Distance Education

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INTRODUCTION

The term distance education is used to describe educational initiatives designed to compensate for and diminish distance in geography or distance in time. The introduction of technology to distance education has fundamentally changed the delivery, scope, expectations, and potential of distance education practices. Technology and electronic communications are becoming exponentially more embedded in every facet of daily life, including business, the professions, and education, a normalization which continues to facilitate and enhance distance education delivery. Ubiquitous advertisements for online courses and degree programs are a testament to an expanded audience and increasing enrollments.

Components of e-learning first adopted by distance education have since been adopted by the traditional education community. So pervasive are the application of new information and communication technologies to education delivery that the terms distance education, e-learning, and blended learning have become conflated. It is important that the clear distinctions between them are understood. Distance education represents an environment where the student and the instructor are separated; blended learning is any combination of electronic media or tools that supplement but do not replace face-to-face learning; e-learning is the application of technology to an instructional module or lesson. The relationship between these approaches is dynamic and may further blur, but distinctions will always remain.

Distance education programs are offered at all levels, including primary, secondary, higher, and professional education. The earliest antecedents of distance education at all levels are found worldwide in programs described most commonly as correspondence study, a print-dependent approach prolific in geographic areas where distance was a formidable obstacle to education. As each new technology over the last century became more commonly available, it was adopted by educational practitioners eager to improve communication and remove barriers between students and teachers.

BACKGROUND

Each developmental stage of technology incorporated elements of the old technology while pursuing new ones. Thus, early use of technology involved telephone, television, radio, audiotape, videotape, and primitive applications of computer-assisted learning to supplement print materials. The next iteration of distance education technologies, facilitating interactive conferencing capabilities included teleconferencing, audio teleconferencing, and audiographic communication. Rapid adoption of the Internet and electronic communication has supported enhanced interactivity for both independent and collaborative work, access to dynamic databases, and the ability for students to create as well as assimilate knowledge. The rapid and pervasive incorporation of technology into all levels of education has been to a significant degree led by those involved in distance education. Virtual universities have evolved worldwide to offer comprehensive degrees. Yet, the technological advances are a threat to those who find themselves on the wrong side of the digital divide. As distance delivery programs have increasingly incorporated technology, the term distance education has been used to distinguish them from more traditional, nontechnology-based correspondence programs. As traditional resident higher education programs have adopted many of the technologies first introduced in distance education programs, the strong divisions between distance and resident programs have become increasingly blurred and have resulted in growing respect for distance education programs. In postsecondary education, technology-based distance education has gradually evolved into a profitable and attractive venture for corporations, creating strong competition for academic institutions. The involvement of the for-profit sector in the delivery of technical, professional, and academic degrees and certificates has, in turn, been a driving force in the renewed discussion of perennial higher education academic issues such as the nature of the learning and teaching experience; educational assessment; academic and professional accreditation; the delivery of student support services such as librar-

ies, computing, and counseling services; and faculty issues such as promotion and tenure, workload, and compensation.

GROWTH IN ONLINE LEARNING

According to the Sloan Consortium, U.S. online enrollments have continued to grow at rates far in excess of the total higher education student population. Nearly 20% of all U.S. higher education students took at least one online course in 2006, a 9.7% growth rate for online enrollments, compared with 1.5% growth of the overall higher education student population. Two-year associate's institutions have the highest growth rates, while baccalaureate institutions have had the lowest growth rates. Increasing demand and growth is anticipated, although at slower rates.

DISTANCE EDUCATION APPLICATIONS

In the primary and secondary environment, distance education is a successful solution for resource sharing for school districts unable to support specialized subject areas, students with mental or physical disabilities who are temporarily or permanently homebound, students with difficulties in a traditional classroom environment, repeat students in summer school classes, advanced-placement students who are able to access college-level programs, adults seeking to complete GED requirements, and the increasing numbers of families who choose a home-schooling option. In the college and university environment, distance education is an attractive option for adult and nontraditional students, students who need to be away from campus for a semester, or those who have difficulties scheduling required courses in resident programs. Distance education delivery options have become a common dimension of almost all traditional institutions. For-profit entities are becoming a dominant force in the distance education arena as education evolves into a commodity, especially for advanced professional education and training, because of their ability to target the marketplace. With the certain need for continuing education and training across government, industry, business, higher education, and health care; the increasing affordability of technologies; and the growing demand for "just-in time," on-demand delivery, distance education promises to be the answer for those who want and need the learning experience and necessary content delivered to their desktops at home or at their place of employment.

TECHNOLOGIES SUPPORTING DISTANCE EDUCATION

Distance technologies involve transmitting combinations of voice, video, and data. The amount of bandwidth available determines the transmission capacity. More expensive, large-bandwidth systems include microwave signals, fiber optics, or wireless systems. Advanced distance education technologies include network infrastructures, real-time protocols, broadband and wireless communication tools, multimedia-streaming technology, distributed systems, mobile systems, multimedia-synchronization tools, intelligent tutoring, individualized distance learning, automatic FAQ (frequently asked question) reply methods, and copyright-protection and authentication mechanisms.

Newer generation tools support the convergence of Internet connectivity with the functionality of traditional multimedia authoring tools, and provide suites of applications, bundled authoring and graphic software, and communications and tracking software that enable the production of sophisticated applications. Second-generation emerging technology tools such as wikis, blogs, podcasts, and social software applications support user-generated content and constructivist learning environments. Educational gaming initiatives, including massively multiplayer online (MMO) games, will support even more collaborative environments. Even as more content is developed, much is lost to format obsolescence. Greater attention must be given to "reusable learning objects" to assure reuse and compatibility of content.

The network architecture determines the extent and flexibility of delivery. Discrete systems for Web support, course postings, course delivery, collaboration, discussion, and student support services are being replaced by Web-based learning-management or course-management systems that fully integrate all dimensions of the teaching-learning experience. These systems are supported by a network of networks that include hardware, software applications, and licensing; they connect intranets and off-campus, regional, national, and international networks. Wireless networks are rapidly expanding on multiple levels, including