

Critical Thinking and Online Learning: A Practical Inquiry Perspective in Higher Education

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Higher education at the dawn of the twenty-first century is experiencing many changes, not the least of which are changes regarding the use of technology in the classroom. Students, parents, employers, and the general public are demanding that educational curricula utilize technological advancements to their fullest (Gumport & Chun, 1999). Technology here refers to the use of computer-mediated communication, the Internet, and online educational programming. In the University of South Dakota's Division of Educational Administration online distance delivery of graduate level courses is a major priority. Currently, all core courses for both the masters and doctoral programs are offered via the Internet. This has been necessitated by ongoing, and growing, student demand.

For years, a central debate in American educational circles has been whether institutions of higher education should focus their efforts on "teaching students how to think rather than what to think" (Bruning, 2004, p.180). This paper will examine the issue of critical thinking and its demonstrated presence in a computer-mediated learning environment. It will also discuss the findings of a study conducted at the University of South Dakota during the spring semester 2004 which considered the importance of developing a "community of inquiry" (Garrison, Anderson, and Archer, 2000) among online learners. Garrison's et al. (2000) community of inquiry is made up of three elements, those elements are social presence, teaching presence, and cognitive presence. The element of cognitive presence is operationalized through the Practical Inquiry Model developed by Garrison, Anderson, and Archer (2000) and the subject of this study.

Background Information

Critical Thought

Much of current educational theory has its genesis in the early twentieth-century writings of John Dewey. Dewey (1910) proposed that learning, to be truly educative in value, must involve reflective thought. Dewey's work led him to define reflective thought as: "active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it, and the further conditions to which it tends" (p. 6). In this sense, knowledge gained through reflective thought is individually constructed and revolves around one's personal beliefs. Beliefs that may or may not be substantiated from a scientific perspective, but none the less are derived from some personal experience (Dewey, 1910).

Dewey (1910) presented the elements of reflective thinking as: "a) a state of perplexity, hesitation, doubt, and b) an act of search or investigation directed toward bringing to light further facts which serve to corroborate or to nullify the suggested belief" (p. 9). The ultimate purpose of this process is to come to a reasonable conclusion or solution of the problem or dilemma presented. Clearly, an individual's past experience and prior knowledge play an important role in reflective thinking. This means that unless we have meaningful life experiences to draw upon to help us sort through and clarify perceived problems or

dilemmas, “confusion remains mere confusion” (Dewey, 1910, p. 12). In Dewey’s 1938 classic writing *Experiences in Education*, he posited that “all genuine education comes about through experience” (p. 13). He later argued that learning through experience is akin to a building process, whereby new experiences when encountered are connected to past experiences that impact how we perceive, approach, and deal with future issues, problems, and dilemmas (Merriam, 1999).

The social aspect of the learning experience was not lost on Dewey. In his essay, *My Pedagogical Creed*, written in 1897, Dewey remarked “I believe that the individual who is to be educated is a social individual and that society is an organic union of individuals” (Dworkin, 1959, p. 22). Interpersonal relationships are a significant matter in this educational framework. It is from collective human activity and the shared learning experiences that govern this activity that knowledge develops (Field, 2001). We have come to know this body of research and thought as social constructivism.

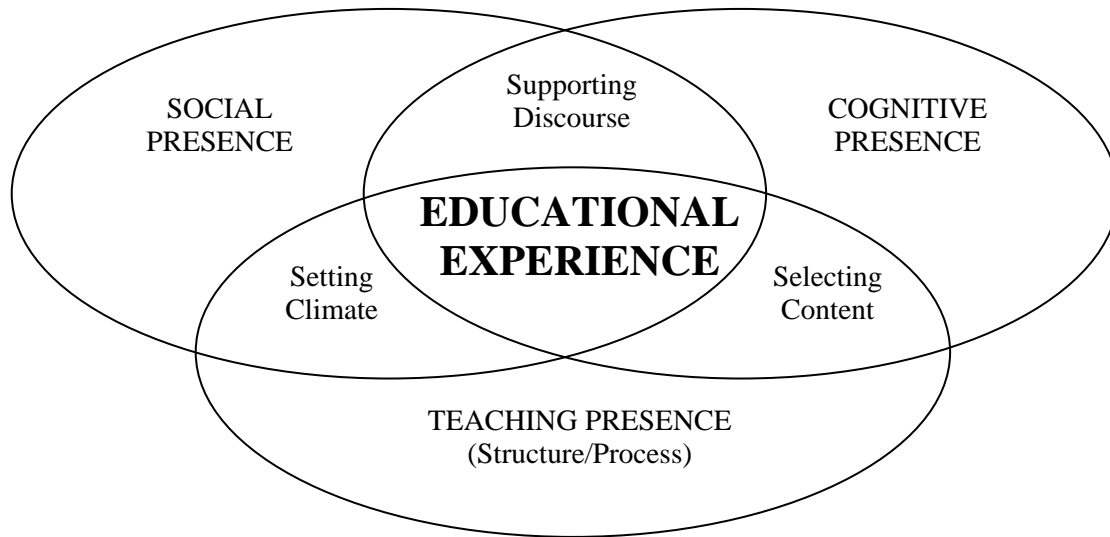
Today, mainstream education has been influenced significantly by the research and writings of such notable constructivists as Ausubel (1968), Brookfield (1987), Bruner (1966), Dewey (1933), Knowles (1980), Mezirow (1981), Piaget (1969), and Vygotsky (1978), as well as classic educators like Bloom (1956) and Chickering (1981). Their work in the areas of self-directed learning, transformational learning, experiential learning, and reflective thought are central to today’s educational practice.

An important element commonly associated with all of these areas is critical thinking. The concept of critical thinking can be traced back to Dewey’s (1933) reflective thinking model. In reviewing the literature, one can find as many definitions of critical thinking as authors writing on the subject. Broken down and analyzed, the word “critical” is of Greek origin with two reference points: “kriticos” (meaning discerning judgment) and “kriterion” (meaning standards). Therefore, the word implies discerning judgment based on standards (Paul, 2003). With this in mind, the term critical thinking could be said to mean thinking that aims at well-formed judgment and utilizes evaluative standards in an attempt to determine the true worth, merit, and value of something (Paul, 2003).

Ever since the noted educational psychologist Benjamin Bloom and his colleagues developed their classification of intellectual behavior in 1956, much has been written about the need to develop higher order thinking skills in our students. To understand the educational practices that would help accomplish this, one must work back from the desired learning outcomes. In higher education, these outcomes are directly tied to higher-order learning that is to say, becoming a creative and critical thinker. The question remains, how does this manifest itself in the classroom and through the use of such distance education mediums as computer-mediated communication? The goals professed in higher education to develop students who can think critically and are self-directed in their life pursuits, must become more than mere rhetoric. Educators must look to develop pedagogical models that lend themselves to student metacognition, self-actualization, and meaning making (Garrison, 2003). There is need to develop models that work to focus student attention toward the development of skills on the upper end of Bloom’s intellectual scale, those of analysis, synthesis, and evaluation.

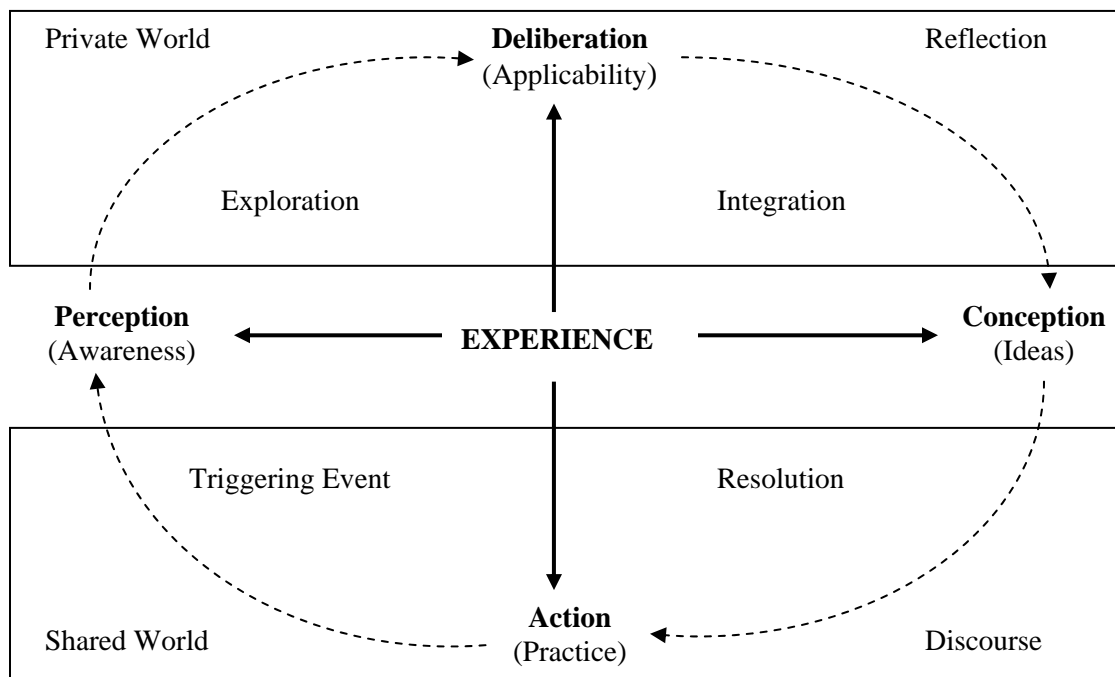
The study completed considered one such model and its use in computer-mediated communication (on-line learning). Garrison’s et al. (2000) Community of Inquiry Model utilizes as its philosophical basis the work of John Dewey (see Figure 1). Dewey’s collaborative constructivist approach to education and learning through reflective thought is discernible in his view that the individual and society cannot exist separately, that learning takes place in both our social and personal worlds (Dewey, 1933). We learn from each other as well as through our individual life experiences. The conceptual framework of the Community of Inquiry has as its roots in Dewey’s reflective inquiry approach to learning. The model incorporates three aspects that can be thought of as three intersecting circles, social presence, teaching presence, and cognitive presence. Together these elements make up the educational experience (Garrison, 2002).

Figure 1. Community of Inquiry Model



From: "*E-Learning in the 21st century: A framework for research and practice*," by D. R. Garrison and T. Anderson, 2003, p. 28. Copyright by New York: RoutledgeFalmer. Adapted with permission from the author

Within this framework, reflective or critical thinking takes place in the element of cognitive presence. For it is here that the work of Dewey (1933), Brookfield (1987) and others clearly manifests itself. To this end, Garrison et al. (2000) have formulated a model of practical inquiry (see Figure 2) which can be used to move the learner through a critical thinking process of (a) triggering event, (b) exploration, (c) integration, and (d) resolution. In particular, the purpose of the study conducted was to explore the impact of using Garrison's et al. (2000) Practical Inquiry Model as a teaching strategy on the demonstrated critical thinking skills of graduate students participating in a computer-mediated (online) learning environment.

Figure 2. *Practical Inquiry Model*

From: “*E-Learning in the 21st century: A framework for research and practice*,” by D. R. Garrison and T. Anderson, 2003, p. 59. Copyright by New York: RoutledgeFalmer. Adapted with permission of the author.

The Study

Population

This presentation centers on quasi-experimental study involving two groups of graduate students. Quasi-experimental research “involves the use of intact groups of subjects in an experiment, rather than assigning subjects at random to experimental treatments” (Wiersma, 2000, p.128). The rationale for the use of this design is that, in educational research random selection or random assignment of subjects is sometimes not an option, as learners often self-select the courses in which they enroll (Wiersma, 2000). In this case, the study involved an experimental group of 16 graduate students (5 male, 11 female) and a control group of 22 graduate students (11 male, 10 female). The experimental group was enrolled in the online course *Introduction to Educational Administration*, EDAD 701, at the University of South Dakota during spring semester 2004. The control group was made up of students who enrolled in the same course during summer 2003, and participated in the study by virtue of their archived discourse. The instructor was the same for both courses. To address the issues of subject representativeness and study generalizability, the researcher used a pretest-posttest, nonequivalent control group study design (Wiersma, 2000). The technique of administering a pretest to all subjects prior to conducting an experiment aids in checking for participant similarity. In addition, it provided the researcher with a beginning point from which posttest data can be measured and compared.

Course Procedures

The pedagogical process of this course was as follows. Each week a new module and topic are introduced to the class by the instructor. After introducing the topic and class reading assignments for the week, the instructor posted a series of two to four questions to invoke critical reflective thought and discussion. The students are asked to post their responses to the presented questions, plus respond to the postings of at least two other members of the class by the end of each week. During the week, the instructor would dialogue with each student, commenting on their posting and/or asking further probing questions. At the beginning of each week, a new module is introduced and the procedure begins anew. The lesson design of the study's experimental group involved an intervention. This process began with the instructor selecting the appropriate week-long module in which to conduct the intervention. The week prior to the intervention, the instructor introduced the experimental group to the Practical Inquiry Model developed by Garrison et al. (2000). The introduction of the model included an explanation of its theoretical use as a tool to enhance higher order critical thinking skills in online learning environments. At this time, students were asked to utilize the model during their upcoming week's work. They were informed that the instructor would begin the module, as usual, with an introduction of a topic of relevance that would serve as the triggering event. They were instructed to use the model, on a self-directed basis, as an instrument to guide their reflective thought processes and interactive discourse through the remaining three phases of exploration, integration, and resolution during the week.

Results

Student discourse/dialogue was read, coded, analyzed, and meaning extracted by two trained coders using a research technique called qualitative content analysis. Qualitative content analysis is a traditional method of studying mass media messages and transcribed discourse and is a research technique designed for the "objective, systematic, quantitative description of the manifest content of communication" (Berelson, 1952, p. 18). The research emphasis of this study was from an adult self-directed learning paradigm. Previous studies have identified control, critical reflection, and responsibility as three important dimensions of self-direction (Brookfield, 1985; Candy, 1991; Garrison, 1993; Mezirow, 1985). The experimental group of this study was allowed the freedom of self-direction. Control of the learning environment, critically reflective thought, and learner responsibility are all central elements of this study's design. Knowles (1998) in his outline of adult learning principles echoes the self-directed nature of learning in adulthood.

The study's findings reflected a significant change in the demonstrated critical thinking of the experimental group of graduate students after they were introduced to Garrison's et. al. (2000) Practical Inquiry Model (i.e., class intervention) and asked to utilize it on a self-directed basis to guide student critical discourse/dialogue during the selected timeframe.

References

- Ausubel, D. P. (1968). *Educational psychology: A cognitive view*. New York: Holt, Reinhart, and Winston.
- Berelson, B. (1952). *Content analysis in communication research*. Illinois: Free Press.
- Bloom, B. S., et al. (1956). Taxonomy of educational objectives. *Handbook I: Cognitive domain*. New York: McKay.

- Brookfield, S. (1985). Self directed learning: A critical review of research. In S. Brookfield (Ed.), *Self-directed learning: From theory to practice* (pp.5-16). San Francisco: Jossey-Bass.
- Brookfield, S. D. (1987). *Developing critical thinkers*. San Francisco: Jossey-Bass.
- Bruner, J. S. (1966). *Toward a theory of instruction*. Cambridge, MA: Harvard University Press.
- Bruning, R. H., Schraw, G.J., Norby, M.M., & Ronning, R.R. (2004). *Cognitive psychology and instruction* (4th ed.). Upper Saddle River, NJ:Prentice Hall.
- Candy, P. C. (1991). *Self-direction for lifelong learning: A comprehensive guide to theory and practice*. San Francisco: Jossey-Bass
- Chickering, A. and Associates. (1981). *The modern American college*. San Francisco: Jossey-Bass.
- Dewey, J. D. (1910). *How we think*. Boston: D.C. Heath.
- Knowles, M. S. (1980). *The modern practice of adult education: From pedagogy to andragogy* (2nd ed.) New York: Cambridge Books.
- Knowles, M. S., Holton, E. F., & Swanson, R. A. (1998). *The adult learner: The definitive classic in adult education and human resource development*. (5th ed.) Woburn, MA: Butterworth-Heinemann.
- Dewey, J. D. (1933). *How we think, a restatement of the relation of reflective thinking to the educative process*. Boston:: D. C. Heath
- Dworkin, M. S. (1959). *Dewey on education*. New York: Teachers College Press.
- Field, R. (2001). John Dewey. Retrieved November 23, 2003, from <http://www.utm.edu/research/iep/d/dewey/.htm>.
- Gumport, P., & Chun, M. (1999). Technology and higher education: Opportunities and challenges for the new era. In Altbach et al. (Eds.) *American higher education in the twenty-first Century* (pp.370-398). Baltimore, MD: Johns Hopkins University Press.
- Garrison, D. R. (1993). An analysis of the control construct in self-directed learning. In H. Long and Associates (Eds.), *Emerging perspectives of self-directed learning* (pp. 27-44). Norman, OK: Research Center for Continuing Professional and Higher Education of the University of Oklahoma.
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2-3), 87-105.
- Garrison, D. R., & Anderson, T. (2003). *E-Learning in the 21st century: A framework for research and practice*. London: Routledge Falmer.
- Merriam, S. B., & Caffarella, R. S. (1999). *Learning in adulthood: A comprehensive guide*. San Francisco: Jossey-Bass.
- Mezirow, J. (1981). A critical theory of adult learning and education. *Adult Education*, 32(1), 3-27.

Mezirow, J. (1985). A critical theory of self-directed learning. In S. Brookfield (Ed.), *Self-directed learning: From theory to practice* (pp. 17-30). San Francisco: Jossey-Bass.

Paul, R., Elder, L., & Bartell, T. (2003). *Study of 38 public universities and 28 private universities to determine faculty emphasis on critical thinking in instruction*. Retrieved January 5, 2004, from <http://www.criticalthinking.org>

Piaget, J. (1969). *The psychology of the child*. New York: Harper & Row.

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Wiersma, W. (2000). *Research methods in education: An introduction*. Needham Heights, MA: A. Pearson.

Biographical Sketches

Greg Boris earned his Ed.D. from the University of Minnesota and has been active in teaching classes in educational administration online since 1999. He is the principle investigator at USD for the Borderless Access to Training and Education (BATE) grant, a FIPSE LAAP grant which involves three universities collaborating to deliver certification courses in educational administration and library media. Recent presentations of Dr. Boris include: 1) 2/04 American Association of School Administrators, San Francisco, CA; "Borderless Access to Teaching and Education (BATE): An Inter-institutional Collaborative for Administrative Certification" (presented with Dr. Patti Chance, UNLV) 2) 8/03 19th Annual Conference on Distance Teaching & Learning, Madison, WI; "Taking the BATE: Inter-institutional Cooperation and Breaking Barriers" (presented with Dr. James Crawford, UNLV) 3) 8/03 National Council of Professors of Educational Administration, Sedona, AZ; "Reaching Out Through Cyberspace: An Inter-Institutional Collaborative Administrative Certification Effort" (presented with Drs. Teresa Jordan and Patti Chance, UNLV) 4) 4/03 The E-Learning Journey: A Conference for Educators and Technical Staff, Aberdeen, SD; "Issues & Opportunities in Cross Institutional Collaboration" (presented with Tom Hall, USD) 5) 2/03 2003 Stop Surfing-Start Teaching Conference, Las Vegas, NV; "Issues and Opportunities in Cross-Institutional Collaboration" (presented with Drs. Teresa Jordan, Patti Chance, James Crawford of UNLV and Dr. Janis Bruwelheide of Montana State).

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