A Journey to Legitimacy:

The Historical Development of Distance Education through Technology

By Denise M. Casey

Distance education holds greater promise and is subject to more suspicion than any other instructional mode in the 21st century. Many traditional educators view distance education with skepticism and express concerns about quality control. Some of this skepticism is justified, in part, by the historical roots and nature of distance education. The history of distance education spans three centuries and reflects an egalitarian approach to education. Distance education began with rudimentary vocational courses delivered by postal delivery service. Now, distance learning programs have snowballed into online instructional delivery systems capable of granting doctoral degrees. By its' nature, the common thread linking the two extremes is an instructional mode in which the teacher is not in the same place at the same time as the student.

Distance education flourished in the United States for three reasons: 1) the great distances of citizens from educational institutions, both geographically and socio-economically; 2) the thirst for education; and 3) the rapid advancement of technology. Each of these factors is in some way instrumental to the development of distance education. However, the significant parallels between the development of distance learning and the expanding role of technology in mass communication suggest that technology is the most compelling developmental factor.

This article attempts to demonstrate the parallels between development of technology and the increased acceptance of distance learning. First, definitions of distance learning will be provided. Second, the history of distance learning and its use of technological innovations will be presented. Third, an overview of the academic institutions that are offering distance education will be covered along with a discussion of accreditation. Finally, a summary and observations about current technological trends and innovations in distance education will be discussed.

Definitions of distance learning

The U. S. Department of Educational Research and Improvement defines distance education as "the application of telecommunications and electronic devices which enable students and learners to receive instruction from some distant location" (Bruder, 1989, p. 30).

Garrison and Shale (1987) listed three characteristics of the distance education process: 1) distance education implies that the majority of the educational community between (among) teacher and students occurs non-contiguously, 2) distance education must involve two-way communication between (among) teacher and students for the purpose of facilitating and supporting the educational process, and 3) distance education uses technology to mediate the necessary two-way communication (p. 28).

There are two perspectives on the core function of distance education: One contends that distance education is a teaching mode while the other views distance education as a vehicle of instruction. The more generally accepted definition offered by Keegan (1988) blends both perspectives and defines distance education as: 1) the quasi-permanent separation between teacher and student throughout the length of the learning process; 2) the influence of an educational organization both in the planning and preparation of learning materials and in the provision of student support services; and 3) the use of technical media: print, audio, video, or computer to unite teacher and learner to carry out the content of the course (p. 10).

It is interesting to note that these definitions include technology as an intrinsic quality of distance learning. History demonstrates how distance learning is linked to technological development.

History of distance education

Distance education and the post office. The correspondence course became the earliest instructional delivery system within the rubric of distance education. The first course was the Pitman Shorthand training program that brought cutting edge stenographic practices to the United States in 1852. Using the United States Postal Service, self-taught secretaries would mail their exercises to the Phonographic Institute in Cincinnati, OH, and, after completing the required coursework, receive a certificate of expertise in stenographic shorthand skills (Matthews, 1999).

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The first participants in correspondence courses were mostly female. Anna Ticknor established the Society to Encourage Studies at Home in 1873. This Boston-based program offered educational opportunities for women across class boundaries by providing correspondence instruction to 10,000 members over a 24-year period. By 1882, William Rainey Harper developed a correspondence program at Chautauqua, NY, that led to the State of New York's authorization of correspondence courses. To further the development of this movement, a "Correspondence University" was established in Ithaca, NY, in 1883 (Erazo & Derlin, 1995).

In addition to providing instruction for women, early distance learning provided the Colliery School of Mines, in Wilkes-Barre, PA, in 1890, an instructional delivery system to teach mine safety. This enterprise became the International Correspondence Schools (ICS), training iron and railroad workers as well as miners. By 1923, ICS enrolled over 2.5 million students (Moore & Kearsley, 1996).

Distance learning achieved academic recognition in 1892 when the University of Chicago created the first college-level distance learning program. Students far from campus would use the United States Postal Service to exchange assignments and lessons (Hansen, 2001).

Meanwhile, in Italy, a physicist, Marchese Guglielmo Marconi, was experimenting with wireless telegraphy. With the advent of radio broadcasting in the 1920s, a stunning new technology capable of reaching an audience far beyond any centralized classroom was created (Bridgeman, 2001).

Distance education and radio. Live educational radio shows reduced instructional delivery time and increased classroom immediacy by allowing distant students to hear their instructor. Educators no longer had to depend solely on mail delivery. By 1921, the first educational radio licenses were granted to the University of Salt Lake City, the University of Wisconsin, and the University of Minnesota. Between 1918 and 1946, the Federal Communications Commission (FCC) would grant such licenses to over 200 colleges. "By 1923 over 10 percent of all broadcast radio stations were owned by educational institutions which delivered educational programming. Despite the popularity of instructional radio, though, there was only one college level credit course offered by radio by the year 1940" (Public Broadcasting Service, 2003). Nevertheless, correspondence courses and instructional radio paved the way for distance learning opportunities through television technology.

Distance education and television. The use of television as an instructional medium began in 1934 when the University of Iowa broadcast courses by television. In 1963, to further support the expansion of distance learning opportunities, the FCC created the Instructional Television Fixed Service (ITFS), a band of 20 television channels available to educational institutions to provide a low-cost, fixed-range, subscriber-based system capable of being utilized for the distribution of broadcast courses. In 1963, the California State University system was the first to apply for ITFS licensing (Public Broadcasting Service, 2003).

Distance education gains acceptance worldwide

Distance learning began to appear in mainstream schools, colleges, and universities and was used to some extent in many classrooms from kindergarten to graduate school. In 1964, the University of Wisconsin, funded by the Carnegie Corporation to study the best use of technology, created the Articulated Instructional Media (AIM) Project. This project was the first attempt to identify, categorize, and systemize distance learning practices and offered direction on how to create and incorporate multimedia instructional packages for the benefit of the independent learner (Gooch, 1998).

The United States was not the only place distance learning was growing in popularity; Great Britain and Australia developed similar instructional delivery systems. The AIM project in America provided a blueprint for the design and development of the British Open University, established by Royal Charter in 1969. Today, this university provides 21% of all higher education in England and is considered a model of distance learning in higher education. The Open University has expanded to Belgium, France, Greece, Hong Kong, Israel, Italy, Luxembourg, Malaysia, the Netherlands, and Portugal (Open University Worldwide, 2005).

In 1974, Germany got into the distance education business. The German FernUniversität (*http://www.fernuni-hagen.de/),* with a 2006 enrollment of 59,000 students, is a rigorous university that places stringent academic demands on its students and continues to be at the forefront of distance learning today. The university offers 1,700 courses in seven disciplines: Computer Science, Economics, Education, Social Sciences and Humanities, Electrical and Information Engineering, Law, and Mathematics. Additionally, the FernUniversität has created an institute devoted specifically to the study of distance learning as a discipline.

The United States federal government boosted its commitment to distance learning when it established the Public Broadcasting Act in 1967 that authorized the creation of the Corporation for Public Broadcasting (CPB) to promote the noncommercial use of television and radio. CPB's primary purposes were to develop high quality programs, establish a system of national interconnection to distribute the programs, and strengthen and support local public TV and radio stations. In January 1969, CPB negotiated with AT&T to interconnect 140 stations, creating the first true national public television system. This system became permanent in November 1969 with the establishment of the Public Broadcasting Service (Public Broadcasting Service, 2003).

In 1970, the first fully televised college courses were created, licensed, and implemented by Coastline Community College and broadcast by KOCE-TV to other educational institutions in Orange County, CA. Coastline Community College was the first college without an actual campus. By 1972, colleges in Miami-Dade, FL; Costa Mesa, CA; and Dallas, TX became pioneers in telecourse offerings (Kersey, n.d.).

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Although the technological innovations in mass communication provided an array of instructional choices for the creative instructor, the uneven nature of the communication flow meant that teacher-student interactions remained cumbersome, and less sophisticated modes of communication were used for student feedback to the teacher. All of that changed with the creation of the microprocessor in 1971 by the Intel Corporation (Intel Museum, 2006).

Distance education and the computer. The first email messages were sent to those on the Intel inter-office system, and in 1978 the first computer Bulletin Board System (BBS) was established (Moschovitis, Poole, Schuyler, & Senft, 1999). The computer was the missing piece of the educational puzzle that would facilitate the free flow of information between teacher and learner as well as introduce the previously absent interpersonal aspects of communication.

Distance education and satellite communication. Distance education was embraced by the business community once the challenge of transferring information within geographically-separated organizations was realized. The satellite television systems that had been created in the 1960s became cost-effective in the 1980s and reduced the cost of employee training by providing "on location" instruction. Prior to satellite technology, either employees or instructors were required to travel. Now, large corporations and the military quickly took advantage of satellite transmission. Investors Diversified Services, an American Express subsidiary, took advantage of satellite transmission to train large numbers of Personal Financial Planners. The home office in Minneapolis, MN, transmitted training modules in Personal Financial Management to all regional

offices nationwide via satellite (S. Courmousis, personal communication, April 23, 2003).

By 1982, the National University Teleconferencing Network used satellites to transmit programs to its 40 institutional members. In 1985, the National Technological University (NTU), located in Fort Collins, CO, offered online degree courses in both continuing and graduate education using satellite transmission to access course materials from other universities and then download and redistribute course materials by satellite. NTU students were full-time employees at corporations and laboratories located throughout the United States. All instruction was distributed by satellite as either a real-time broadcast or video. The instruction originated in one of the NTU member studios for three hours a week. Students were required to complete weekly essays about course content as well as a written term paper. Students could telephone the professor during the broadcast and participate in lively discussions (Souder, 1993). The instructional needs of working professionals combined with technology to further develop the distance education business.

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Other educational institutions soon followed. Satellite systems brought education to some of the most distant locations in the United States. "The first state educational satellite system, Learn/Alaska, was created in 1980. It offered six hours of instructional television daily to 100 villages, some of them only accessible by air" (Schlosser & Anderson, 1994, p. 4).

The business of education became an even more viable moneymaker with the domestication of computer technology. A new student body of computer-savvy working professionals became a target market. Driven by the need for state-of-the-art information, updated certification, and instant gratification, students looked to the "no campus frills" instructional institutions. The University of Phoenix (*http://www.phoenix.edu/)* emerged on the education for-profit scene in 1989 offering degree programs to meet those needs. As of 2006, the University of Phoenix offered 10 bachelors degrees, 18 masters degrees, and two doctorates as well as 21 continuing education programs. This expansion is credited in large part to the utilization of the Internet.

Distance education and the World Wide Web. The World Wide Web, developed by Tim Berners-Lee, provided a potential linkage for all of the computers in the world and in 1991 the information superhighway was born (Berners-Lee, n.d.). The web also increased possibilities for distance learning experiences. With the introduction of high-speed broadband transmission, distance learning over the Internet became the next instructional frontier. The potential for interactive, virtual classrooms was limited only by the budget, institutional vision, and course management software.

The catalyst for academic online instruction came in the form of online course management systems. Blackboard™ and WebCT ™ are software programs used to facilitate the instructional communication between instructor and student in cyberspace. In February 2005, WebCT and Blackboard merged under the Blackboard brand to become the "leading provider of enterprise software applications and related services to the education industry" (Blackboard Inc., 2006). These rapid technological advancements have provided enormous opportunities for academic institutions to better meet students' instructional needs. Even the most prestigious schools provide blended (a combination of online and face-to-face) and online courses.

An overview of academic institutions offering online distance learning

Online course offerings are increasing dramatically. In 1993, Jones International University (*http://www.colleges-usa.com/jiu/),* headquartered in Colorado, opened its virtual doors to provide instruction in five bachelors degree and 24 masters degree programs and was the first fully online university to be accredited by the Higher Learning Commission. In 1997, the California Virtual Campus (*http://www.cvc.edu/)* opened with a catalogue of over 1,500 classes. The university, a consortium of nearly 100 colleges and universities, is designed to provide a full cadre of courses needed for certificates and/or degrees within college programs (California Virtual Campus, n.d.).

In 1999, the British Open University (*http://www.open.ac.uk/),* which has 158,000 undergraduate students and 25,000 postgraduate students, expanded into the American market and opened a sister institution – the United States Open University. However, in June 2002 the United States Open University closed due to insufficient revenues and insufficient enrollments (Chronicle of Higher Education, 2002).

In 1999, the Distance Learning Education Demonstration program was established by the U. S. Department of Education as an experiment to help determine the most effective way of delivering quality education via distance learning. As of 2006, this ongoing program has 24 program participants – over 100 institutions from 20 states and the District of Columbia. The Education Demonstration Program allows the Secretary to waive certain statutory and regulatory requirements for institutions participating in the program and to monitor program participants to guard against fraud and abuse. At the present time, to be eligible for financial aid, an educational institution may offer no more than 50% of its courses by correspondence.

Two main concerns of the program center on specific student aid requirements which should be altered to provide greater access to distance education programs, and the appropriate level of federal assistance for students in distance education programs. With increased numbers of course offerings and students, there is an increased possibility of fraud and abuse. Fortunately, to date, the program has found no evidence of fraud or abuse with the waiver of the 50% regulation (U. S. General Accounting Office, 2004, p. 5).

The combination of participating institutions selected for the Education Demonstration Program by the federal government demonstrates recognition of the many types of instructional facilities offering distance education programs. Although this program is essentially an experiment, participation by the federal government suggests perceived credibility for individual distance learning programs while establishing opportunities for quality control.

Distance learning methods are now being employed by some of the best universities the world has to offer. The University of Oxford will join an alliance formed by Princeton, Stanford, and Yale Universities to offer distance-learning courses. The three American institutions announced last spring that they would collaborate to offer online courses to their alumni (Chronicle of Higher Education, 2000, A48).

Accreditation and quality control

The essential nature of distance learning, with teacher and student being separated by both space and time, creates an environment that could threaten the quality of learning that is supposed to take place. The educational institutions, the learners, and the teachers are all subject to the honor system. However, many educators question if the honor system is enough to guarantee an education.

Historically, the proliferation of home study programs brought with it the potential for graft and disreputable business practices. Consequently, the National Home Study Council was created in 1926 to monitor and insure quality control. In 1927, the Fair Trade Practice Rules for Home Schools were developed by the National Home Study Council, a consortium of 16 institutions including the National Better Business Bureau and the Carnegie Corporation, to enforce ethical labor practices such as teachers having appropriate credentials in their field of instruction. The United States Department of Education acknowledged the council, which was renamed the Distance Education and Training Council, as the nationally recognized accrediting agency for distance education programs, a role it continues to perform today (Altbach, Berdahl, & Gumport, 1999). Accreditation can be viewed as a seal of academic approval and proof of scholarly legitimacy. For example, the Higher Learning Commission, a part of The North Central Association of Colleges and Schools, is a 112-year-old membership organization for educational institutions and is committed to developing and maintaining high standards of excellence.

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When Jones International University (JIU) gained status by being accredited by the Higher Learning Commission and by being a member of the North Central Association, it received a mark of recognition and acceptance by the academic community. JIU now "holds the same regional accreditation certificate as elite universities such as Michigan, Northwestern, and Notre Dame" (Hansen, 2001, p. 22).

Summary and trends

The history of distance education reveals a journey from the vocational training of factory workers to academic degree programs for professionals. The legitimacy of this instructional delivery system has been ensured in part because of its rich history, increasingly sophisticated technological infrastructure, accrediting bodies, and acceptance by Ivy League universities as a viable and profitable instructional mode. The American Federation of Teachers (AFT) identified four major markets leading the growth in distance education including: 1) existing higher education institutions that have or are developing distance education programs, 2) corporate-university joint ventures,

3) full virtual universities, and 4) corporate or training institutions. The potential market for distance education seems to grow with each new estimate. The AFT noted that Merrill Lynch initially projected that the distance education market would reach $7 billion in 2001 and forecast the total e-learning market, including all education and training, at $25 billion. The AFT also reported that Thomas Wiesel Partners had projected an even higher growth rate to $10 billion in 2001. These trends demonstrate the potential commercialization of distance learning and the reliance on technological trends.

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Technology trends. With reluctant acknowledgement, educators concede that distance education is here to stay. Russell (2001) noted that after reviewing hundreds of distance education comparative studies, no significant differences between online and face-to-face learning were reported. He explained, "the good news is that no significant difference studies provide substantial evidence that technology does not denigrate instruction" (p. xiii). That being said however, online technology still faces obstacles.

One of the major complaints about computer-mediated communication in general, is the lack of social cues. When cues are filtered out, communication becomes more "task oriented, cold and less personal than face-to-face communication" (Walther, Anderson, & Park, 1994, p. 461). Current technological developments are striving to remedy this drawback. Three recent innovations are particularly useful in increasing interpersonal communication: podcasting, blogs, and the webcam.

The use of podcasting, where distance students can listen to audio broadcasts as part of instructional content, is already being used in the Dysart School District in Arizona (Ryman, 2006). Podcasting can also provide students a venue to chat about topics within the classroom and capture their conversations for the whole class to share and "seems to be a natural fit for Generation Y-ers" (Callas, 2006).

Video blogs, or vblogs, can also increase social presence. Students and teachers can record their own video images and transmit visual and auditory information to each other. Ideally, however, a webcam can allow students and teachers to see and hear each other in an online classroom and increase interpersonal communication.

The use of webcam in distance education is in its infancy. A start up ESL (English as a Second Language) company in San Diego is developing instructional ties with China in hopes of combining online instruction with the value added webcam to provide face-to-face verbal and nonverbal feedback and instruction (R. Wu, personal communication, November 17, 2005). Start-up costs of webcam instruction for students and teachers alike are still formidable, particularly in China where few students have personal computers, let alone advanced technology.

In conclusion, this article has demonstrated the parallels between the development of technology and the increased acceptance of distance learning, and has provided definitions of distance learning and explained its history. Several academic institutions that offer distance education were named and accrediting bodies were discussed. Finally, current technological trends and innovations in distance education were offered. The future of distance learning seems secure because of its ability to adapt to technological trends.

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References

Altbach, P. G., Berdahl, R. O., & Gumport, P. J. (1999). *American higher education in the twenty-first century.* Baltimore, MD: The Johns Hopkins University Press.

Berners-Lee, T. (n.d.). *The World Wide Web browser.* Retrieved November 7, 2006, from http://www.w3.org/People/Berners-Lee/WorldWideWeb.html

Blackboard Inc. (2006). *Blackboard Inc. completes merger with WebCT, Inc.* Retrieved Nov 1, 2006, from http://investor.blackboard.com/phoenix.zhtml?c=177018&p=irol-newsArticle&ID=822607&highlight=

Bridgeman, R. (2001). Guglielmo Marconi: Radio star. *Physics World.* Retrieved February 14, 2006, from http://physicsweb.org/articles/world/14/12/7

Bruder, I. (1989). Distance learning: What's holding back this boundless delivery system? *Electronic Learning, 8*(6), 30-35.

California Virtual Campus. (n.d.). *The CVC catalog.* Retrieved September 2, 2006, from http://www.cvc.edu/catalog/content.asp?page=250

Callas, T. (2006, October 9). *Teens podcast a spell over Potter fans online.* Retrieved November 1, 2006, from http://www.signonsandiego.com/uniontrib/20061009/news_mz1b9teens.html

Chronicle of Higher Education. (2000, October). *Oxford, Princeton, Stanford, and Yale plan distance-education venture.* Retrieved May 5, 2006, from http://chronicle.com/free/v47/i06/06a04803.htm

Chronicle of Higher Education. (2002, February). *United States Open University announces it will close in June.* Retrieved January 3, 2007, from http://chronicle.com/free/2002/02/2002020501u.htm

Erazo, E., & Derlin, R. (1995). *Distance learning and libraries in the cyberspace age.* Retrieved January 27, 2005, from http://www.checs.net/95conf/PROCEEDINGS/erazo.html

Garrison, D. R., & Shale, D. (1987). Mapping the boundaries of distance education: Problems in defining the field. *The American Journal of Distance Education, 1*(1), 5-11.

Gooch, J. (1998). *They blazed a trail for distance education.* Retrieved January 3, 2007, from http://www.uwex.edu/disted/gooch.cfm

Hansen, B. (2001). Distance learning. *CQ Researcher, 11*(42), 1-24.

Higher Learning Commission. (2007). *Welcome to the Higher Learning Commission home page.* Retrieved January 3, 2007, from http://www.ncahlc.org/

Intel Museum. (2006). *Intel's first microprocessor—the Intel® 4004*. Retrieved November 1, 2006, from http://www.intel.com/museum/archives/4004.htm

Keegan, D. (1988). Problems in defining the field of distance education. *The American Journal of Distance Education, 2*(2), 4-11.

Kersey, J. (n.d.). *Distance learning: It started earlier than you think.* Retrieved November 7, 2006, from http://www.degree.com/articles/distance-learning.htm

Matthews, D. (1999). The origins of distance education and its use in the United States. *T.H.E. Journal*, (*27)*2, 54-59. Retrieved January 26, 2005, from http://www.thejournal.com/magazine/vault/A2222.cfm

Moore, M. G., & Kearsley, G. (1996). *Distance education: A systems view.* Belmont, CA: Wadsworth.

Moschovitis, C. J. P., Poole, H., Schuyler, T., & Senft, T. M. (1999). *What does a network do? 1970-1978.* Retrieved November 6, 2006, from http://www.historyoftheinternet.com/chap3.html

Open University Worldwide. (2005). *Background information*. Retrieved December 12, 2005, from http://www.open.ac.uk

Public Broadcasting Service. (2003). *Distance learning week – Timeline: An overview.* Retrieved October 27, 2003, from http://www.pbs.org/als/dlweek/history/index.html

Russell, T. (2001). *The no significant difference phenomenon as reported in 355 research reports, summaries, and papers: A comparative research annotated bibliography on technology for distance education.* Raleigh, NC: Office of Instructional Telecommunications, North Carolina State University.

Ryman, A. (2006, January 9). If you can't beat'em, join'em. *The Desert Sun,* p. E3.

Schlosser, C. A., & Anderson, M. L. (1994). *Distance education: Review of the literature.* (Report No. ISBN-0-89240-071-4). Ames, IA: Iowa State University of Science and Technology, Research Institute for Studies in Education. (ERIC Document Reproduction Service ED 382 159)

Souder, W. (1993). The effectiveness of traditional vs. satellite delivery in three management of technology master's degree programs. *The American Journal of Distance Education*, *7*(1), 37-53.

U. S. General Accounting Office. (2004). *Distance education: Improved data on program costs and guidelines on quality assessments needed to inform federal policy.* Retrieved October 15, 2006, from http://www.gao.gov/new.items/d04279.pdf

Walther, J. B., Anderson, J. F., & Park, W. D. (1994). Interpersonal effects in computer-mediated communication. *Communication Research, 21*(4), 460-487.