Programs and Resources in Distance Education

Stacey Donahue
School of Information, University of Michigan, 404C West Hall, Ann Arbor, MI 48109-1092.
E-mail: stacey@umich.edu

Distance education programs are offered by both commercial and traditional educational institutions. Some programs offer complete degrees while others only provide courses geared toward professional development or personal enrichment. This article presents short profiles of several distance education programs, a list of World Wide Web sites, and a bibliography about distance learning.

The number of institutions offering some flavor of distance education is constantly increasing (see Roberts, 1996). The content and method of delivery of these programs ranges from correspondence courses on children's writing to on-demand digital video on the latest developments in information systems technology sent directly to a student's home. While the short profiles of some of the programs described here attempt to give the reader a representative sampling of the current state of distance education, it is by no means a comprehensive review of the field. Figure 1 summarizes the methods the programs in this article use to provide instructional delivery and faculty–student interaction. The Uniform Resource Locators (URLs) for Web sites and the bibliography that follows provide more breadth and depth on the nature and scope of distance education programs.

University of Wisconsin–Madison

The University of Wisconsin–Madison offers a Certificate of Professional Development in Distance Education. Students can enroll at any time in this self-paced program. As of April, 1996, 85 students were enrolled in the program. Course materials include self-contained print modules, audiotapes, and videotapes that have been custom designed for the program. The commercial program "First Class" provides e-mail and computer conferencing capabilities to students and faculty, and it allows students to submit their assignments in electronic format. Seminar classes use audio conferencing, and multiple sites can participate in a seminar without the

need for specialized equipment. This reflects Wisconsin's commitment to using readily available technologies as a means for instructional delivery. Tuition is $250 per class and $1,000 per site (one location with up to five people).

Many of the students are currently employed individuals who are setting up distance education programs within their own organizations. The program is experientially based and student projects and reports often have a direct impact on their own workplaces. Advisors work with students by providing feedback on assignments, academic counseling, help with computer networking problems, and advice on shaping the program to fit the students' own learning objectives.

Mind Extension University

Those with cable television are likely to have stumbled across the Mind Extension University (MEU) in the course of channel surfing. Thirty-five colleges and universities participate in MEU. Each participating school provides the faculty and course materials and serves as the actual degree-granting institution. Each is responsible for all aspects of students' academic work. MEU's role is to provide the infrastructure and delivery mechanisms that allow the participating institutions to offer telecourses to a widely dispersed audience. Texts and other supplementary materials are sent directly to the student by MEU. Class sessions are delivered by prerecorded television broadcasts or videotapes sent to the students. None of the course offerings presents real-time student/faculty interaction.

Students pay tuition to the institution where they are enrolled and pay a one-time enrollment and setup fee of $35 to MEU. Courses run for 8 weeks. There is a faculty-to-student ratio of 1:30, with additional instructors or teaching assistants assigned by the originating institution as enrollments increase. Assignments are graded by professors and may be submitted as attachments to e-mail, by mail, or by fax. Students use a toll-free number to dial into a phone bank where they can leave or pick up

	Method of Instructional Delivery						Student/Faculty Communication				Credential			
Programs	Print	Audio Tape	TV Video-tape	Audio Confer-encing	Video Confer-encing	Computer Network	E-mail	Phone	Fax	Computer Conferencing	AA	BA or BS	MA or MS	Certif-icate
University of Wisconsin	•	•	•	•		Dial-up	•			•				•
Mind Extension University	•		•			Dial-up	•	•	•		•	•	•	
Clonlara School	•		•			Dial-up for CompuHigh	•	•	•	limited to one program				HS Diploma
University of Phoenix	•					Dial-up	•		•	•		•	•	
University of Alaska	•		•	•				•	•		•			•
America Online						Dial-up & Internet	•			•				
New York University						ISDN & Dial-up	•	•		•				•

FIG. 1. A comparison of several distance education programs.

messages or leave questions for their instructors. MEU also offers an electronic bulletin board system and is beginning to use the World Wide Web in some classes.

Approximately, 40,000–50,000 people participate in MEU each semester either by registering for or auditing a class or by ordering course materials. More than 100 people have received degrees since the program's inception in 1987. Students are typically adults between 25–40 who have families and active careers.

Clonlara School Home-Based Education Program

In the K-12 arena, distance education has often been the primary method for insuring equity and access to education when distance or politics (i.e., the isolation of racial groups in South Africa during the apartheid era) physically separate students from resources. In the United States, there has been a growing interest in home schooling. Parents want more control over their children's educational process because of religious reasons or philosophical differences with the current educational system. The Clonlara School Home-Based Education Program located in Ann Arbor, MI serves more than 6,000 students worldwide pursuing grade school studies and high school diplomas.

Parents and students work with a "contact teacher" to develop a curriculum to meet individual students' needs and interests. Identifying resources and supporting curricular materials are the responsibility of each family. Students are encouraged to draw on the resources and individuals within their own communities. Museums, clinics, theaters, libraries, service organizations, books, films (especially documentaries), local colleges, and universities all offer potential learning opportunities. People within a local community are often willing to serve as mentors or accommodate a student as an apprentice. The contact teacher is the liaison between the participat-

ing family and Clonlara. Regular mail is the most common means of communication, although the use of voice mail and e-mail are beginning to increase. Student progress is measured by reports on their experiences that they periodically submit to Clonlara. In their final semester, students submit a portfolio of their work and take an exit exam that they are likely to have helped design. Tuition for the domestic program is $475 per family (regardless of the number of students in a family) and $575 for overseas families (including Canada and Mexico).

Clonlara also offers its students a computer-based learning program called CompuHigh. Some of the subjects offered are algebra, geometry, American government, earth science, and collaborative writing. In order to participate, students sign up with Delphi, a commercial Internet service provider. Each class is run by a mentor who is responsible for an electronic classroom. Each "classroom" contains a bulletin board where students and mentors leave messages for one another, a forum for ongoing discussion, and a place to go for uploading and downloading files. The Delphi network also provides students with a gateway to the Internet. The mentor takes an active role in the electronic classroom, participating in online discussion, providing feedback on student work, and guiding students in their use of Internet resources. CompuHigh also offers a "School Lobby" where students and mentors can participate in school-wide forums.

The University of Phoenix

The University of Phoenix is owned by the Apollo Group, Inc. Its online programs are designed specifically for working adult professionals, offering undergraduate and graduate degrees focused on business and management. A typical student might be described as a working professional (70% are male) in his mid-thirties who trav-

els frequently for business and is pursuing a graduate degree. There are approximately 1,400 people currently enrolled. Courses run for 5–6 weeks. Students enroll in a single course at a time and courses have a maximum enrollment of 13 students. Tuition is $335 per undergraduate credit and $410 per credit for graduate study.

Course materials include textbooks and a detailed course guide with course objectives and outcomes, syllabus, and assignments. Computers provide the integral link between faculty and students. Typically, an instructor begins a week by providing introductory materials on the week's topic and the assignments online. Computer mediated communication is used to create interactive learning groups, students work online in small groups of 8–13. There are also electronic forums open to all students such as an online student union and subject area groups. Aside from time spent conferencing, the majority of work is done privately by the student. He then goes online to send or receive course materials.

There is an initial charge of $89 for software to connect to the University of Phoenix main computer, then students typically incur phone costs of $15–$25 per month to conduct their classwork online. A large technical support staff is available 18 hours a day to assist students in getting online and with any technical problems they may have. The University also provides a "Learning Resource Center," an online digital library. It includes a customized set of links to Internet resources as well as two databases of magazine and journal articles supplied by UMI. More than 600 students have obtained graduate and undergraduate degrees since the program's inception in 1989.

University of Alaska—Anchorage

The University of Alaska offers associate degree programs, upper division undergraduate level courses, and graduate certification in special education. The entire associate degree program is delivered via television. Students have a choice of tuning to a broadcast, taping it, or having videotapes sent to a site where they can view them or check them out, i.e., a local high school or library. The graduate program in special education includes multisite audioconferencing as well. Many of the courses are purchased from PBS. The university department associated with a particular course area reviews the recommended text and accompanying materials and may make substitutions if they choose. The instructor of record develops a syllabus and supplementary materials for the course. With the exception of a $38 fee per distance course, tuition is identical to that of on-campus courses.

There are no requirements of on-campus attendance or group interaction. Students most often use the phone to communicate with instructors who are required to hold "phone office hours" at least twice a week. Assignments are turned in by mail, fax, or are sometimes dropped off on campus (many students live within a 50-mile radius of the campus).

The university provides optional on-campus discussions and orientations two to three times each semester. Additionally, faculty have the option of creating a "wrap around" video as a way of introducing themselves to the students. The video is sent out before the course starts. On the tape, the instructor introduces himself and provides a short overview of the course. About 3,000 students enroll in telecourses annually. The University is planning to develop an online course for the Fall 1996 semester.

America Online

Although over 5 million people subscribe to America Online's (AOL) Internet services, the company does not track the number of people who have participated in its courses. The courses are all non-credit and cover topics of academic or professional interest, though many might be characterized as personal enrichment. Certificates of completion are available upon request and some employers recognize these as qualifying employees to receive tuition reimbursement. Credit courses will soon be offered as a result of a recent agreement with the University of California, Berkeley Extension Department.

Typically, classes feature live online "lectures in a virtual auditorium" (the lecture is actually text typed on the screen by the lecturer). The instructor interacts with the students by responding to questions typed in by students at prescribed times during the online session. AOL also offers "chat rooms" where students may hold asynchronous text-based chats with each other or with the instructor. Libraries of supplemental course materials are available. These are likely to be downloadable files prepared by the instructor. AOL users also have access to the World Wide Web. The majority of courses cost under $50. New offerings are provided for free as a way of test marketing the appeal and feasibility of the course.

New York University

New York University's (NYU) Virtual College is pioneering the use of high bandwidth network connectivity to deliver multimedia courseware directly to students' homes. The Advanced Professional Certificate in Information Technology consists of four-credit graduate level courses aimed at "nontechnical generalists" responsible for the design or operation of online information systems. Students are in their late 20s to mid-40s with an approximately 40%/60% split between females and males. They have an average of 10–15 years work experience, about two-thirds have a B.A. and one-third have a graduate degree. Many of the students are employed by large organizations that provide complete reimbursement for the program's $8,000 tuition.

Each student is connected to a central campus server

by an ISDN line providing data transmission speeds of up to 128 kbs/sec. Lotus Notes is used as the interface to the curriculum materials, for collaborative work with other students, and as a means to communicate with the instructor. Students have access to the instructor through traditional channels such as voice mail and fax. The course materials make extensive use of multimedia. The digital format of the curriculum allows students to capture and annotate material which they can transmit back to the professor or other students. The course materials include readings, video animations and simulations, and hypertext reference materials which are delivered in real time to the student over the ISDN line. The workstation in the student's home functions as a node on a virtual LAN. By starting up a program on his computer, the student is automatically connected to the server on the NYU campus. Rather than traveling to a campus computer lab, students can run sophisticated and resource-intensive applications like CASE tools and project management software from their homes. When students are only participating in online discussions or sending e-mail, they often use an analog modem to connect to the server, as the extra bandwidth provided by the ISDN line is unnecessary. The program offers an 800 number for modem access when students are away from home. The course delivery system has built-in work-flow features to help both student and faculty monitor the student's progress. Students must complete the entire certificate program within 2 years; most students finish within three semesters. Two hundred students have completed the program as of March 1996.

The Virtual College is a work in progress. In addition to measuring student satisfaction and success, the program developers are paying close attention to the process and the human resources invested in delivering education in this manner. Faculty keep detailed logs of their activities. The Lotus Notes system keeps track of the number and kinds of documents generated during a course. The program's director, Dr. Richard Vigilante, is conducting a cost-benefit analysis of all the channels that are used for instructional delivery in the program.

Distance Education Web Sites

These URLs provide a gateway to existing programs, online discussion groups, databases of resources, journals, bibliographies, and active practitioners. In addition, several of these sites provide excellent summaries of the nature of the listservs and newsgroups devoted to distance education and provide direct links or contact information for the groups.

Sites that Provide an Overview of the Field of Distance Education

Resources for Distance Education
http://webster.commnet.edu/HP/pages/darling/distance.htm

Described as "A list maintained by Professor Charles Darling, Capital Community–Technical College Hartford, Connecticut," this site provides an excellent starting point for anyone interested in finding out more on any aspect of distance education.

University of Alberta Distance Education Subject Guide
http://gpu.srv.ualberta.cal ~ tanderso/adi/deg/depage.htm

A comprehensive set of links to all aspects of distance education.

University of Michigan—Academic Outreach Resources
http://www.umich.edu/ ~ aop/pages/aoatummain page.html

Provides annotated bibliographies on topics related to distance learning and continuing education. Topics include: Distance education, adult education, access issues, multimedia, computer networks, curricular issues, student issues, and computer-mediated instruction.

Sites about Programs Profiled in This Article

Mind Extension University
http://www.meu.edu/meu/index.html

University of Alaska Distance Learning Center
http://137.229.108.32/

An overview of their programs coupled with regularly updated links related to all aspects of distance education (programs, digital libraries, research papers online).

University of Wisconsin—Extension Distance Education Clearinghouse
http://www.uwex.edu/disted/home.html

Information on its program and its nationally known annual conference on Distance Teaching and Learning. General information on distance education including a set of glossaries and a directory of interactive delivery systems.

Sites about Current Distance Education Courses and Programs

The Internet University
http://www.caso.com/iu.html

Links to more than 700 courses available over the Internet accessible by subject or provider name.

Asynchronous Learning Networks
http://www.sloan.org/Education/ALN.new.html

Provides information about Sloan Foundation grantees in its "Learning Outside the Classroom" program. New York University's Virtual College is one such program.

The Open University
http://www.open.ac.uk/OU/OU.html

Britain's Open University has been offering distance education programs for almost 30 years. Currently more than 200,000 people are studying in its programs. The "Showcase" link off its homepage highlights many of its current innovative approaches to learning.

National Teachers Enhancement Network
http://www.montana.edu:80/~wwwxs/standard/info.html

Offers graduate science and math courses to teachers nationally.

National Technological University
http://www.ntu.edu/index.htm

One of the oldest satellite delivery programs in the U.S. offering degree and non-degree programs to consortium members.

Bibliography

Bates, A. W. (1995). *Technology, open learning and distance education.* London: Routledge.

Brookfield, S. (1986). *Understanding and facilitating adult learning: A comprehensive analysis of principles and effective practice.* San Francisco: Jossey-Bass.

Burge, E. J. (1994). Learning in computer conference contexts: The learners' perspective. *Journal of Distance Education, 9*(1), 19–43.

Burge, E. J., & Lenskyj, H. (1990). Women studying in distance education: Issues and principles. *Journal of Distance Education, 5*(1), 20–37.

Burge, E. J., & Roberts, J. M. (1993). *Classrooms with a difference: A practitioner's guide to the use of conferencing technologies in learning.* Toronto: OISE.

Burge, E. J., & Snow, J. E. (1990). Interactive audio classrooms: Key principles for effective practice. *Education for Information, 8,* 229–312.

Collis, B. A. (1993). Evaluating instructional applications of telecommunications in distance education. *Educational and Training Technology International, 30*(3), 266–274.

Davie, L. E., & Inskip, R. (1992). Fantasy and structure in computer mediated courses. *Journal of Distance Education, 7*(2), 31–50.

Davie, L. E., & Wells, R. (1991). Empowering the learner through computer-mediated communication. *The American Journal of Distance Education, 5*(1), 15–23.

Evans, T., & Nation, D. (Eds.). (1993). *Reforming open and distance education: Critical reflections from practice.* London: Kogan Page.

Gagne, R. M. (1977). *The conditions of learning.* New York: Holt, Rinehart, and Winston.

Gunawardena, C. N. (1994). Social presence theory and implications for interactions and communication in telecommunications-based distance education. *Distance Learning Research Conference,* San Antonio, TX (pp. 119–128).

Harasim, L. (Ed.). (1990). *On-line education: Perspectives on a new environment.* New York: Praeger.

Harry, K. (1994). A rough guide to distance education journals and newsletters. *Openpraxis, 1,* 6–9.

Hawkins, J. (1991, March). Technology-mediated communities for learning: Designs and consequences. *The Annals of the American Academy of Political and Social Science, 514,* 159–174.

Hiltz, S. R. (1994). *The virtual classroom: Learning without limits via computer networks.* New Jersey: Ablex.

Hooper, S., & Hanfin, M. J. (1991). Psychological perspectives on emerging instructional technologies: A critical analysis. *Educational Psychologist, 26*(1), 69–95.

Lockwood, F. (Ed.). (1995). *Open and distance learning today.* London: Routledge.

Mason, R., & Kaye, A. (Eds.). *Mindweave: Communication, computers and distance education.* Oxford: Pergamon.

Moore, M. G., Cookson, P., Donaldson, J., & Quigley, B. A. (Eds.). (1990). *Contemporary issues in american distance education.* New York: Pergamon Press.

Moore, M. G., Thompson, M. M., Quigley, A. B., Clark, G. C., & Goff, G. G. (1990). The effects of distance learning: A summary of the literature. *American Center for Distance Education Research Monograph, 2,* 1–74.

Roberts, J. M. (1996). The story of distance education: A practitioner's perspective. *Journal of the American Society for Information Science, 47,* 811–816.

Roberts, J. M., & Keough, E. M. (Eds.). (1995). *Why the information highway? Lessons from open and distance learning.* Toronto, Canada: Trifolium Books Inc.

Rowntree, D. (1992). *Exploring open and distance learning.* London: Kogan Page.

Wagner, E. D. (1993). Evaluating distance learning projects: An approach for cross project comparisons. *Annual Meeting of the Association for Educational Communications and Technology, 15.*

Wells, R. (1992). Computer-mediated communication for distance education: An international review of design, teaching and institutional issues. *American Center for Distance Education Research Monograph, 6,* 1–75.

Journals

Keith Harry's article in *Openpraxis* listed in the bibliography provides an annotated listing of serial publications in the field. Four of the leading journals are: The *American Journal of Distance Education* published three times a year; Australia's *Distance Education* published twice yearly in May and October; *Epistolodidaktika: The European Journal of Distance Education* published twice yearly; and the Open University's *Open Learning,* published three times a year in February, June, and November.

Acknowledgment