-threatening environment. This course provided empirical evidence that online courses can involve open sharing about personal experiences, learning about content that is personally meaningful, and promote a

sense of community. Nowhere was data found that indicated course discussions were impersonal, superficial, misdirected, or dehumanizing and depressing. In fact, what was found was quite the opposite. Students readily shared their feelings, critically examined course issues, extended their support in helping peers, and embraced many of the challenges of taking an online course. Specifically, three issues were identified that characterized course activity and focused this discussion.

First, much of class work took place in a virtual space that could be accessed and participated in from multiple spatial and temporal spaces, thus meeting the needs of class participants. The largely asynchronous delivery mode of the course provided freedom and flexibility in dealing with the constraints of resources such as time, space, money, and personal and family relationships. Freedom and flexibility was apparent in the fact that students developed individual learning contracts with the instructor, selected the theorists they would research, and in the diversity of group projects. The facilitator was also instrumental in setting the climate, especially in the conceptual framework of the learning activities and the tone of communications from the beginning. In fact, seven of the eight students who reviewed a draft of this article as part of our member checks, suggested that we had not adequately highlighted the importance of the instructor in creating a warm and open learning environment.

A second emergent issue in this course involved the co-creation of meanings as participants contextualized the course content in their personal activities. Having these online collaborative spaces served two purposes: contextualizing course activity in personal experiences and supporting the sharing of multiple perspectives. This is important when one acknowledges that the meaning of a concept or theory is not an objective property but is instead a situationally determined phenomenon, whose particular attributes are contextually dependent (Bereiter, 1994). Toward developing an appreciation for the multiple applications of a particular theory, the ability to share and reflect with others who have had rich life experiences becomes essential and was a major asset of this course. We observed, the continual sharing of varying perspectives that contributed to the emergence and evolution of deep and grounded understandings, providing participants with opportunities for critical reflection that is not necessarily available or, at the very least, taken advantage of in the traditional course classroom—especially when there are 34 class members.

A central impetus underlying this reporting of the data, and the third issue, was to show how the online discussions provided evidence for students' willingness to be open and that this sharing led to personal growth.

For many of the course participants, course content was life content and life content was course content. Said another way, there was no meaningful separation between learning course content, participating in class dialogue, and who they were as individuals. This last notion, of personal development co-evolving with course participation, is a central notion that has been discussed by researchers examining learning as-part-of-a-community (Barab & Duffy, 2000; Lave, 1993, 1997; Wenger, 1998). Whether or not students' appreciation of these meanings will be more robust and will transfer to future contexts is beyond the scope of this reporting of the data. However, we expect that the personal significance and the contextualized nature of these understandings are more likely to transfer to other contexts than would content "acquired as coldly cognitive facts."

Four design/implementation components that contributed to the depth and intimacy of course activity were identified. First, the course structure was clearly flexible, allowing for class participants to adopt course work to issues that were of direct concern to the students, not simply to the course instructor. Second, the selection and order of course assignments were particularly conducive to the creation of an open and warm atmosphere. For example, the opening prologue and first chapter of the Hudson book was deeply personal, intermixing theoretical content with personal experiences, including a personal account of the author's battle with paralysis. *As educators, one frequently begins courses with assignments that are meant to create a strong conceptual framework for the material rather than creating a strong affective climate that can be leveraged for purposes of motivating engagement and supporting deep personal processing of the material*. Educators need to invest in resources for developing course climate, not simply understanding of course content. Third, the gentle and non-intrusive facilitation of the instructor supported a warm and open learning environment. This point was emphasized by seven of the eight students who provided member checks on the earlier article drafts and something that was clearly evident in the examination of the course postings. Fourth, the language of the syllabus, interviews with the instructor, and our examination of the data indicated that the instructor was explicitly intending to establish an online learning community, as opposed to simply using the virtual space to post pre-determined content.

IMPLICATIONS

Contrary to the notions of those who consider computers as harbingers of the dehumanization of education and as contributing to the break-down

of the student-teacher relationship (Nissenbaum & Walker, 1998; Oppenheimer, 1997), we found that computer-based, asynchronous tools can buttress learning in profound ways. The findings here have provided evidence that there emerged a positive, caring, and non-threatening environment for participants to learn about adult development in general and their own development in particular. More specifically, it was asserted that course participants shared personal material, supported each other in addressing individual needs, and encouraged the evolution of thinking about course issues in a personal way. Consistent with other findings (McDonald & Gibson, 1998; Spitzer, 1998), students readily shared their feelings, critically examined course issues, extended their support in helping peers, continually posted even when it was not a course expectation, and embraced many of the challenges of taking an online course.

These findings suggest that benefits of online courses extend beyond the time and place independence they provide for participants, but also include the reflective and social environment they can foster (Harisim, 1989; Jaeger, 1995). We contend that asynchronous, computer-mediated communication tools actually promote reflective and critical thinking, allowing for deep and meaningful learning to occur. Consistent with those arguments advanced by other researchers (Boyd, 1990; Dehler & Porras-Hernandez, 1998; Macdonald & Gibson, 1998; Mikulecky, 1998), it is the authors belief that this is partly due to the fact that asynchronous text-based communication fosters the ability and opportunity for students to reflect on, and revise, their work.

Obviously, this will not happen in all online courses. In this course, the instructor was committed to fostering a sense of community, and chose texts and assignments that facilitated deep and personal sharing (i.e., the Hudson textbook, the timeline activity, the autobiography assignment). Further, the topic of the course, adult development, directly related to issues that were near and dear to each of the student's personal experiences. Therefore, the links between what was considered course content and what was considered personally meaningful were natural and, to some degree, expected. However, given that all interaction happened online, the fact that these links and the nature of the conversation were so deeply personal and seemingly transformative was not expected.

It appears that at least for this particular application, the online discussion space fostered a personal experience for individual class members as well as for the class as a whole. Open and selective coding was used to develop a grounded account of course dynamics, providing empirical support for the claim that online courses can support deep learning about content,

open sharing about personal experiences, and the emergence of a sense of community. This is not to imply that all online courses, especially those involving less personal content, will foster deep and personal sharing. The emergence of such experiences is not an inherent feature of the technology per se, but arises from the confluence of the technology, student motivation and commitment, course assignments, and the content of the course. Technology simply provides educators, and researchers, with a powerful tool (Barab, Hay, & Duffy, 1998). These findings do, however, indicate that deep and personal sharing is possible online.

Another important implication of this study was the importance of "staying out of the way" with respect to the design and use of computer-mediated environments. It seems that as environments with features designed to increase the interactivity that the tool can offer are developed, we may actually be adding noise to the free flow of interaction between course participants. The increasing ubiquity of computer mediated interactive environments adds urgency to this quandary. Instead of aiding in interactivity, it may be that each of these features serve as a filter. Less, it may turn out, is indeed more! (diSessa, 1988). The more the technology can get out of the way, the more actual interactivity might take place in the environment.

In this online course, only very simple interactive tools were used. *Participants did not interact with computers; they interacted through computers with each other*. There were asynchronous message boards, chats, and some e-mail. Without the distraction of having to become proficient with new tools (ironically designed to facilitate interactivity), course participants were afforded the opportunity to leave behind the constraining shackles of learning a new technology. In this way, we are moving from a focus on human-computer interaction towards environments that truly support human interactivity. In other words, *the focus was not human-computer interaction but human-human interaction as mediated by computers* (Barab, in press). Should not the decentering of technology be the educational technologist's ultimate goal? Do more technical layers of innovation actually hinder "human" interactivity?

It is our responsibility as educators to investigate how we can use tools (i.e., the Web) to impact the educational experience. In this context, the tool not only supported student learning but also our ability as researchers to learn from their experiences. Online courses provide researchers with an exciting research opportunity in that they can capture significant portions of class activity, allowing for the reporting of "thick" descriptions of knowing-in-the-making. This article further provides researchers with a framework for characterizing online courses.

A significant piece of the overall online story was the instructor's and the students' willingness to embrace change, both in terms of the content of their discussions and in terms of the medium through which they were learning. There is a story about a man who was put to sleep in 1600 and wakes up in the 1990s. He looks at skyscrapers, cars, airplanes, computers, and hears radios and televisions and is amazed. Then, someone shows the man a college classroom where the professor is standing in the front of the students and delivering a carefully rehearsed lecture, and he knew it was higher education. We as educators must embrace change, not as passive observers or didactic sycophants. Instead, we must jump in and explore this new world, critically examining how it can help us improve teaching and learning.

In many ways, this course situated these notions for course participants by providing them an opportunity to experience change and their own ability to cope with it as part of their learning experience. In our rapidly changing technological society, students and educators must learn to embrace change. This course provided an example of a learning environment designed to support students in experiencing change, in understanding adult development as a process of change, and in engaging in the critical reflective process so necessary to benefit from and to encourage change. It is through these types of experiences that educators can situate student learning about adult development and societal change, providing the field and the learner with new models for potentiating the teaching and learning process.

This article provided empirical evidence for the existence of deep and meaningful learning in online courses, and it is the responsibility of future researchers to develop the grounded theoretical explanations of why and how. Theory generation with respect to "why" and "how" online courses can support deep and meaningful interactions is part of our future research agenda. This process will require the examination of subsequent iterations of the course to test and saturate emerging theories, examining why the themes identified in this research "occurred, what conditions were operating, how the conditions manifest themselves, and with what consequences" (Strauss & Corbin, 1990, p. 168). It is then that we will be able to state not only that deep and meaningful, collaborative learning can occur online, but, more importantly, there are interventions that one can do to increase the chances that it will occur.

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Notes

1. One theme that continually emerged through our examination of the data was technology, both its opportunities and frustrations. Clearly, technology played a major role and was a central issue in much of the online dialogue. Having said this, the focus of this reporting of the data is not on the technology per se but on what the technology afforded—moving from the technical to the social dimension of online learning (Spitzer, 1998). As such, we have not selected technology as one of the emergent issues to be explicitly discussed in this paper; we have instead nested technology discussions as they relate to the other issues that were more central to the primary foci of this manuscript.

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