**AUTHOR:** Stephen R. Barley
**TITLE:** Computer-Based Distance Education: Why and Why Not
**SOURCE:** The Education Digest v65 no2 p55-9 O 1999



OVER the last decade, institutions of higher education, state and federal agencies, corporations, and the public at large have become increasingly interested in “distance” or “distributed” learning. Despite considerable debate about what these terms mean, almost everyone party to the debate agrees on the motivating premise. Whereas education has traditionally meant bringing students to sources of knowledge, the time has come to bring sources of knowledge to students.

In general, distance learning refers to delivery of a curriculum to students who are not present on campus, while distributed learning most often connotes ways of facilitating interaction among those distant students. For simplicity, I shall use only “distance learning” because it is the broader of the two terms: distributed learning can be understood as a type of distance learning.

Even though the idea of distance education may not be new, the perception is widespread that it is only now entering an era of its own. The renewed promise of distance education rests on a confluence of economic and technological developments that are setting the context for the twenty-first century.

The advent of the World Wide Web and the increased need for training have spawned considerable entrepreneurial activity. The last several years have witnessed the founding of firms dedicated to developing computer software and hardware for supporting distance education, to building specific training modules, or to providing consulting assistance to firms that want to mount their own distance education programs.

Although computer-based training and distance education hold considerable social and economic promise, it is important to recognize that the promise rests largely on high hopes for a fledgling set of technologies. As with most new technologies, the realities of implementing Web-based education are likely to be different from what its proponents’ rhetoric implies.

We know from studies of other technologies, such as word processing and computer-aided design, that anticipated benefits may be less easily achieved than originally thought. Embedded practices and unanticipated side effects often slow technology diffusion, counteract intended consequences, and lead to undesirable secondary outcomes. For instance, although firms claim that “intranets” will create efficiencies and change the way they do business, current research at Stanford University suggests that most firms that have constructed intranets are actually doing very little of significance with the technology.

Even if Web-based technologies do occasion a fundamental restructuring of the way education is delivered, doing so will, by definition, alter embedded institutional arrangements and cultural practices. If the goal is to provide greater access to knowledge and opportunity and if one believes that distributed education is key to achieving this goal, then failing to take institutional, demographic, and cultural issues into account may thwart the larger objective.

At present, important practical, social, and institutional questions remain unanswered, in part, because of the speed at which Web-based technologies have been so enthusiastically embraced. Because the technologies driving the development are so new, researchers have yet to study their use, and users have not had sufficient time to accumulate the wisdom of experience.

Among the questions that need to be answered if we are to go beyond the rhetoric and realistically assess the future of distance education are the following:

* How prevalent are the new forms of distance education? We know that a number of highly visible schools and corporations are experimenting with computer and Web-based education, but we do not know how representative they may be. It would be useful to know the characteristics that distinguish corporations and schools that offer distance curricula from those that do not. We also do not know how many students or employees are actually taking advantage of opportunities for distance education, and we know even less about the attributes of those students. Without such information we cannot determine whether distance education is reaching those who might not otherwise have access to knowledge or simply reaching those who already take advantage of most other educational opportunities.

* Are there practical and cultural barriers to distance learning? Although many schools want to move into distance education, most universities simply do not have the technological infrastructure, the financial wherewithal, or the technical talent to allow them to do so in a concerted way. Similarly, even though a growing percentage of households have access to computers, access is highly stratified by socioeconomic class. Access may be similarly stratified among business organizations: larger, wealthier firms may be able to provide access to distributed education while smaller, less profitable firms may not. What are the implications of such stratification for the goals of distance education, and how do we overcome these barriers?

* What are the firms and schools experimenting with distance education actually doing, and what are they learning about using Web-based technologies? Although firms and schools regularly report their general involvement with distance education, there is little specific and systematic information about what any organization has actually done. More importantly, little is known about what firms have discovered about the limitations and opportunities of Web-based courses. Surfacing such data is critical for accurately assessing the potential of distance-based education and for fostering a community of practice around development.

* How can we characterize the content of courses currently taught via Web-based education? Due to the nature of the medium, we need to know which subjects are most amenable to Web-based education. Some limitations are likely to be technological. For instance, even though Web-based education can be a multimedia affair, technical and economic realities (such as bandwidth and cabling) are likely to pose constraints on implementation. Other limitations may be social. If early developers are technical people, then all else being equal, their courseware should highlight technical information. Finally, some limitations may be inherent in the medium itself. For example, technical skills are often difficult to learn except by doing, and some even require face-to-face interaction with more accomplished members of a community of practice. It is difficult to comprehend how the Web could simulate such learning.

* How does the context of distance learning differ from the context of more traditional forms of learning? All teaching and learning takes place in a context. We know that the context of learning is crucial for educational outcomes. However, aside from pronouncements that learners need no longer travel to classrooms and that they can learn at their own pace, we know next to nothing about the context in which distance-based learning occurs.

What sort of background knowledge do students need in order to locate appropriate courses and providers? When students take courses at their desk or at home, how does the immediate environment affect the learning process? How do the temporal structures of distance learning differ from the temporal structures of classroom learning, and do the differences matter? Unless we understand the context of distance learning, we are unlikely to understand how the technologies can be optimally used.

* How do employers assess competency with distance-based education? Historically, schools have provided credentials and certifications. Students who pass through a curriculum are exposed to specific content (sometimes in a specified sequence), and their performance is assessed via grades and attested to with diplomas. Schools and departments within schools are examined by external accrediting agencies that certify quality. Furthermore, schools vary in their reputation for faculty and students, thereby providing additional information that allows employers to assess the adequacy of a student's preparation. No such institutions currently exist to attest to the quality of instruction or learning via distance education programs. In the absence of schools, credentials, and accrediting bodies, how will employers and other organizations assess the value of their employees' education and determine whether they have mastered the skills and knowledge they purport to have learned? How will employers compare knowledge, skills, and degrees acquired via the Web with the same training acquired in more traditional educational settings?

* How will students assess the relative utility of different training opportunities? Credentials, accreditation, and reputations also provide students with a means of distinguishing between different providers of education. In the absence of such signaling devices, students may have difficulty assessing the relative utility and quality of alternative educational experiences before spending their money. To the degree that firms rely on distance courses developed and supplied by vendors, they are likely to suffer similar confusion.

* What are the implications of blurring institutional boundaries? Although firms have always offered training, most has been "hands-on," or else focused on managerial skills such as leadership and team building. Schools have historically served as the provider of general education and structured forms of training. As firms move into the business of education and offer types of courses more traditionally found in schools, the boundaries between the two kinds of institutions may blur. What can we expect if firms and schools, in essence, begin to compete for students?

**ADDED MATERIAL**

Stephen R. Barley (Sbarley@leland.stanford.edu) is Co-Director, Center for Work, Technology, and Organization, Industrial Engineering and Engineering Management, Stanford University, Stanford, CA 94305 (phone: 650-723-9477). Condensed from Competence Without Credentials, a special publication of the U.S. Department of Education (USDOE), Office of Education Research and Improvement, from which the full report is available by contacting USDOE, ED Pubs, P.O. Box 1398, Jessup, MD 20794-1398 (phone: 877-4ED-Pubs).

"Doctors don't want germs on anything, so they fertilize all their stuff."