

**DISTANCE EDUCATION—FAD OR PARADIGM SHIFT?**

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**ABSTRACT**

This paper discusses the movement toward distance education and the impact of various technologies on the ability to deliver distance education. Political and economic pressures have also increased the implementation of distance educational opportunities by universities. In spite of the pressure to increase distance delivery of university coursework, distance education has some significant difficulties.

Within many of the Pennsylvania State System of Higher Education institutions, there has been a substantial, almost exponential, increase in the number of offerings of distance education opportunities either through Web based courses or Interactive Television. The system has also created a state-wide E-University, perhaps, in part, as competition with the explosive emergence of other web-based higher education institutions such as the University of Phoenix.

During the last two collective bargaining contract initiatives in the Pennsylvania State System of Higher Education, the topic of distance education has been and currently is a matter of lively discussion between management and labor. From the State System perspective, distance education offers opportunities for more efficient allocation of scarce faculty resources (and thereby lowering costs). From the labor perspective, distance education presents a danger of increasing faculty load and reducing faculty positions at a given educational institution due to the ability to replace through attrition faculty members at one institution with distance delivery from faculty at other institutions. Beginning fall semester 2003, all State System institutions were required to adopt common calendars. The adoption of the common calendar removed a major obstacle from cross-institution distance education delivery since the classes will start and end at the same time. From the State System perspective, more distance delivery is expected.

With these prospects of increased distance educational opportunities, this paper will explore some of the issues surrounding distance education with a discussion of whether the trend is a fad or a paradigm shift. Some have even warned that distance education will ultimately lead to the demise of the traditional bricks and mortar educational institutions as the cost effectiveness of distance delivery presses its comparative economic advantage.

**The Movement Toward Increased Distance Education Delivery**

The delivery of quality education in America is a challenging enterprise. Taxpayers are increasingly concerned about the cost of a quality education at all levels, including secondary and post-secondary education levels. Distance education, the delivery of education where the instructor and the student are separated by space outside the classroom, and connected using computer-mediated means, has the potential for more efficient allocation of educational resources from one location to another. Distance education technologies including digital compressed video delivered over ISDN, Internet, or the ATM (Asynchronous Transmission Mode) lines, satellite, microwave, Internet web sites, e-mail, fax, videotape and traditional “snail” mail. These technologies offer exciting possibilities for increasing the quality and reducing the cost of distance education. Particularly exciting is the improved technology and access to the Internet, especially advances in the delivery of “live” audio and video that may be delivered over standard telephone lines with relatively inexpensive equipment.<sup>1</sup>

At a conference on distance education by the Pennsylvania Association of colleges and Universities, Dr. Thomas Head, of Virginia Tech suggested the following paradigm for classifying educational instructional delivery on the basis of time and location.

|      |           | LOCATION                                     |                                  |
|------|-----------|--|----------------------------------|
|      |           | Same   | Different                        |
| TIME | Same      | Traditional Classroom                        | Distance Learning (synchronous)  |
|      | Different | Computer Assisted Instruction (asynchronous) | Virtual Classroom (asynchronous) |

Same-time-same-location traditional classroom education has been the delivery system of choice at all levels of education. Different-time-different-location education has historically been in the form of correspondence courses delivered through mail services. Although asynchronous means of distance education have been used since the invention of the radio, it is only recently that computer technology has been used. Different - time - same - location, asynchronous delivery, has been limited primarily to a video tape media, used since the 1970's. Computer assisted instruction in elementary and secondary schools has been more recently used to augment traditional classroom instruction for the student. Same-time-different-location or synchronous delivery has primarily focused upon interactive systems using satellite, ISDN, ATM, microwave, or cable transmission of either two-way video or one-way video/two-way audio. Some institutions, like Oklahoma State University, have used some inexpensive Internet delivery systems. In recent years, there has been some interest in computer-directed virtual classrooms. Web based course software such as Blackboard has integrated the virtual classroom into its core application.

The bulk of the research on educational delivery systems suggests that the mode of delivery is not a critical element of quality educational outcomes.<sup>2</sup> Rather, the critical elements seem to be effective instructional design and instructional techniques. The traditional advantage of classroom delivery has been face-to-face contact with the student that allowed the student and teacher to establish a rapport that encouraged learning. Other modes of delivery generally were unable to establish this kind of rapport. With technologies now available, face-to-face contact can now be offered at a distance.

Studies of students of other delivery methods have suggested three critical needs for those who do not in the same location as the originating site:

1. Distance learners want and need rapid feedback.
2. Distance learners need easy access to library resources
3. Distance learners need local support.

All educational delivery systems to remote locations should consider these three needs.

A driving concern in alternative delivery systems of quality higher education is the interest in providing universal access. Traditionally, the question of access was focused more narrowly upon the economic ability of the parent to pay for tuition,

books, housing, and board. Government programs and higher education institutional initiatives were directed primarily toward the residential, traditional student who was just out of high school. With the development of the community college system, more non-traditional students were attracted. However, the focus remained with in-class instruction at fixed times and locations, still not fully meeting the needs of their students. Some adjustment to evening and weekend classes was given. While the community college system did increase access, recent trends in higher education funding have made access more difficult. In addition, structural changes in the national economy have increased need for lifelong education. For those whose professions have become obsolete, retraining and re-education is needed. However, for those same people, the opportunity cost of returning to a campus setting is exceedingly high with family considerations being paramount. While one worker in the family may be occupationally displaced, the other worker is even less free to move to a different location to access educational services. In addition, increased child-care burdens increase with the loss in family income.

Although educational institutions, especially K-12 schools were early adopters of computer technology, they have failed to keep pace with individual personal computer users, and the corporate community. The fact that you can still find decrepit Apple II computers in classrooms is a pathetic indictment of an education system that needs drastic overhauling. Even more disturbing in this day and age is some classrooms have no computers. Much of this may and can change, though, because of one critical development: the Internet. Surfing the Web can become a common activity in schools, and should get the attention of those in the education establishment. If you browse the literature on computers in education, you will see a definite trend emerging; long-distance learning using computers. A 1993 nationwide survey of 550 elementary and secondary education teachers indicated a need for improved financial support for technology and access local area networks and dial-up services.<sup>3</sup>

In the late 1990's, Governor Tom Ridge of Pennsylvania unveiled a bold plan to bring all of Pennsylvania's K-12 public schools into the computer age by allocating substantial budgetary resources for those schools. In addition, in a Project known as Link-to-Learn,<sup>4</sup> substantial budgetary resources were allocated to universities, K-12 schools, libraries, and business to develop networks and infrastructure that would allow those participants

to connect together through a network of networks called the Pennsylvania Educational Network (PEN).

As a result of the Link-to-Learn initiative, there has begun to be a paradigm shift in re-thinking of the role of technology in the classroom. Increasingly educational opportunities are becoming more accessible to not only K-12 programs but also to higher education and life-long learning programs.<sup>5</sup> Consequently, there should be an increase in the demand for distance education programs.

The long-distance learning concept can be applied to bring education opportunities to the people in a widely spread geographic area such as northwestern Pennsylvania. Adult learners have increased difficulties accessing higher education resources due to family, job, and financial constraints. Financial issues include not only costs for books and tuition, but also costs of the commute (gas, and vehicle depreciation) and the opportunity costs associated with the commute. For example, a student who is forced to drive an hour each way to class forgoes the opportunity to spend those hours at work.

Finally, the last pressure on increasing the use of distance delivery of educational services is the economic costs associated with bricks and mortar. Distance delivery, especially web based distance delivery, allows substantial growth of the student population without incurring significant costs of additional property. Most of the costs associated with web-based distance education are sunken costs. The only marginal capital costs are those associated with providing additional servers or bandwidth. Even these are usually insignificant since most institutions operate with surplus band width and computer capacity.

### **The Case Against Increased Distance Education Delivery**

As compelling as some of the reasons for the growth of distance education, there are also some potential problems. These problems may be generally classified as student-centered, technologically-centered, and/or instructionally-centered.

Among the student-oriented difficulties with distance education is that most distance delivery is heavily dependant upon technology. Some students are uncomfortable with the technology. In web based courses, the student must be competent with the use of personal computers and the use of the Internet. While this is less of a problem with students of traditional college age, it is much more of a problem

with returning adult students who may have little personal computer skills and have little experience with navigating the Internet. With the use of Interactive Television (ITV), some students are uncomfortable with talking on television or with using the "See me" buttons. For distance education to be effective with students with technology usage deficiencies, remedial training is important. This remedial training needs to be face-to-face.

Another student-oriented problem is that students in web course delivery or at distance sites in ITV delivery is the need for the student to be more motivated to assist in the own education than students in traditionally delivery. Since web courses are generally asynchronous, the students must discipline themselves by setting aside a time to work on the course. Unmotivated students are more likely to procrastinate and put off or never complete the course. For students on far-end ITV, there is a tendency for them to believe that they will not be noticed if they fail to come to class. Ironically, this perception is actually opposite of reality. Because the far-end site is often many fewer students, an absence is much more noticeable by the instructor. However, regardless of the delivery mode, the instructor needs to be much more intentional about motivating reluctant students. This is often more difficult unless the instructor is willing to make personal phone calls to the students.

In distance delivery courses, it is generally more difficult to develop relationships. Certainly, distance delivery makes instructor-student relationship building a challenge. While the same is also true of large section traditional delivery classes, it is much more difficult for the student to seek out the professor after class or during office hours for the distant student. Student-to-student peer relationships are also much more difficult to develop. Again, the distant student had more of a challenge to interact socially with the other classmates. Consequently, it is more difficult for them to development cooperative working relationships with each other. However, as business decentralize and telecommuting becomes more commonplace, the need for peer-to-peer relationship building across distances will become more important and distance education environments might be more useful in teaching those skills.

Finally the last student-oriented difficulty with distance education occurs when all of the student's college education is distance delivered. When all of a student's education is delivered by distance off campus several important sociological functions of college may not be experienced. For the high school

student going away to college, a college education provides a semi-structured place for the student to gain independence and self reliance. The college atmosphere provides a safe place for the free exchange of ideas. The college atmosphere also provides ample opportunities for recreational sports and intramural activities. Distance educated students often do not have these advantages. In addition, the amount and variety of coursework is more limited for the distant educated student relative to the on-campus offerings.

Because of the substantial dependence upon technology for distance delivery of education, growth in distance education requires that the technology must be stable and reliable. Students and faculty alike can become quickly disillusioned in distance education when the technology fails. Among common technological problems are the failures of computer hardware such as a server failing and failed transmission lines in the case of ITV courses. Particularly disruptive in a distance education course is a loss of data in a computer failure such as lost exams and/or homework submissions. For distance education computers, frequent (daily) backups and the use of RAID storage systems are very important. As the demand for distance education grows, redundant, fault tolerant servers will gain in importance.

Another technologically-centered difficulty is that the current technology is insufficient for some courses. Consequently they are not appropriate for distance delivery. These types of courses include lab courses and physical education skills courses. The problems for lab courses include safety issues and development of the appropriate hands on technique that may be required. While it is somewhat difficult to imagine, these difficulties could be overcome through future advances in technology.

One area where technologically-centered challenges have made progress is in the area of library access. While technology has not yet completely been successful in exporting the library to the student's distance location, online journal databases and CD book collections have made great strides. For example, services such as Westlaw allow virtual access to almost an entire law library.

Instructionally-centered problems are primarily of three types—instructional resource problems, instructor limitations, and instructor motivation problems. Few educational institutions provide enough technical resources for optimal delivery of distance education. Distance educators often need

assistance with Web design, acting and camera techniques, production services, far-end academic support, and far-end technical support. Because distance courses require much more extensive preparations, institutions that wish to promote distance education must consider what institutional resources they are willing to commit in the above areas. Few faculty members are willing to invest the time and energy necessary to deliver quality distance courses without significant assistance from their institution.

A related problem is that because of the higher initial cost of development of a distance course and the higher cost of updating a distance delivery course, courses may go longer periods of time between updating the course content. This is an even more significant problem when the university does not provide adequate technical assistance for instructional development.

Another problem with the growth in distance education is perversely its own success in web delivery. Several institutions have found a significant student preference for on-line courses, especially in the summer program. The challenge for the institution is to grow distance education without shrinking traditional education.

Finally, the last problem constraining the growth of distance education is the reluctance of faculty, union, and institutional to “buy-in” to distance education. Distance education does, in fact, require additional effort on the faculty's part relative to conventional delivery. In addition to the normal development of course content, the faculty member is required to make extra efforts to overcome the constraints with distance delivery. For example, student group project work must be designed such that the students are able to collaborate electronically. Many faculty members believe that distance education is of lesser quality than conventional delivery. As mentioned early in this paper, the research does not support their lesser quality conclusion. However, their feelings and perceptions are real and do negatively impact their willingness to participate in distance education. Consequently, the faculty union parrots their concern regarding the quality of a distance delivered education. Many provisions of the Collective Bargaining Agreement tend to stifle growth. Finally, institutional barriers make it more difficult for institutions to collaborate with each other through distance education. Issues regarding tuition sharing, student fee billing, and faculty course load often present such significant obstacles that courses are simply not offered.

### A Look Toward the Future

Despite the constraints on distance education, economic and social pressure on educational institutions will continue to fuel growth. Every semester, the numbers of courses offered through distance education increases. State-wide initiatives such as the Keystone Network foster additional growth. Clearly, not every course is currently

appropriate for distance delivery given our current state of technology. Also clear is that not all faculty will be interested nor will all faculty have the requisite skills to succeed with distance delivery of their courses. Nevertheless, demand is increasing and supply will eventually adjust. Otherwise, educational institutions such as the University of Phoenix will soon make enough inroads within the State to measurably affect enrollments.

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<sup>1</sup> One-way live audio can be delivered using RealAudio and other software that requires only an addition of a sound card and speakers for the student and a microphone, sound card, and appropriate server software for the sending location. Two way audio and video can be delivered using NetMeeting or other video conferencing software, and low-cost video cameras, sound cards, microphones, and speakers. The only additional requirement is an Internet connection. The Internet connection may be direct using an ISP (Internet Service Provider) and a telephone modem. Digital Subscriber Lines (DSL), cable modems, and satellite now offer the bandwidth to offer much higher quality, high-speed Internet connections.

<sup>2</sup> Miller, John W., McKenna, Michael C., and Ramsey, Pamela, "An Evaluation of Student Content Learning and Affective Perceptions of a Two-Way Interactive Video Learning Experience," *Educational Technology*, June 1993, p. 51. "Our review of the available research identified no study that has shown distance learning to be disadvantageous in terms of content learning, while some have even documented advantages over conventional, face-to-face instruction (e.g. Barron, 1987, Weingand, 1984)."

<sup>3</sup> Honey and Hengrequez, "Telecommunications and K-12 Educator: Finds from National Survey," Center for Technology in Education, Bank Street College of Education, New York, New York, 1993.)

<sup>4</sup> The Link-to-Learn initiative has been funded at \$40,000,000 for each of the last two years and anticipates another \$40,000,000 this year.

<sup>5</sup> Additional information about the latest Pennsylvania educational technological initiatives can be found at the web site located at [http://www.pde.state.pa.us/ed\\_tech/site/default.asp](http://www.pde.state.pa.us/ed_tech/site/default.asp).