The Promise – and Peril – of Web-Based Course Delivery in Adult and Continuing Education

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Abstract: *Much has been argued about the advantages and pitfalls of computer technology in the delivery of adult education. This research examined the use of web-based instruction in terms of learner attitudes, students' differential use of computer technology, and the impact on learning outcomes and technological competency*

The Case for Web-Based Course Delivery

Course delivery via computer technological allows educators to reach a greater number of learners sometimes at great distances from the campus classroom. Learning via websites, electronic bulletin boards, "chat" rooms, or other interactive means can support a variety of stimulating learning experiences. But is computer technology all that it promises? Or, do our students take advantage of courses delivered via technological means at the detriment of their comfort or learning? Do women and men enjoy, respond, or learn equally well in a technological environment? And what are the lasting outcomes and impact of the increased use of educational technology? These questions compel adult educators to examine the use of computer technology in terms of delivery effectiveness, the rationale behind our choice of technology, and even whose interests are being served. In partial response to these questions, the purpose of this research was threefold. The first was to survey the attitudes of adult learners regarding their use of web-based instructional technology in graduate adult education classes; the second was to examine the ways in which adult learners differentially use computer technology in their learning; and the third was to explore the impact of successive use of computer technology in terms of learning outcomes and technological competency.

Theoretical Framework

The theoretical framework informing this research focused on three distinct, but inter-related aspects of our society's computer culture. First, the substantive and often contradictory literature describing computer anxiety and self-doubt regarding technology competency (Scott & Rockwell, 1997) and gender issues relative to attitudes, access, and computer use (Durack, 1997; Reinen & Plomp, 1994; Westbrook, 1999) were illustrative and helpful. More specifically, the literature on the context of educational computing served as a basis for understanding the sociocultural differences present in and perpetuated by technology (Bromley & Apple, 1998; Mangione, 1995) and the gendered notions of technology, education, and work (Missingham, 1996). And third, recent literature on computer-mediated communication and the effect of technology on linguistic patterns and style provided a background for understanding the participants' online communication styles (Baron, 1998; Rossetti, 1997; Savicki, 1996; Yates, 1997). In addition to these three related bodies of literature dealing specifically with the research, theories and models of learning styles and instructional strategies were also informative.

Research Design

This research project employed a mixed methodological design utilizing two brief attitudinal and demographic surveys, focus group and individual interviews, and document analysis. This mixed and triangulated design amplified descriptive and attitudinal data with more in-depth and clarifying qualitative data that added richness and understanding of participants' views regarding their use of computer technology in learning.

Research Participants

The project took place between July, 1997 and June, 1999, during which time a total of 28 graduate students (12 men and 16 women, age 32 to 64) participated. There were ten African-American participants, two Asian, one Latino, one Native American, and 14 Caucasian students. All participants were degree-seeking adults who during the term of the

study were enrolled in at least two graduate courses delivered solely by means of web-based technology.

Course Design and Content

The web-based courses were electives in an Adult Education (MAEd) degree program at a mid-sized Doctoral II university. The courses were multiple sections of an Issues and Trends in Adult Education course with topics including: Multicultural Issues in Adult Education Practice; The Role of Human Resource Development in Adult Education; and Leadership in Adult and Continuing Education. All of the courses were delivered in an abbreviated summer session of 5 weeks, during which time the students would normally have met twice weekly for 4.5 hours each night.

The three courses utilized a variety of computer technology and web-based instructional strategies such as email, threaded discussion boards, synchronous chats, internet searching, and course lecture and presentation material placed on the university's server. Students were expected to be knowledgeable of these strategies and have at least limited technological proficiency, However, both online tutorials and technical assistance were available for students during each course offering.

Research Strategies

Specific research strategies included a brief (20-item) attitudinal and demographic survey, a follow-up survey, focus group and individual interviews, and document analysis. In addition to simple demographic data, the surveys (one administered upon enrollment and the second at the conclusion of each course) included questions related to: students' experience and comfort level with computer technology; reasons for choosing a web-based course; degree of anxiety regarding the web-based delivery; expectations held about the delivery mechanism, degree of difficulty, and outcome of the course; and the likelihood of choosing another web-based course in the future. The attitudinal items utilized a 5-point Likert scale for ranged responses.

Focus group and/or individual interviews were conducted at the beginning and again near the conclusion of each course to assess student attitudes. All of the interviews were conducted by a graduate research assistant in order to offer anonymity to the participants and illicit the most forthright responses. The interviews were audio-taped and transcribed verbatim for subsequent data analysis.

Document analysis included review of students' online communications, learning journals, course assignments and grades, and the students' self-reported technological competency assessment. Their online communications were examined for frequency, length, and nature of response; their learning journals and competency assessments served to corroborate attitudinal and interview responses; course assignments and grades were the primary source of learning outcomes.

Data Analysis

Given the small number of participants in this research, the survey data were of limited, descriptive value only. The document analysis consisted largely of content analysis as prescribed by Denzin and Lincoln (1994); qualitative data were analyzed using constant comparative methods according to Glaser and Strauss (1967).

Findings

Research findings were organized in terms of the three broad research purposes, those of learner attitudes toward the use of web-based technology for learning, differential use of computer technology, and learning outcomes and increased technology competency.

Learner Attitudes

Two significant themes emerged in terms of learner attitudes, the first dealing with the students' motivations for enrolling in a web-based course. The students cited three primary reasons for their participation: (a) convenience, specifically in terms of class attendance; (b) intrigue or curiosity about the technology; and (c) the need to learn some aspect of the technology. Convenience was identified by 95% (12 men and 15 women) of the students as either their first or second reason for participation. More women than men (82% and 34%, respectively) reported intrigue, interest, or curiosity with the technology as their primary motivation. As one participant said, "I just can't imagine how we're going to *talk* about these course topics without being in the same place!" Another reported being curious about how the use of technology would impact the time she spent on her course work. And yet another cited her intrigue with chat rooms, adding, "This will be a way for me to find out about

them in a safe environment." Women again outnumbered the men (42% and 12% respectively) in citing the need to learn technology as their primary motivation.

The second theme dealt with the degree of anxiety regarding the students' use of web-based technology in their learning. While there was some acknowledged moderate anxiety, it was more in terms of "not being able to get online in the evening" or "not understanding the concepts if we can't talk about them in class" than about technological proficiency. There was no difference between women and men, or between ethnic groups in the degree of anxiety regarding the actual use of the technology.

Differential Use of Computer Technology

The second purpose of the research, examining the differential use of computer technology, resulted in some of the more curious and significant findings. Specifically,

- Women more frequently referred to computers as "tools" for coursework, whereas men considered their course work as "a chance to play on the computer for legitimate reasons." The majority of the women reported enjoying the web-based instruction but having to "strategize and limit [my computer time], because I don't have time to play."
- Four participants — all people of color and nearly 30% of the minority students — cited computer access as an issue. Two of these students didn't own a computer at all; one woman did all of her work in the university's computer labs, and one man who enjoyed the support of his employer used the company's computer equipment and access during his lunch and break time and after work. Both of these students worried that their "lack of opportunity and access to equipment might put us behind and limit the time we have to work on homework." A third student who cited access as a problem noted having to "share the computer with my children, so there's no time to enjoy learning it." And, finally, the fourth student for whom access was a problem noted substantial long-distance charges incurred because he lived in a rural area without a local internet service provider or direct link to the university's server.
- Women's online communications were generally longer, more in-depth, and more frequent, often in response to others' postings. In spite of noting access difficulty, family responsibilities, and career pressures, in all three courses, women's collective communications were 37% longer than those of the male students. The women also reported spending longer reading and preparing for their more in-depth postings to course assignments and others' postings. As one participant noted, " Using the computer for dialogue and response to course topics isn't much different for us than in class. In this environment, too, we are more thoughtful about crafting our response; we talk more with one another. We don't just give an answer and go on to something else."

Learning Outcomes and Technological Competency

The research was least surprising and informative in regard to the third question of learning outcomes and technological competency. Learning outcomes were assessed primarily by course assignments and end-of-course grades. The students' self-reported technological competency was based on ISTE standards adapted for post-secondary students.

Course grades. Throughout the course, all students demonstrated significant learning and mastery of course objectives. And, there was little difference in learning outcomes as measured by students' end-of-course grades. Twenty-two of the 28 students (78.57%) earned an *A* for their course work; five students (17.86%) negotiated alternative course assignments which resulted in grades of *B* for the course, and, one student requested an *Incomplete* that was later changed to grade of *B* when her course work was completed.

Technological competency. While increased technological competency was not a stated objective of any of the courses, gains in proficiency relative to various computer functions and applications were expected. At the conclusion of each course, the students completed a self-reported assessment of their technological competency according to measures identified by ISTE standards. All the students reported increased proficiency in the majority of competencies, with women reporting the greatest gains. Twelve students (43%) reported learning applications or competencies which they previously did not know. Women more frequently than men reported improved attitudes toward web-based

learning and stated they would "eagerly enroll in another [web-based] course."

Implications for Adult and Continuing Education

This research holds both theoretical and practical significance for adult and continuing education specifically in terms of program planning and implementation. This research supports current literature about sociocultural aspects of access, computer use in education, and gendered communication patterns. On the other hand, this research sheds new light on women's approaches and attitudes toward computer use. Thus, this research presents several opportunities to dispel myths regarding learners in technologically delivered courses, in particular revealing women's pragmatic approach toward computer use and no more anxiety than their male counterparts. Additionally, it suggests a leveling of the playing field, as it were, in terms of communication patterns in class dialogues mediated via computer technology.

Pragmatically, educators will continually be called upon to reach a greater number of more diverse learners. The use of computer technology, especially web-based learning can help meet this challenge – if attention is given to the critical issues of access, learner attitudes and anxiety, learning styles, and communication patterns. This preliminary research clearly suggests that women and men may learn equally well in web-based courses and that web-based learning may serve to encourage and support learners' increased comfort with and use of computer technology. Continued exploratory research such as this can further serve to guide adult and continuing educators in asking the right questions regarding the use of educational technology for learners in the next century.

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