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ABSTRACT
        The birth of modern continuing education as a structured
university enterprise has been given impetus by the development of distance
education. Instruction through and with a mix of technologies is a permanent
and critically important part of distance education. Because of the
heterogeneous quality of the adult student population, the introduction of
educational technology for this group may lag behind that of undergraduate
students for whom both educational and technical requirements may be
mandated. The introduction of computer technology takes many forms. Computer
Aided Instruction (CAI) and Computer Mediated Instruction (CMI) allow highly
limited student/teacher feedback that is primarily restricted to predeveloped
and sequenced educational materials; it is narrow in span and best used as a
supplement to live teaching or to drill. Computer conferencing has made
possible interactive distance learning between students and instructors. Its
educational format, the electronic course delivered through the Internet,
will drive adult distance learning into the next century. Beyond the issues
of inter-institutional competition, population diversity, and faculty choice
as factors affecting the implementation of distance education electronic
technology, there is the phenomenon of electronic teaching itself,
particularly the asynchronous (spread out over a series of days) electronic
contact. Benefits of electronic teaching include a reconceptualization of the
"classroom" wherein intellectual and communication skills, especially
writing, are strengthened. (YLB)

TECHNOLOGY AND THE ADULT CLASSROOM OF THE FUTURE
NEW POSSIBILITIES FOR TEACHERS AND LEARNERS

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Abstract

In this paper the author describes the evolution of technology in the adult classroom. A number of different applications are reviewed including Computer Aided Instruction (CAI), Computer Mediated Instruction (CMI), and electronic conferencing. The electronic course offered through the Internet is emphasized as the current delivery model of choice for electronic distance learning. The impact of this modality is analyzed with special emphasis on adjustments required by faculty and students. Benefits of electronic teaching include a reconceptualization of the "classroom" wherein intellectual and communication skills, especially writing, are strengthened.

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Introduction

It has become impossible to function within higher education without computer literacy in one form or another. Whether it be an office setting where business software programs address administrative and management needs, the use of the library for conducting research, communication between colleagues on campus or worldwide, and, most importantly, teaching, we are witnessing a fast paced revolution taking place on many fronts. The future before us contains more and more computers fulfilling more and more needs.

As the campus landscape evolves, pushed by this steady introduction of technology, we need to assess to what extent changes in the nature of higher education itself have actually taken place, beyond the mere introduction of technology. At times teaching seems relatively untouched- especially when every day we see lecturers standing in front of large classes of students. Concomitantly we are aware that hundreds of colleagues nationwide are experimenting with the introduction of computer technology in their curricula. Although major sea changes are underway, transformation, though seemingly inexorable, is uneven. This paper is concerned with the introduction of technology in continuing higher education also known as adult continuing education. My goal is to raise questions to be considered by others wrestling with similar educational/technological issues regardless of the age of the students. Although adult education also encompasses the realm of distance education, I plan to also address on-campus instruction as well.

Foundations of Continuing and Distance Education

The roots of continuing education are in extension. The term literally describes one of the key initial functions and audiences- reaching beyond campus to part-time, continuing adult students who were unable to attend

campus for instruction. Initially extension was conducted by travelling faculty members who would visit remote and outlying areas. By the late 19th century, correspondence supplemented the use of "circuit riders" and was the first form of education in which the instructor and student were physically separated from one another.

Bates (cited in Merriam and Brockett, 1997, pp. 208-209) conceptualized three stages of technology application to distance education.

Stage 1. Reliance upon a single technology and separation of teacher and learner.

Stage 2. Use of more than one technology.

Stage 3. Introduction of interactive media which permits student and teacher mutual access.

Interestingly, we find that each new level of innovation serves in a complementary fashion supplementing its predecessors, expanding the ranges of choice and opportunity. Earlier extension delivery modes may continue to exist because they are serving needs. So correspondence did not eliminate the need for what are commonly called off-campus courses. The latter is still a preferred mode of addressing extension education needs especially when there is instructor availability and the requisite critical mass of students. The "circuit rider" replicates the model of the on-campus course, which ironically is also the model emulated by the electronic course or seminar which we will discuss later. Strictly speaking, however, the off-campus course is not considered a form of distance education because teacher and students are together.

The birth of modern continuing education as a structured university enterprise was given impetus by the development of distance education (Edelson, 1991). The effective administration of these programs mandated certain important university objectives including improving quality, standardization, and enhancing access. A strong consumer focus, an early component of all continuing education, had a special place in correspondence courses since students, not tied down to a particular site, were free to go elsewhere. Thus distance education from its very inception and continuing to this day, is the form of adult education, if not all higher education, that is most sensitive to competitive pressures. It comes closest to resembling a "free market" since institutions are at liberty to recruit students wherever they are. And adults, as mobile, value conscious consumers, know they are free to take their business elsewhere and readily acknowledge their limited commitment to educational providers. Moreover, as costs of outreach continue to drop and technology becomes simplified, many barriers to competition will erode and the primary determinants of student choice will be program value, howsoever defined by adult students.

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"Distance education" has replaced "correspondence" as the preferred term to describe off-campus instruction. Correspondence remains as both a primary and secondary delivery mode depending upon program variables. It will continue to address needs, but increasingly it has been supplanted by other media especially video and computer related modes. Instruction through and with a mix of technologies is a permanent and critically important part of distance education. And regarding students, no simple definition will suffice to describe the range of adults currently addressed through continuing education and outreach programs. The population has swelled and is so diffuse including men and women in all walks of life, throughout the complete range of educational attainment, from high school equivalency to part-time doctoral degrees. Workplace education encompasses blue collar through the professions. Continuing higher education has found a way to successfully address the needs of each group.

Because of the heterogeneous quality of the adult student population, it is possible that the introduction of educational technology for this group may lag that of undergraduate students for whom it is more feasible to mandate both educational and technical requirements. This may obtain even though many adults in their work already use computers and other forms of highly complex technologies which are more advanced than colleges can deploy. But the introduction of technology is inevitable for young and old and it behooves us to look at and try to assess the impact wrought by this pedagogical transformation.

The Landscape of Computer Education Technology

The introduction of computer technology takes many forms (Verduin and Clark, 1991). An early format was use of the computer as a teaching tool, referred to as either Computer Aided Instruction (CAI) or Computer Mediated Instruction (CMI). In the case of the latter the computer facilitated rather than served as the source of instruction. Student/teacher feedback is highly limited in these models and primarily restricted to predeveloped and sequenced educational materials. As sole source educational tools they are narrow in span although with improved technology, especially CD ROM and faster and more sophisticated computer chips, the CAI/CMI teaching machine has become increasingly "lifelike." It is best used as a supplement to live teaching or as a way to conduct drills and the more routine parts of learning. Both CAI and CMI will always exist for self-directed independent learners with "on demand" educational needs.

Computer conferencing, the next evolution in the application of telecommunications technology, has made possible interactive distance learning between students and instructors. The educational format is the

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electronic course which, delivered through the Internet, has become the methodology of choice for the 1990's. It will drive adult distance learning into the next century. The popularity of the Internet, and its phenomenal expansion in the past two years, has given electronic courses access to every corner of the globe. However, thinking about the impact of this technology has clearly not kept pace with its availability.

Conceptualizing Computer Instruction: Some Observations

The following is designed as a discussion guide based upon the author's experiences, and those of other faculty members, in teaching electronically. A justification for this approach is that most electronic teaching is likely to be by faculty who incorporate this new mode into their teaching repertory as opposed to specialists in educational technology. This pattern has been true for all forms of adult learning in that faculty for adult education programs are more often content matter specialists who also teach adult students and not professional adult educators. The advance of distance education technology, especially its acceptance, will be based upon how compatible this mode of instruction is with traditional forms and its ease of application by casual users. The more compatible and user friendly, the easier it will be for faculty to make transitions from one format to the other and back again. This might mean teaching an electronic course as one part of a workload composed of other traditional face-to-face courses, or even alternating an electronic course with a campus-based course on the same subject which has been this author's strategy. One could argue then, that differences that finally emerge in the electronic classroom will be based largely upon instructor style, rather than substantive qualitative differences in the medium. For example, even in traditional on-campus lecture classes, instructors may affect different approaches along a continuum of student/teacher interaction as follows: the lecture, the lecture and question/answer period, and a discussion centered mode. All three of these approaches coexist, sometimes even in the same course wherein an instructor may use any or all of these techniques.

Suffice it to say, the growth of electronic teaching in mainstream higher education will be dependent upon the participation of faculty who see themselves as conventional instructors, but who wish to avail themselves of this electronic option. The predominant use of adjunct faculty in adult education makes it feasible for program administrators to play an active part in creating electronic courses for adult students. Thus we may ultimately come to see the florescence of this innovation in distance rather than in conventional education where adaptation is largely a matter of faculty volition instead of administrative decree.

Beyond the issues of inter-institutional competition, population diversity, and faculty choice as factors affecting the implementation of distance education electronic technology there is the phenomenon of electronic teaching itself, particularly the asynchronous electronic contact which is its leitmotif. This is likely to be the most important determinant of its acceptance. How different is the electronic classroom and what are its advantages and disadvantages?

Although some electronic communication between students and faculty may be in real-time (synchronous), it is more likely for them to be spread out over a series of days (asynchronous) since the basic appeal of distance learning is not having to attend class at one specific time and place. Therefore, the class session or instructional component will be longer in duration, one week for example, as opposed to one single day or evening. In a typical electronic course, electronic discussion of a topic will be initiated by an instructor who electronically posts to all class members a discussion topic or theme. This is followed by an exchange of comments over the ensuing days.

Without face-to-face contact, it is possible to experience an initial feeling of isolation, but this is dispelled over time. Some classes meet first at a "live" orientation session, or when this is not possible, the instructor will collect photos from class members and make a class portrait which is distributed by mail. In some situations, the photos are incorporated within a certain item on the course's electronic Home Page. Even when these strategies are omitted, the practice of communication by electronic mail is now so widespread that the acceptance of electronic contact as a way of meeting and getting to know people has become fairly routine, much like telephone contact was a generation earlier. The biggest challenges seem to be technical problems in the electronic environment and in the way class dialogue is managed.

Almost every report on electronic teaching (McGreal, 1996) includes some degree of technical mishaps or malfunctioning. Anyone who has struggled with computer problems of one form or another knows how vexing these can be, especially for non-specialists. A "help desk" facility is a *sine qua non* of the electronic classroom. Without it both student and/or faculty frustration levels will quickly undermine confidence in the enterprise and discourage new participants.

Consideration of the electronic class environment itself is a more subtle issue since it goes to the core of faculty identity and behavior. The nature of teaching as a performing art in real time has been a fixture since Socrates,

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if not earlier. In the electronic class, there is no performance *per se,* just a chain of responses. The value of spontaneity must be balanced with a more thoughtfully crafted approach that is driven by the written, as opposed to, spoken word. In the electronic environment as we now know it, writing is everything, ergo the professor as "writer" instead of "actor." Clear exposition of thought patterns, the development of ideas, synthesizing the contributions of others all come to the fore as priorities. The need for students to frequently take information and weave it together into their own written contributions to the class presents opportunities for faculty to improve student writing skills, long an educational weakspot.

Conducting a class discussion over an extended period of time, rather than a single session, means that attention can be focused on subjects for longer periods, strengthening retention and interpretive skills. The "afterthought" can be incorporated on an as-needed basis, not held for the next week when it always seems out-of-place and artificial. Students can also act with immediacy, commenting on a book, film, or some other phenomenon bearing upon the course, sharing this information with classmates with relative ease.

Most significant of all is democratization in the ecology of the small group. Traditional barriers to participation including age, sex, color, ethnicity, shyness, and even a number of physical impairments can be minimized in the new peer group of electronic learners. Many faculty who have taught electronically comment on the ease with which students can jump in and participate, more so than in traditional classes. Perhaps the new role of faculty as discussion leader at the electronic seminar table is more potent than initially conceived.

Some electronic teaching still lacks the freshness, variety and flexibility of *some* in-person courses. More sophisticated computers and ease in incorporating graphic and multimedia dimensions will doubtlessly help to give the electronic seminar greater variety and appeal. But for faculty who have developed their skills based upon a nuanced visceral interpretation of the "chemistry of the classroom" there is bound to be considerable resistance at first. It is clear, however, that the computer class or seminar driven by student demand will gain in popularity becoming a regular feature of the collegiate environment. For adult education, in particular, it has already altered the landscape providing multiple learning opportunities for students and teacher alike. Once technical barriers and costs are significantly reduced we are likely to see still greater participation throughout higher education. We can also be sure that yet-to-be developed technological innovations will offer new challenges and opportunities. Perhaps a stance of

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innovation and receptivity to change should be entrance requirements for all who wish to play a role in the technological campus environment of the future.

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