53

Refereed Article

An Exploration of Electronic Discussion as an Adult Learning Strategy

Barbara Daley

Abstract

The purpose of this study was to explore the use of electronic discussion as a teaching and learning strategy for students within an adult education graduate program. Over 450 student contributions to electronic discussions were analyzed to extrapolate learning and group processes and faculty roles. Results indicate that learning progressed to a high analytical level during electronic discussion and that group process development facilitated learning as well. Implications for research and practice in adult education are drawn.

Introduction

The delivery of education through on-line courses, web-based instruction, reflector groups, and web-based conferencing is exploding, yet research is only beginning to examine the impact that this technology has on learning. Previous research has examined the instructional design of web-based courses (Braden, 1996), differences between face-to-face teaching and on-line teaching (Russell, 1997), and learning style change in a technology-rich environment (Cohen, 1997). However, a major question remains to be explored in depth by the field of adult education: "What impact do new technological teaching strategies have on the learning of adult students?"

Literature Review

The terms "teaching" and "learning" are often used interchangeably in everyday conversations of faculty and students. When it comes to un-

Barbara Daley is Associate Professor of Adult and Continuing Education, University of Wisconsin at Milwaukee.

derstanding computer-mediated environments, however, usually only the concept of teaching is explored, based on the unstated assumption that good teaching will produce high quality learning. However, following a study of 127 courses housed on the World Wide Web, Boshier et al. (1997) indicates that

> while the web holds considerable potential for learner interaction, few courses use much of its interactive capability. Most courses surveyed offer no possibility of collaborative learning. The chief difficulty was conceptual, not technological. It appears that many, if not most, courses were designed by "instructional designers" obsessed with objectives, assessment of students and arranging things in a hierarchical order. . . . The author has uncritically and, in many cases, unwittingly and naively endorsed a transmission model of learning. (p. 340)

Thus, as determined in this study, as well, the major focus of faculty using computer-mediated environments has often been on teaching and course design. How well these courses promote learning is usually a neglected issue. Lian (2000) underscores this point:

> We may think that through the use of computers, the Internet, discussion forum, we provide flexible conditions for exploratory learning. . . . However, these conditions will never be flexible until they will be experienced as flexible by individual learners. . . . *Flexibility is a function of the adaptability of the teaching environment to the demands that learners experience in the process of exploration of the power of their own beliefs/understandings.* (p. 18)

Very recently, however, researchers have begun to investigate learning in computer-mediated environments. For example, Milton, Davis, and Watkins (1999) looked at interactions occurring within small groups in an asynchronous, web-based, distance learning environment and found that virtual learning communities developed when there was a fusion of the learning processes and group dynamics. Rheingold (1994) indicated that the potential anonymity of virtual communities contributes to learners feeling that "virtual communities treat them as they always wanted to be treated—as thinkers and transmitters of ideas and feeling beings" (p. 26). Chester and Gwynne (1998) found that two-thirds of the students in an

on-line course rated their participation in the subject matter as greater than in a face-to-face course. Holt, Kleiber, Swenson, Rees, and Milton (1998) analyzed student participation in a national issues forum conducted on the Internet for the purpose of studying its effectiveness and analyzing facilitation methods. Holt et al. (1998) described how a multi-stage deliberation process developed that was "largely consistent with the theoretical literature about critical and reflective thinking" (p. 46). Additionally, this study identified that the discourse developed differently in discussions conducted on the Internet versus those conducted by electronic mail. Finally, Milton, Wilson, and McCall (1999) indicated that "the analysis of these small groups [in a computer-mediated environment] has taught us that the additional dimensions of time and space supported through collaborative technology increase the complexity of the learning and the interdependence of the processes and people involved" (p. 7).

In addition to research on teaching and learning in computer mediated environments, authors have developed learning process models that depict both learning and thinking processes in computer-mediated environments. Along these lines Cicognani (2000) identified four stages through which she felt learners gathered information and developed expertise in an on-line environment. She named these stages generalization, focusing, application, and consolidation. In the generalization stage the learner is introduced to the materials and tools of learning in the on-line environment. In the focusing stage the learner is focusing on specific understandings of the subject matter. In the application stage the learner is more creative and focuses on problem solving using the knowledge generated in the first two stages. In the final stage, consolidation, the learner consolidates knowledge through the process of summarizing, posing new problems, and finding new solutions.

Jonassen (2000) chose a different route and elected to use a model of complex thinking as one that explains learning in a computer-mediated environment. The Integrated Thinking Model (Iowa Department of Education, as cited in Jonassen, 2000) defines complex thinking as "an interactive system, not a collection of separate skills" (p. 25). In this model complex thinking is composed of content/basic thinking, critical thinking, and creative thinking. Content/basic thinking is further delineated to mean problem solving, designing, and decision-making. Critical thinking, on the other hand, is defined as analyzing, evaluating, and connecting, whereas creative thinking includes synthesizing, elaborating, and imagining. Jonassen (2000) indicates that complex thinking is an integration of

these three types of thinking and that, using computers as learning tools, multiple types of thinking and learning can be fostered.

These previous studies and initial attempts at the development of learning process models indicate a great need for additional information that describes the impact of technology on learning processes, effectiveness, and outcomes. The intent of this study was to begin to fill this gap by analyzing learning, group processes, and teaching processes in courses using electronic discussion.

Conceptual Framework

Constructivist learning theory, which provided the overall conceptual framework for this study, holds that "learners actively construct and reconstruct knowledge out of their experiences in the world" (Kafai & Resnik, 1996, p. 3). As Merriam and Caffarella (1999) indicate, "Basically, a constructivist stance maintains that learning is a process of constructing meaning; it is how people make sense of their experience" (p. 261).

In a constructivist framework, knowledge construction takes place when learners construct knowledge actively through intellectual engagement and investment in personally meaningful tasks. Constructivists believe that individuals learn through their experience and that meaning is rooted in that experience. The key to learning, in a constructivist framework, is for the learner to find multiple ways to link new information to previous experience. Lambert et al. (1995) refer to constructivism as the epistemological processes of knowing and coming to know. Within a constructivist framework learners create their own knowledge by the methods they use to put their worlds together. In other words, constructivists focus on the connections that the learner is making between ideas. Novak (1998) believes that learning occurs through a process of assimilating concepts into the cognitive structures by subsuming concepts under each other, by progressively differentiating concepts from each other, or by recognizing similarities among concepts. The crucial element is that the learner creates actively a knowledge base through linkages and experiences. "The design task," Hannafin, Hannafin, Land, and Oliver (1997) conclude, "is one of providing a rich context within which meaning can be negotiated and ways of understanding can emerge and evolve" (p. 109). For this study graduate courses were designed and implemented from a constructivist framework, using electronic discussion as a teaching strategy to facilitate constructivist learning.

Research Questions

The purpose of this study was to analyze one component of technological teaching strategies, electronic discussion groups, with an adult student population. The following research questions were advanced to guide this inquiry:

1. In an electronic discussion, what learning processes do adult learners utilize?
2. In an electronic discussion, how do group processes develop?
3. How does the faculty role change when using electronic discussion?

Methodology

In this qualitative, interpretivist study, electronic discussion was used as a teaching methodology in four adult education graduate courses offered within a master's degree program in adult education at a major midwestern university. Course activities were designed to offer the learners an opportunity to develop knowledge and beliefs related to course content, to integrate experiences, and, ultimately, to reflect upon and assess their own level of learning. Electronic discussions were used in each course to analyze case studies, discuss course readings, and reflect on learning achieved during the course. Learners were expected to participate in assigned course activities as well as in conversations with other course participants.

Since the intent of this study was to explore the impact of electronic discussion on learning, a convenience sample of courses using electronic discussion was included in this study. The same instructor taught all the courses. Two courses employed electronic discussion using electronic mail, and two courses employed electronic discussion over the Internet.

A total of 52 individuals participated in the electronic discussions that were analyzed for the purpose of this study; 76% were female and 24% were male. The majority of students who were enrolled in the courses that were reviewed in this study had used some form of electronic discussion previously. Participants ranged in age from 25 to 55.

Following the completion of the four courses, over 450 adult student discussion contributions were analyzed using a constant comparative method of analysis (Glaser & Strauss, 1973). Each individual learner's

contribution was treated as a separate, unique piece of data. All learner contributions were reviewed, compared, and analyzed until category themes could be extracted. Data from all the contributions were then coded into a qualitative data analysis software program using the coding scheme developed. In addition to data coding, a system of matrices was designed to analyze each research question under study. One matrix depicted data descriptive of learning processes, one depicted data descriptive of group processes, and one matrix depicted data that demonstrated faculty role. From these matrices the researcher was able to see the patterns, themes, and processes developed during the electronic discussions. Quality control was maintained by having a second qualitative researcher review the dependability and confirmability (Lincoln & Guba, 1985) of study data, methods, and findings.

Findings

The findings from this study will be presented in three areas: learning processes, group process, and faculty role in electronic discussions (see Figure 1).

Learning Processes

Data indicate that the adult students in these courses used four different learning processes during an electronic discussion. These processes were labeled engaging, developing conceptual relationships, drawing conclusions, and reflecting and self-evaluating.

First, an engagement process developed where the adult learner used multiple and varied strategies to gain comfort with the technology. During this engagement process it was common to receive messages that stated, "I have never done this before, but here goes." Adult learners needed to engage with the technology in this phase, and they needed to "get over the technology hump." They would send messages multiple times to make sure that they were received; they would switch Internet providers and change services as they discovered how the technology worked. They would engage initially with the technology to chat, plan snacks and meals for class, and clarify course assignments.

Second, the adult learners began developing conceptual relationships with the course content under study by (a) linking and differentiating concepts, (b) engaging in dialogue linked to their own and their colleagues' experiences, and (c) evaluating colleagues' comments. Each of these three
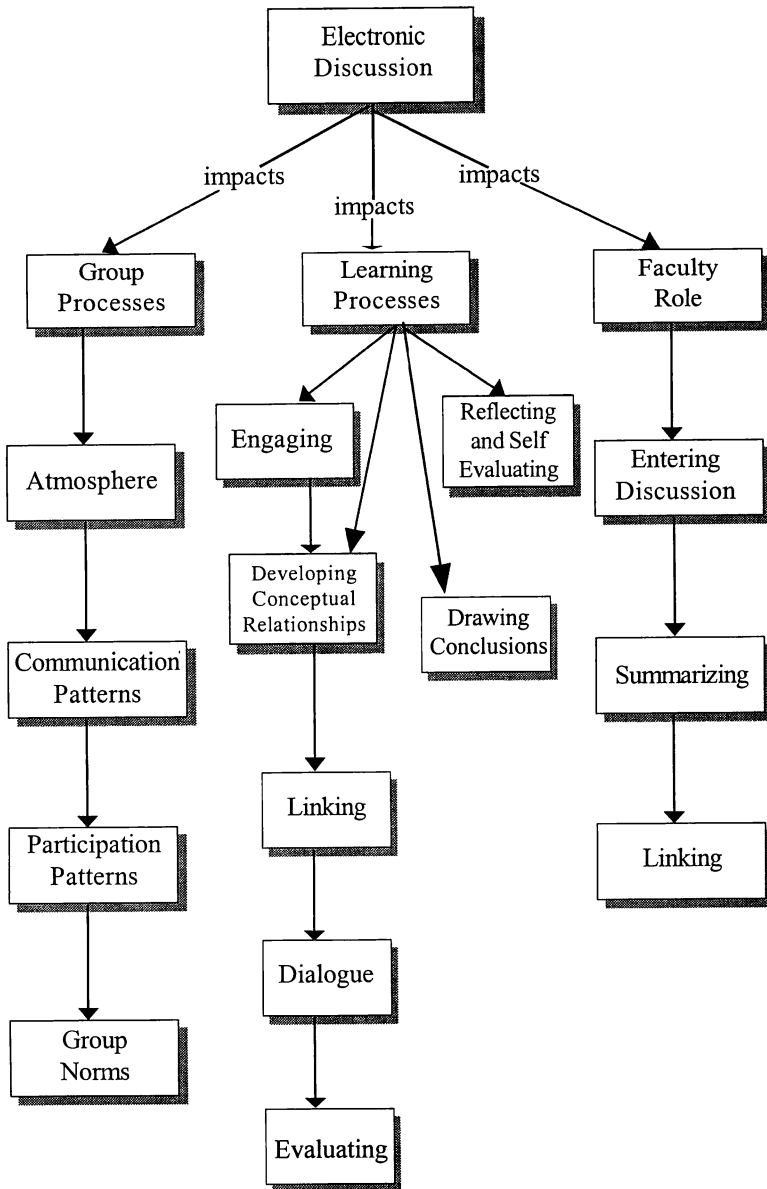
Figure 1: Impact of Electronic Discussion on Learning Processes, Group Processes, and Faculty Role

processes was seen within each course, in the same sequence, irrespective of the course being conducted on the Internet or by electronic mail.

Linking

Learners used the electronic discussion initially to link and differentiate concepts. This process was initiated most often by a learner who linked concepts from two or three course readings. Once this linking occurred, a different learner responded and further clarified or expanded on the connected ideas. For example, a student enrolled in a continuing professional education course stated:

> Schon's work on reflecting in action, Mezirow's work on transformation theory, and Brookfield's work involving critical thinking combine into an interesting look at how we might get outside our own minds and see our thoughts and feelings as magnificent contrivances of the world rather than as the only way that things can be. Each work deals with bewilderment and intellectual vertigo but differ in where they place emphasis of work within the topsy-turvy world of our brains.

Following this, a second learner stated:

> I feel compelled to reply to J. She did such a splendid job of discussion of Schon/Mezirow/Brookfield. Now for a little perspective from my view of the reading.

Dialogue

Next, the learners' ability to create a dialogue connected to their own experience was developed. In this phase the learners seemed to move away from the focus on their readings and move to a discussion of their own experiences as related to their colleagues' experiences. For example, in this phase one learner stated:

> So rather than questioning the role of CPE in fostering these concepts, I question the role of the organizations sending their employees to the CPE programs. Do some of your corporations have a defined policy or process whereby employees can propose changes based on new learning from CPE? In my experience of a hospital setting, it seems to me that most changes come from the top, and only the free and easy suggestions from the lower ranks are easy to implement.

During this dialogue phase, learners attempted to understand and create meaning. As such, learners often made the following type of comment:

> I've just printed and re-read everyone's comments in the last week. Besides helping me better understand what I've read, I've really thought about everyone's examples.

This learner then went on to link colleague comments together, provide a summary of the discussion to date, and add her own new comments that moved the dialogue even further.

Evaluating

It was interesting to note that, in each group analyzed for this study, there was a point where one learner took the risk of disagreeing with or challenging the thinking of a student-colleague. Sometimes these challenges were subtle, such as, "In thinking about H's comments, I am not sure I agree with her full assessment; my ideas take me in a different direction." At other times the challenge was more direct. For example, in a leadership course the students were discussing the movie *Norma Rae*. One student characterized the movie's main character as a transactional leader. Another student took exception to this and wrote a detailed analysis of transactional versus transformational leadership and challenged the first interpretation as not linked to the course materials or content. This challenge spurred the rest of the group on to analyze leadership theories in much more depth. Once that challenge occurred, the group moved to yet another level of learning: drawing conclusions.

In this third level of learning, adult students used knowledge to draw conclusions and make decisions. For example, students were discussing the importance of training within a business environment. They had discussed both the role of management and the role of training. One learner used this discussion to frame a work-related decision as follows:

> More and more I believe HRD people must be very business focused, not only in their approach to training but how they manage themselves and their departments. . . . The decision to use CBTs as the training tool for new employees may not be the best solution, but there are so many aspects to consider. Our company has over 100 employees. Their orientation, training, etc., is solely in the hands of managers. I would score huge brownie points if I delivered a CD ROM with an overview of the company and executive welcome, but

I won't because I do not believe that training is the root cause for 50% turnover. Changing the training delivery won't solve the management problem.

Finally, some groups reached a fourth level of learning that included a reflection and self-evaluation process. In these groups learners would share changes in their own thinking, in their worldviews, and in the meta-cognitive processes they used in learning. An example is this student response:

> Why is it important to be situated in an authentic activity? I will give you an example via a problem I solved while I read the articles on situated cognition. I believe that I have finally figured out, "Why do the professors always want us to include in our papers the implications of what it is we are studying or alleging through our analysis?" Well, obvious as the answer may seem to you, I have always been bothered by it. First of all, since I am currently not an educator, I often could not think of any implications for the field of education. . . . Now, I realize that because I am not situated in an education field I have a completely backward perception of these exercises. Also, the word implication got in the way for me. My business background led me to want to think about situations as having to have a cause and effect. When I could not say this could cause that I did not have an implication worth writing down. Well, I have been transformed. I don't believe the task of compiling implications is a cause/effect assignment anymore. . . . I consider the thinking exercise of realizing implications as a way to hone my tools as a student. Therefore, I can let my thinking lead me to the implications and then let the implications lead me to future study. So now I just don't study about situated cognition; I try to live in the idea of it.

Group Processes
Data indicated that these group processes seemed similar to group processes developing in face-to-face instruction. Group atmospheres were cordial, communication patterns seemed to be linked and nested, participation patterns included all learners, and group norms seemed to develop. In one group, for example, the discussion norm seemed to be that in entering discussion on a particular topic, the learner first needed to develop his or her own written statement of understanding before it was acceptable to comment on a colleague's view. Another group norm that developed was

the level of participation. In some groups the level of participation was extremely high, and the group seemed to push each member for more and more contact. In other groups a moderate level of participation developed, and the group norm was not as demanding. Groups also developed ways to tease, have fun, and "joke around" on line. These findings are similar to that of Milton, Davis, and Watkins (1999) who, in their study of virtual learning communities, noted that

> each group engaged in their own set of behaviors and established a unique identity that was largely the result of the group dynamics. . . . The two issues that seemed to be critical but that detracted from the performance of the groups were agreement of an acceptable level of participation and engagement with the group. (p. 5)

Faculty Role

Electronic discussion fostered a change in the faculty role, which tended to move from presenting information to summarizing electronically and linking comments made by learners. This summarizing and linking process appeared to be most helpful to the groups once they had engaged in dialogue about their own experiences. This study supports Holt, et al.'s (1998) findings that "facilitating on-line learning involved many responsibilities: creating the environment, guiding the process, providing points of departure, moderating the process, managing the content and creating the community" (p. 48). These changes place faculty members in a guiding and facilitating role, rather than in a knowledge transmission role.

One interesting finding of this study was that if the faculty member entered the discussion too early, then the learners talked to the faculty member as the authority figure. However, if the faculty member waited and entered the discussion after colleague relationships had been established among learners, then the faculty member could enter the discussion, and the group would treat her or him as a group member rather than as the authority figure.

Implications for Practice and Research

This study has implications for the practice of adult education as well as for further research in the field. First, adult educators will benefit from a greater understanding of how technology facilitates not only the teaching, but also the learning, process. This deeper understanding of

technology's impact on learning can lead to more effective use of technology in teaching.

It was evident in this study that the learners moved through learning processes of engagement, developing conceptual relationships, drawing conclusions, and reflection and self-evaluation. The electronic discussion format helped learners take a more analytical and reflective approach to their own learning. A number of factors could have contributed to this high level of analysis and synthesis in learning. First, a constructivist approach was used in designing the discussion format and group activities. Learners were asked to focus on connections with content and analysis of experiences. Second, the technology provided the learner the ability to read colleagues' comments, print those comments, go back to course materials and integrate these materials with their colleagues' comments, think about what it meant, and then, ultimately, frame their responses. Learners who participated in electronic discussions felt that they used a "more thoughtful" process in framing responses. In addition, as one student expressed it, "You know, there is a record of the things we say, so I think we are accountable in a different way for our ideas than we are in a classroom discussion."

A major teaching/learning issue raised by this study is determining which course content/activities are best suited for electronic discussion and which for classroom discussion. It appears that adult educators will need to address this issue in their consideration of discussion formats within courses. As Boshier et al. (1997) indicate, "From an adult education perspective, it is not acceptable to use the web to emulate the worst of face-to-face courses where power relations are unproblematised and learners constructed as passive recipients of information" (p. 347).

Second, this study has implications for further research. The author considers this to be a preliminary exploration and believes that the field would benefit from its replication and expansion. Additionally, future research is needed to clarify learning processes that develop in computer-mediated environments. For example, the field would benefit from a clearer understanding of how specific technologies, instructional design, learning process, context, and facilitators are all interrelated. What impact does each of these have on the learner in a technology-enhanced environment? Holt et al. (1998), for example, also believe that "further research is needed to investigate the structuring and sequencing of electronic forums, strategies for combining face-to-face and electronic experiences, techniques for effective moderation of on-line conferences, and methods for modeling critical thinking" (p. 48).

Conclusions

In conclusion, this study has begun to identify the impact that electronic discussion has on the learning, teaching, and group processes within an adult education graduate program. It is apparent that these processes are intricately connected and that each needs to be analyzed and understood fully in order to be employed effectively. As adult educators, we need to move beyond using technology because it is available, exciting, new, and unique. We need to ask ourselves, "If I use this technology, will it have an impact on learning, and, if so, what will that impact be?" As Chester and Gwynne (1998) indicate, "We can not [sic] assume that the skills and pedagogy of face-to-face teaching will be appropriate in cyberspace. We have to be open to change and open to the lessons, both in their delights and their dangers, that teaching on-line can offer" (p. 9).

References

Boshier, R., Mohapi, M., Moulton, G., Qayyum, A., Sadownik, L., & Wilson, M. (1997). Best and worst dressed web courses: Strutting into the 21st century in comfort and style. *Distance Education, 18*, 327-348.

Braden, R. (1996, March-April). The case for linear instructional design and development: A commentary on models, challenges and myths. *Educational Technology*, 5-23.

Chester, A., & Gwynne, G. (1998). Online teaching: Encouraging collaboration through anonymity. *Journal of Computer-Mediated Communication, 4*(2). Retrieved from http://www.ascusc.org/jcmc/vol4/issue2/chester.html

Cicognani, A. (2000). Concept mapping as a collaborative tool for enhanced online learning. *Educational Technology & Society, 3*, 150-158. Retrieved from http://ifets.ieee.org/periodical/vol_3_2000/b01.pdf

Cohen, V. (1997). Learning styles in a technology-rich environment. *Journal of Research on Computing in Education, 29*, 338-349.

Glaser, B. G., & Strauss, A. L. (1973). *The discovery of grounded theory: Strategies for qualitative research.* Chicago: Aldine Publishing.

Hannafin, M., Hannafin, K., Land, S., & Oliver, K. (1997). Grounded practice and the design of constructivist learning environments. *Educational Technology Research and Development, 45*, 101-117.

Holt, M., Kleiber, P., Swenson, J., Rees, R. F., & Milton, J. (1998). Facilitating group learning on the Internet. In B. Cahoon (Ed.), *Adult learning and the Internet* (pp. 43-51). San Francisco: Jossey-Bass. (New Directions for Adult and Continuing Education, No. 78).

Jonassen, D. (2000). *Computers as mindtools for schools: Engaging critical thinking* (2nd ed.). Saddle River, NJ: Prentice-Hall.

Kafai, Y., & Resnik, M. (1996). *Constructionism in practice: Designing, thinking, and learning in a digital world.* Mahwah, NJ: Lawrence Erlbaum.

Lambert, L., Walker, D., Zimmerman, D. P., Cooper, J. E., Lambert, M. D., Gardner, M. E., & Ford Slack, P. J. (1995). *The constructivist leader.* New York: Teachers College Press.

Lian, A. (2000). Knowledge transfer and technology in education: Toward a complete learning environment. *Educational Technology & Society, 3*(3), 13-22.

Lincoln, Y., & Guba, E. (1985). *Naturalistic inquiry.* Newbury Park, CA: Sage.

Novak, J. (1998). *Learning, creating and using knowledge: Concept maps as tools to understand and facilitate the process in schools and corporations.* Mahwah, NJ: Lawrence Erlbaum.

Merriam, S., & Caffarella, R. (1999). *Learning in adulthood: A comprehensive guide* (2nd ed.). San Francisco: Jossey-Bass.

Milton, J., Davis, M., & Watkins, K. (1999). Virtual learning communities: Creating meaning through dialogue and inquiry in cyberspace. In K. P. Kuchinke (Ed.), *Proceedings of the 1999 Academy of Human Resource Development Conference* (pp. 1165-1173). Baton Rouge, LA: Academy of Human Resource Development.

Milton, J., Wilson, J., & McCall, M. (1999, May). *Through the looking glass: Learning through and in spite of technology. A qualitative analysis of action science case work on the web.* Paper presented at the Adult Education Research Conference, Northern Illinois University, DeKalb.

Rheingold, H. (1994). *The virtual community: Finding connections in a computerized world.* London: Secker & Warburg.

Russell, T. L. (1997). *The "no significant difference" phenomenon.* Retrieved from http://www2.ncsu.edu/oit/nsdsplit.htm