Distributed Learning: What Makes for a Successful Course?

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ABSTRACT

Distributed learning presents universities and colleges with the ability to expand their reach into new markets and stay competitive and relevant in this dynamic information-based global economy. Through the effective use of distributed learning tools, location and cost are no longer barriers to earning a degree and will enable universities and colleges to reach working adults, international students, as well as the traditional undergraduate student market. This paper focuses on the evolving transformation of distance learning models to technology based distributed learning modes. While each institution has its own mission and goal for distance learning and distributed learning, there are certain things that need to be considered while developing or implementing a curriculum that involves education at a distance. This paper explores distance learning from a macro perspective and suggests some critical success factors that will aid faculty and institutions in distance/distributed learning development. The authors will also share some of their experiences.

Keywords: Distributed/distance learning, critical success factors, development models, pedagogical implications.

INTRODUCTION

Distance learning and distributed learning have a potentially significant role to play in academic content delivery for educators globally. It can certainly do for higher education what the Gutenberg press did for the Bible. History tells us that until 1450 A.D., books were painstakingly copied by hand, a lengthy process that limited them to an elite few. The combination of movable type, ink and press, however, greatly increased the distribution of the written word. Likewise, capacity in courses at Harvard, Stanford, MIT and Wharton is limited. With distance learning, however, a Wharton professor can teach students not just in Philadelphia, but now globally as well. The Internet and the World Wide Web have revolutionized the way we teach, making it possible to move much, if not all, of what we used to do on paper into the realm of electronic media (Adams, 1998; Bender, 1995; Chimi and Gordon, 1997; Privateer, 1999).

It is our view that the winners in this dynamic knowledge-based economy will be those who can rapidly receive, filter, process and utilize information whenever and wherever it is desired or needed. While the electronic classroom still revolves around the primary classroom document, the syllabus, this document is no longer a static paper contract, but a living, dynamic electronic web page with multiple parts and pieces all linked together using hyperlinks (Falcigno, 1995; Purao, 1997). The Internet has also made it possible to move the contents of the course on-line and new tools such as threaded discussion groups, chat rooms, and virtual lectures have made it possible to conduct a class entirely on line (Burns, 1999; Novitski, 1999). Thus, facilitating a "real world" environment requires students to use higher order skills.

Our experiences in developing distance learning courses date back to 1997. As early adopters of the Internet and World Wide Web (WWW) in our traditional on-campus classes, it seemed to be a logical and natural extension of what we were already doing. Much of our course material was already on-line and accessible through our course pages or through Blackboard™ or eCollege™. We both had detailed lecture notes and external links to other resources on-line and students were quite pleased with the amount of supplemental information provided to them. Our shared dilemma was our uncertainty of how to duplicate the "classroom environment" to an on-line setting and how students would respond to the lack of face-to-face, personal contact typical of an on-campus course. Studies were conducted on two sections of the same course, one on-line and the other on-campus, investigating student perceptions and the level of learning taking place [Papp, 1999 & 2000].

The findings suggest that there are several critical success factors that enable distance learning to thrive. These factors will be discussed next.

CRITICAL SUCCESS FACTORS

Effective use of distance learning technologies in the classroom can transform the learning process. The use of higher-order skills such as problem solving, collaboration, statistical analysis and simulation enhances student learning. Assigned projects require greater student initiative and enable them to incorporate "real world" scenarios to supplement traditional learning. Current distributed learning tools provide instructors with powerful tools to monitor, guide and assess the progress of their students as well as the ability to bring subject matter experts into the classroom virtually. Thus, these learning information systems can be used to track student performance in real time and over time. Instructors can also use distributed learning tools to access resources to supplement instruction and exchange ideas with other instructors and professional experts in their domain. Such learning tools have the potential to become not only an "instructors aide" in the classroom, but a complete learning information system. Characteristics of effective distributed learning include:

- ✓ High Expectations
- ✓ Effective Instructors
- ✓ Technology in every students hand
- ✓ Engaging & interactive high quality content
- ✓ Internet connection
- ✓ Adequate learning time

A pre-requisite to a successful course in a distributed learning mode is content that sets high expectations from students through effective delivery of challenging subject matter in a manner that is motivating to students. It is also important to carry content on user-friendly platforms that utilize multimedia tools that students tend to be attracted to. Finally, instructors delivering course content must be able to effectively use the technologies. This might require them to modify or shift their pedagogical paradigm and behavior. The myriad benefits of integrating distributed learning technologies into the classroom when successful include:

- ✓ Student Motivation
- ✓ Student Achievement
- ✓ Higher level thinking
- ✓ Gives instructors tools to improve instruction
- ✓ Utilizes resources of the WWW
- ✓ Expands learning time
- ✓ Prepares students for the digital world

It is our view that the proliferation of personal computers and the increasing penetration of the Internet are key contributors to the rising demand and success of distance learning. Internet use and diffusion is growing at an unprecedented pace, reaching a 25 % market share in only 7 years, compared to 35 years for the telephone and 30 years for the microwave. According to International Data Corporation (IDC), Internet access is forecasted to grow to 320 million users in 2002, up from 14 million in 1995. The diffusion of the Internet and computers in our daily lives is evidenced by the rapid growing integration of the World Wide Web (WWW) and e-mail in university and college courses. It is suggested that:

- ✓ Over one-third of all college classes are using Internet resources as part of the syllabus, compared with 25 % in 1997 and 15 % in 1996.
- ✓ Over one-fourth of college courses are using World Wide Web (WWW) pages for class materials and resources, compared with 8% in 1996 and only 4% in 1994.
- ✓ The percentage of classes using e-mail increased to over 44% in 1998, up from 8% in 1994.
- ✓ Most class textbooks today are complimented with student and instructor resources accessible from the Internet.

Today, distributed learning is more than just a phenomenon; rather it is a success for all of its stakeholders--students, instructors and institutions and private distance learning developers There has been a phenomenal growth in the number of instructors, universities and colleges that are seeking to develop education or course delivery systems that combine the best of traditional classroom instruction with the power of technology. This is illustrated by the growth in students enrolled in distributed learning and the number of distributed learning courses offered by two and four year institutions. In 1998, 710, 000 students were enrolled in distributed learning courses, this figure is expected to increase to 2.2 million in 2002, representing a compound annual growth rate (CAGR) of 33 %.

It is estimated that over 84% of four year colleges are expected to offer distributed learning courses in 2002, up from 62% in 1998. In fact, two-year colleges are also quickly moving into the distributed learning domain with over 85% expected to offer distributed learning courses in 2002, up from 58% in 1998.

Finally, it should be noted that the rapid acceptance of distance learning and the adoption of the new educational model by many of the world's best institutions-- Stanford, Harvard, University of Pennsylvania's Wharton School of Business, Duke University's Fuqua school of Business and MIT, among others—illustrates the enormous pressure on universities and colleges to attract new students and revenue streams. The benefits of distance learning cannot be ignored. It provides them with the ability to expand their reach into new markets and stay competitive and relevant in today's digital and knowledge-economy. The benefits as highlighted earlier are categorized as follows:

- ✓ Increase Access to Education
- ✓ Increase Access to Best Content
- ✓ Decrease Cost
- ✓ Increase effectiveness

It is our view in this paper that the success of distributed learning courses and programs depends greatly on the quality and effectiveness of its design, content and mode of delivery. Currently, there exist a variety of approaches that universities and colleges are exploring to capitalize on distributed learning to shift into the demands of the evolving knowledge-based economy. The old perceptions of distance learning in the form of video and cable are being transforming by the rapid and dynamic advancement in technology. In order to enhance quality and success today, the solutions range from live satellite broadcasts to high-tech hubs to asynchronous Internet collaboration.

It is important for universities and colleges to evaluate the highlighted questions noted below when designing their distributed learning programs and courses. Success will depend on the answers to these questions since they will shape how the programs and courses are developed.

- ✓ Who are the students we are trying to serve?
- ✓ What kind of experience do we want our students to have?
- ✓ What kind of distributed learning is most appropriate for our courses and programs? How difficult will it be to convert and convey the information in a distributed learning format?
- ✓ How much can we ask instructors to change the way they do things?
- ✓ How much of this program/courses do we want to manage ourselves? Do we outsource/not outsource?
- ✓ What is the content?

The decision regarding which distributed learning model to adopt depends on how "convenient" the courses or programs must be and what degree of "collaboration" between students and their instructors the courses or programs should provide.

Intellectual property: Who owns the course?
One of the first hurdles that must be overcome is the issue of intellectual property rights or ownership (AACSB, 1999; Quinn, 1996). Faculty spend a great deal of time developing course content, frequently incorporating material from their research or consulting that is sensitive in nature. They are understandably reluctant to place such material on-line if it will be accessible to anyone and, more importantly, will then become the property of their institution or the distributed-learning provider. One way to solve this problem is to formulate language that protects the faculty's intellectual property while enabling that faculty member to share material with the students. Therefore, the first critical success factor is to provide faculty with a certain level of security with respect to their intellectual capital. Such a suggestion may seem ludicrous for those who come from the corporate world where the contributions of workers belong, in whole or in part, to the company that employs them. While academia is similar to corporations in many respects, it is also quite different and by imposing similar policies on its faculty, Universities may find that the courses and

programs are not as "robust" as they might otherwise be due to such copyright and intellectual property concerns.

Suitability for a DL environment
Another consideration for faculty endeavoring to teach in a distance-learning environment is the suitability of the course for such an environment. Certain topics lend themselves to this environment more readily than others. Courses that depend heavily or completely on face-to-face interaction among students are much harder to conduct on-line. While technologies like chat rooms, threaded discussion groups and virtual meetings can bring students together over great distances of time and place, they still cannot fully duplicate the dialogue of the classroom. Face-to-face interaction is still a key component of many courses and while technologies like threaded discussion groups and chat rooms can replicate some of communication between students and faculty, there is no way to entirely duplicate the interactive classroom environment. With this in mind, faculty need to analyze their pedagogical approaches and determine if their courses can be successfully adapted for an on-line learning environment.

Building the course: More than a day's work
Faculty should also consider the amount of advanced preparation that goes into a distance or distributed learning class. From personal experience, it takes a considerable amount of time and effort to set up the course for the first time and also a good amount of time to continuously update and maintain it. For example, it typically takes about 25% more time to conduct a distributed learning class than our on-campus class as we have the added responsibility of responding to e-mail and threaded discussion postings.

Faculty should consider using courses that they have previously taught in the classroom since they will have some idea of what works and what doesn't. It is important to note, however, that even if a course has been successful in an on-campus setting, it may not fare as well in an on-line environment due to problems such as lack of face-to-face communication and other logistical and technical issues. Thus, using a course with which you are familiar will make it easier to transition the course to the new environment.

Course content: To include or not to include?
Course content is an issue that has been raised quite often with faculty, administrators and students alike. Particularly, the use of exams and other instruments of evaluation have been hotly debated (Chimi & Gordon, 1997; Fischer & O'Leary, 1998). Should an on-line course be an exact duplicate of the on-campus course it mirrors or should slight modifications be made to account for the separation of time and space? Exams can be made sufficiently challenging that a student would not have a good opportunity to engage in academic misconduct (cheat). Faculty can also use spur-of-the-moment evaluations or "pop quizzes" to make sure students are actively and fairly participating. Phone

calls to students can also be used as a "check and balance" when integrity is in question. As a result, the development of course content should be carefully undertaken to maximize the use of available technology and enable student learning.

Problems: Murphy was right!

Once developed, simply running the course can be an exercise in frustration if you are not prepared and do not have access to a good support staff. Problems can and will occur, both to you and your students. For example, Papp once gave an on-line exam where all the students flunked the exam. He was devastated that he made the exam too difficult and that he had not prepared them for it well enough. Upon further inspection, he found that the server had crashed at the very moment that the exam was to be saved and all their answers were lost. They never knew what had happened. He gave them a new exam (different, of course) and they all did very well on it. Explaining the problem to them was more of a challenge than creating and administering the new exam. For the most part, they were all more than understanding and the class turned out to be one of his most successful and rewarding. The moral of this story seems to be that when using technology, the instructor should be prepared for any eventuality. After all, how are such problems different from those of the classroom environment when the only bulb in the overhead projector blows out in the middle of class?

Distributed Learning Platform: All or Nothing?

With respect to distributed learning platforms, several different alternatives exist, including *eCollege™, Unex™t, Comweb™, WebCT™, Web Course-in-a-Box™ and BlackBoard™* as well as developing a customized web platform from scratch.

The easiest option for those who are not well versed in technology is *eCollege™* (www.ecollege.com) and *BlackBoard™ (www.blackboard.com)* . Although the cost per student is higher, they do provide a high level of support and guidance. They will, given sufficient lead-time, transfer all your course materials from hardcopy format to web-ready format for you. This is a very desirable option for those who do not want to learn the nuances of HTML and/or do not have a lot of lead-time to develop their course.

Another option is to use a software package like *BlackBoard™* or *Web Course-in-a-Box™* which will allow you to quickly and easily put up a course web site with minimal development time and effort.

Finally, one can undertake the development of a complete website from scratch. This will provide the highest level of flexibility and customizability but also necessitates a strong background in technology and a willingness to spend considerable time up front designing the site.

Measuring success: Responding to Others

Once the hard work of development is done, will the course meet the needs of the students and be successful? How do you respond to the "nay-sayers" who contend that distance learning cannot possibly compete with the classroom and students will either do much worse (because they do not have an instructor to guide and lead them) or much better (since the course will be too easy and/or have little or no accountability when it comes to assessment)? One answer is to run the course, survey the students, track their progress, and compare it to the traditional classroom environment (Papp, 2000). Results from several successful courses support the literature's findings that there is no significant difference between the two environments from a performance standpoint (Russell, 1999).

Measuring the CSFs

Given these critical success factors, it is necessary to study each one in isolation and also as a composite to determine which factor(s) influence and impact student learning. One way to assess the impact of distance learning is to assess which type of learning style the student exhibits. As this paper goes to press, research was underway to determine whether students taking an on-line class learn differently from those taking on-campus classes. Students in both the on-campus and on-line sections of the same course were administered the *Learning Style Inventory* to determine within which type of learning style they are classified: concrete experience, reflective observation, abstract conceptualization, or active experimentation (Kolb, 1976). Our initial hypothesis would be that students in the on-line class would be more oriented toward an abstract learning style; Kolb suggests that "an orientation toward abstract conceptualization focuses on using logic, ideas, and concepts. It emphasizes thinking as opposed to feeling while "an orientation toward concrete experience focuses on being involved in experiences and dealing with human situations in a personal way. It emphasizes feeling as opposed to thinking" (pp. 68-69).

The critical success factors to distance learning previously mentioned will also be explored to determine their impact on student perceptions and learning.

IMPLICATIONS FOR EDUCATORS

Many universities are beginning to look at distance learning as an alternative means of content delivery and to reach non-traditional populations (Bialaszewski, et. al., 1998; Fischer and O'Leary, 1998; Russell, 1999). The creation of a distance-earning/distributed-learning course has many rewards.

Students like using a technology that they will employ in the working world, one that facilitates their learning and allows them to learn on their own time in their own way. They also like that they can "attend" the class when it is convenient for them and complete the

assignments on their own schedule. This is particularly important for schools that face a great deal of competition in their area or enroll students from a wide geographic area. Through distance learning, institutions can offer more sections and courses to students at times that are convenient for them. (Since they are our "customers", anything we can do to retain and please them is seen as a positive step).

From an instructor standpoint, several critical success factors can make the development and implementation of a distance-learning/distributed-learning course a fulfilling and rewarding experience. While technology will always have its little surprises and unexpected problems, good preparation can go a long way toward making the transition to a distributed-learning environment easier. As the Internet moves further and further into the mainstream, distance learning will become a greater part of the educational process. It will probably never replace the traditional on-campus class, however it does provide alternative pedagogical approaches to learning and can make classes more fun and applicable and teaching more rewarding.

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This paper highlights our ongoing research and investigates not only whether distance learning is appropriate, but also which factor(s) influence student-learning outcomes. It represents a multi-year study of more than 150 students completing distance leaning courses and traditional on-campus courses in a variety of platforms. Continued research is necessary to validate the critical success factors proposed here to determine how and when distributed-learning environments should be employed and what facilitates their use. Some initial data and findings will be presented at the conference.

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