Distributed Learning
New Horizons for Higher Education

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Technology is rapidly reshaping our world. In the process, the face of education is also changing. New directions are fast emerging that alter the pace, place, and format of both teaching and learning. These new horizons can be summed in the concept of distributed learning.

## Historical Perspective (A Very Recent One)

The development of distributed learning finds its roots in the 1970s through the efforts of visionaries who began to experimentally link technology and the instructional process. In the 1980s, educational pioneers began to seriously explore the utilization of electronic media in learning contexts. By the 1990s, faculty practitioners had emerged and distributed learning began to move into prime time.

Strong indicators of this shift in education have surfaced over the past five years. In 1995, for example, only one third of universities in the United States had any form of distance learning, while another 25% estimated they might in the next two years. By 1997, however, 80% of American universities reported distance education programs (Sabelli, 2000). Much of this unexpected growth took place in the area of distributed learning. By that year, for example, 400 accredited colleges and universities in North America employed some form of online instruction (Velsmid, 1997), while over 150 accredited institutions offered entire bachelor's degree programs to students who rarely, if ever, visited campus (Herther, 1997).

At present, 85% of all higher education institutions, not just universities, offer some form of distance education, with Web-based learning quickly replacing other formats, such as correspondence courses and even satellite and compressed video delivery (Buchanan, 2000). While the preponderance of distance education courses remain in the areas of business, social science, and education (see Figure 1), other disciplines, such as computer science and allied health, have begun to vigorously enter the distributed learning arena (Market Data Retrieval, 2000).

Figure 1. Distance Education Distribution

Recently, IDC predicted that by 2002, 15% of all enrolled students in higher education would participate in distance learning, as compared with just 5% in 1999 (Everhart, 2000). In a similar vein, Lifelong Learning, an adult education consulting firm
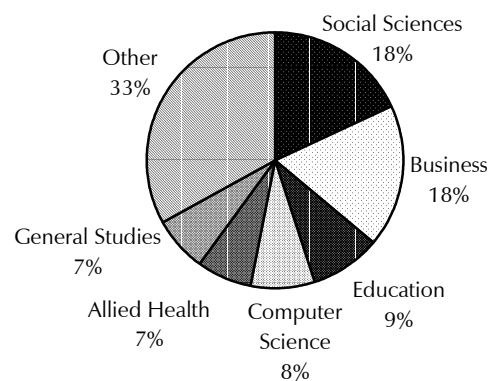
in Waterbury, Vermont, forecasts that the number of adult learners taking courses via electronic media will double to more than 1.4 million by 2004.

Current Trends

These figures encapsulate several significant educational trends. The past few years have seen the emergence of private, for-profit universities, such as New York University and The University of Phoenix, which leverage online learning modalities. Virtual universities, such as Newport Asia-Pacific University and Jones International University, have also proliferated. Furthermore, in response to a recent survey, 84% of Fortune 500 companies indicated that they are planning or have established a corporate University (Densford, 1998). There is also an emergent collaboration among universities in the implementation of distributed learning. This is evidenced in the case of Western Governors University (WGU), the Ivy Plus group, and the consortium formed by MIT with 2 of the leading universities in Singapore, to mention a few.

WGU, for example, is a partnership between 19 states and 20 corporations, such as AOL, AT&T, Apple, IBM, Micron, Microsoft, Novell, Sun, and 3Com. Perhaps the most recent development in this vein is Canadian Virtual University that opened its doors virtually in October 2000, representing a partnership of seven chartered Canadian universities that have aligned their resources and online distance education expertise. Finally, existing brick and mortar institutions are becoming increasingly Web-enabled, with Internet access spreading from libraries and computer labs to the classrooms, residence halls, and beyond (Market Data Retrieval, 2000).

Each of these trends has served as an impetus for distributed learning. Many of the larger universities, such as Duke, Stanford, Carnegie Mellon, Purdue, Columbia, MIT, and Johns Hopkins, now offer undergraduate or graduate programs either partially or completely in electronic format. The same is true at many regional and state universities. Graduate programs in health and education, for example, are available online from the University of Alberta and the University of Central Florida. Master's degrees in agriculture, business administration, engineering, and nursing, as well as doctoral degrees in audiology and pharmacy can be taken, at least in part, via electronic format from the University of Florida. An MBA degree can be taken through distributed learning from the University of Texas, Nova Southeastern University, and the University of Maryland University College (UMUC), among others.

UMUC is an interesting case of distributed learning. The institution has focused on serving adult part-time students via electronic media, offering bachelors' degrees in 15 areas of specialization, as well as 10 graduate degrees with 19 specialty tracks. Its growth has been remarkable. In the 98-99 school year, for example, there were 9,959 students enrolled. The following year, 99-00, online students boosted enrollment to 21,299. Of these students, 99% were degree seeking, 80% were employed full-time, and the average age was 34 (Banks, 2000).

Student and Teacher Reactions

Student responses to distributed learning have been overwhelmingly positive. Louise Haynes, an MS degree student in Newport Asia-Pacific University's (NAPU) distance learning program, says, "When I started using computer awhile back, I realized that the possibilities for education are unlimited." Another distance learning student, Suresh Lal, vice president and manager of accounting and control at an American bank, is a second-year MBA student in Heriot-Watt University's distance learning program, based in Edinburgh, Scotland. Lal said, "Distance learning offered me the flexibility of doing the course at my own pace without taking time off from my job. I hope it will give a boost to my career."

Gary Mayo, 45, pursued a virtual executive MBA from Duke University. He recently graduated and considers access to other scholars around the world as a bonus. "Over the course of the 19-month program, I had classmates from Moscow, Amsterdam, Brazil, Hong Kong and Toronto," says the global customer service director for Visteon Automotive Systems, a division of Ford Motor Company in Detroit. "It was great to be able to talk about newsworthy events, such as the financial situation in Asia, as they happen with the people who actually live there."

Duane Flowers, a graduate student at NAPU, noted that distributed learning "is much more convenient than a full-time program. I don't have to quit my job. I don't have to move away for the duration of the program; I can go at my own speed, and I can work at home." Then he added, "At what other university can you go to class in your pajamas?"

Faculty reactions, however, have been mixed. Referring to online students, Dr. Anthony Al-Jamie states, "They're the most motivated students I've ever seen." However, another professor, who preferred to remain anonymous, declares: "The basic assumption is false— that NEW electronic gadgets will NECESSARILY improve the QUALITY of university teaching…. A good mind and a trained voice are the only ESSENTIAL tools."

Definitions and Formats

So what exactly is distributed learning and how does it relate to the concept of distance education? Distance education can be defined as learning that takes place at remote locations from the main institutional campus, thus freeing faculty and students from the constraints of time and place. Distributed learning, on the other hand, is a learner-centered approach to education that integrates a number of electronic instructional technologies, both synchronous and asynchronous, to create high-quality cost-effective instruction.

Distance education and distributed learning may thus be visualized as two overlapping circles (see Figure 2). Some forms of distance education, such as correspondence programs and distance learning centers, do not normally involve distributed learning modalities. Conversely, some forms of distributed learning, such as Computer-Based Instruction (CBI) and Web-enhanced courses may take place on the main institutional campus. Much of the growth in both distance education and distributed learning, however, is taking place in the synergistic overlap. Here, through such approaches as Computer-Mediated Instruction (CMI) and Networked Learning, instruction is taking place far removed from the institutional

campus and is mediated almost exclusively through electronic media. As early as 1995, however, J. W. Hall observed that "distance" was rapidly becoming less important as the key descriptor for courses or students, and suggested that "connected" (or distributed) learning is probably a more accurate and significant descriptor.

This paradigm shift is seen via a progressive evolution occurring in instructional delivery. Early on in the educational metamorphosis, face-to-face instruction in the traditional classroom was supplemented with Computer Assisted Instruction (CAI), using educational software or videodiscs; and later with Computer-Based Instruction (CBI), employing simulations and audio/video clips on CD-ROM or DVD, and Web-based research on the Internet.

Figure 2. Distance education and distributed learning

This was followed by Computer-Mediated Instruction (CMI), in which students and teachers interacted remotely via e-mail, electronic bulletin boards, synchronous chats, and threaded discussions. Most recently, Networked Learning (also known as "connected learning" or "e-learning") has emerged as a hybrid of CBI and CMI. In Networked Learning, technology mediates course delivery, connecting teacher with students, and students with content and with each other, regardless of their location.

These developments have resulted in three major forms of e-learning (see Figure 3). In Web-enhanced courses, which are usually conducted on the institutional campus, there is a significant Web presence. This may be primarily in the form of Internet-based research and simulations, or it may expand into "paperless courses" where all content is housed online. Teacher and students still meet, however, for regular class sessions. At the other end of the spectrum are Web-based courses. Here there are no class meetings (or these are limited to a course orientation and proctored exams). All interactions take place through electronic media, usually entirely online or with a combination of video and the Web. The third type of e-learning is the mixed-mode course, which combines features of Web-enhanced and Web-based approaches. Although there will be

Figure 3. Types of Distributed Learning

some class meetings, there is significantly reduced in-class "seat time" through the use of online modalities for content delivery and teaching/learning interactions.

Rationale

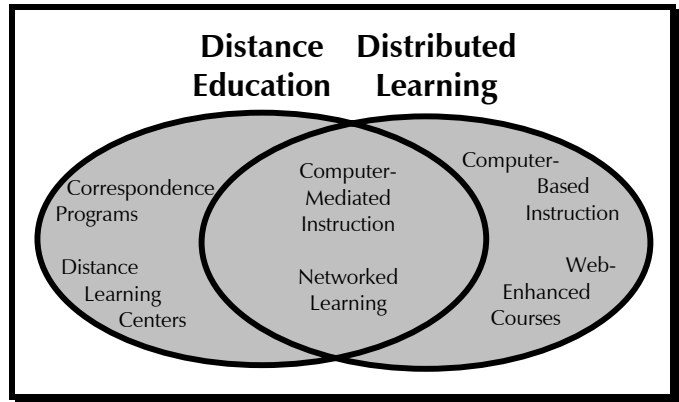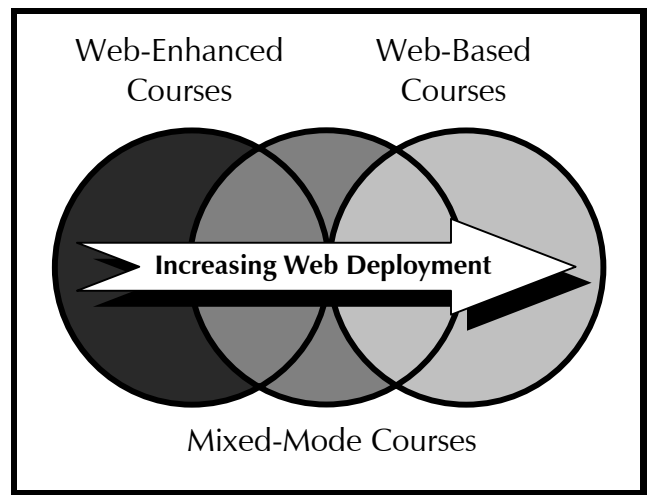Why has distributed learning expanded exponentially? A number of factors have been cited for this rapid growth. These include changing student demographics (increasing numbers of adult learners, for example), developments in digital technology (such as compressed video and audio), and the demand for flexible learning opportunities by on-the-job professionals. Previously if a professional wished to obtain further training, he or she must either commute or migrate to the educational institution. Through distributed learning approaches, however, the professional-turned-student is able to interact virtually with the instructor and other class members.

While all of these factors have played a role in the rapid rise of distributed learning, there are two primary reasons from the institutional perspective—decreased costs and increased revenues. Distributed learning can, in fact, reduce institutional expenses. There are less brick and mortar installations required and not as many employees need to be hired. The Florida state University system, for example, expects online programs to save about 40% of the cost of in-class programs ("Caught in the Web," 1998).
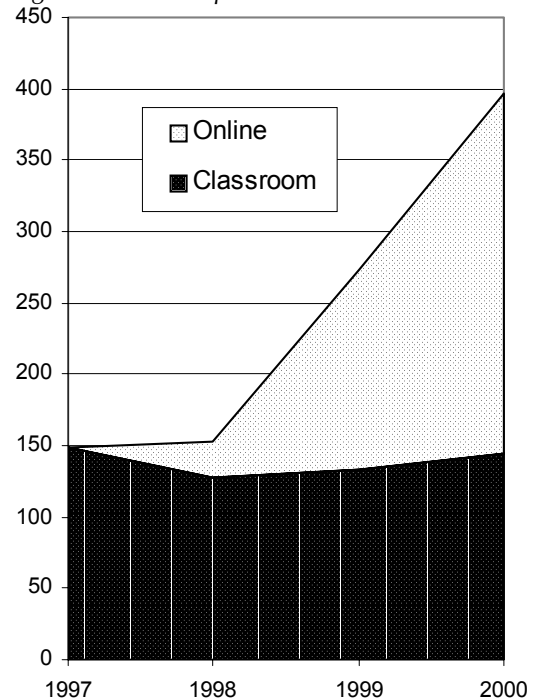
Through new revenue channels and increased geographic reach, distributed learning can also lead to increased institutional revenues. At UMUC, for example, Spanish course enrollments in 1997 consisted entirely of in-class students (see Figure 4). By 2000, the enrollment had tripled, with the growth resulting primarily from online students (Hart-Gonzalez, 2000).

Figure 4. UMUC Spanish Course Enrollment

Institutional Development

In order for an educational institution to set up a distributed learning system, some important steps in institutional development should take place. These may be subsumed under the phases of strategy formulation, planning, implementation, and review.

In formulating an institutional *strategy*, the organization's leadership must carefully analyze trends, potential customers, and competitors; and then visualize where the institution should be in the future. Particularly, educational opportunities should be identified that leverage the Internet for instruction. Based on this exploration, goals and objectives for distributed learning can be formulated, and decisions made as to what programs and services will be offered online, who the targeted student populations will be, and how marketing, delivery, and quality control issues will be handled.

In the *planning* stage, the institution needs to determine how success will be defined. Plans also need to be laid regarding tuition levels (often at a par or higher than on-site tuition) and marketing strategy (whether it will be primarily in traditional formats, online, or a mix of both). Software packages and hardware configurations also need to be selected, and a decision made regarding Internet access (e.g., whether the site will be hosted internally or externally through an Application Service Provider). Finally, security issues (such as the need for a firewall) should be examined and a Disaster Recovery Plan (DRP) formulated—in essence, a contingency plan for serving your students if your Web site goes down.

The phase of *implementation* encompasses the actual development, installation, site testing, hosting, and marketing of the distributed learning system. Many institutions have found that an incremental implementation, first of online courses and then of entire programs, allows time for some of the kinks and difficulties—such as how many users can access the Web site at a given time—to be sorted out.

Finally, the *review* process evaluates whether goals and objectives are being met and whether online students find the experience profitable and satisfying. Security and quality controls should be carefully examined to be sure these are in place and running smoothly. It would also be well to periodically invite an external consultant to conduct an audit of the entire distributed learning system.

System Features

Learning experiences in a low-technology classroom can be either passive or interactive (see Figure 5). Lectures, for example, typically focus on the dissemination of information and require little in the way of active student involvement. New instructional paradigms, however, call for the classroom teaching/learning experience to be constructivist—highly interactive and project- and experience-based.

Figure 5. Types of educational experiences

Technology

Pedagogy	Low	High
Passive & disseminating	Lectures	Online tutorials
Interactive & adapting	Project-based Experience-based Constructivist	Simulations Collaborative projects Internet research

Similarly in the high-technology settings of distributed learning, instructional systems can be either passive or interactive. Many of the traditional forms of distributed learning, such as early online tutorials, have focused primarily on the dissemination of course content. Here the student views or listens to lesson content online and then responds to evaluative exercises. Under an interactive paradigm, however, the experience becomes much more adaptive. The student actively engages in collaborative projects, asynchronous discussions,

simulations, and Internet-based research. Evidences of this learning are primarily in the form of student projects and participation.

Assuming an interactive/adaptive pedagogy, the virtual learning environment would include the following features:

- Online course syllabus, including a webliography of pertinent Internet resources
- An electronic bulletin board for class announcements
- Asynchronous conferencing and synchronous chat
- Formation of student groups for discussions and collaborative projects
- Course content, corresponding to class lectures and handouts, in hypermedia format
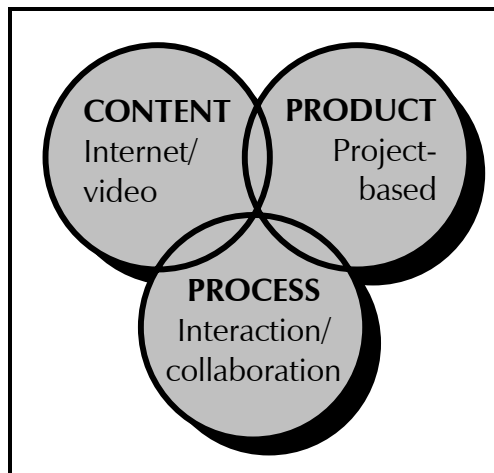- Electronic submission of student assignments and instructor feedback

In addition, there should be institutional support for student services (such as career advising), Internet access to library resources (including full-text journals), provision for Web-related faculty training and technical support services, and online marketing and institutional research. All of these facets can be coordinated from a Center for Distributed Learning, which is at the heart of the virtual campus.

The distributed learning system itself is comprised of three major components—content, process and product (see Figure 6).

Figure 6. Distributed Learning Components

Content

Faculty members are ultimately the course content providers, but they will need specialized training and support personnel in order to convert class materials into appropriate Web format. Some institutions have opted for a team approach to online course development. These working groups usually consist of the instructor (who is the content specialist), a curriculum expert, a media design specialist, and a peer reviewer.

In order for this course development to take place, however, the institution must provide incentives and recognition for faculty participation and innovation. These may take the form of release time (e.g., decreased teaching load to develop online materials), a stipend or honorarium, and/or a technology grant (e.g., a given amount of funding that may be used to purchase hardware or software, or attend technology-related events). Involvement in e-course development may also be encouraged by showcasing these projects and by considering these activities in reference to faculty promotion and tenure.

Another content-related aspect, particularly important to distance learners, is Internet access to library materials and services. This implies that contracts for electronic indexes and full-text databases must take into account distance students. It also would be well to create a full-time distance education librarian position and to establish mechanisms for full-text document delivery to students via e-mail as a library service. In this regards, the guidelines

for providing distance learning library services, prepared by the Association of College and Research Libraries (ACRL), may prove helpful.

<u>Process</u>

In terms of process, the distributed learning system should require students to collaborate and interact. Most online students simply do not find the learning experience motivating if they work in isolation. Indeed for many students, the exposure to new ideas, ideals, and experiences of other learners is as educational as the coursework itself.

Online teachers must consequently build a sense of community among the learners. This can begin by initiating a discussion thread on why students are taking the course. Subsequent asynchronous conferencing—online discussions in which students log on at personally convenient times, share their own ideas, and react to other student postings on the topic—can focus on a particular course-related topic or issue, perhaps one each week. Students should also be encouraged to work collaboratively on certain course projects via an electronic whiteboard or document sharing application.

Communication between teacher and students should also be ongoing. This interaction can take the form of e-mail, electronic bulletin boards for announcements, or synchronous chats for teacher/student interviews. Other process components can include guest expert chats, online debates, implementation of a buddy or study group system, and inclusion of student experiences. In all, there should be a concerted effort to promote a culture of inquiry based upon discovery learning, problem framing and solving, and collaborative learning. In essence, seeking to create and adapt, rather than reiterate and replicate.

<u>Product</u>

In regards to product, online courses cannot evaluate student learning based simply on a midterm and a final exam (which probably isn't sound educational practice anyway, in any context). Rather, on-going, project-based evaluation is essential for a distributed learning format. Such projects, occurring at frequent intervals throughout the course, can consist of case studies, annotated bibliographies, collaborative reports, write-ups of class-related activities, and the like. These can be submitted as attached e-mail files or via course management software. (An online archive of exemplary past student work has been found to be a useful criterion for students and instructors alike.)

Evaluation should also take into account the quality and frequency of student participation in threaded discussions, panels, and debates. Formal examinations, if needed, often take the form of open book tests, online timed quizzes (using Question Mark software, for example), or proctored exams, which are then submitted to the instructor in electronic format. The evaluation system should allow for electronic homework collection, instant grading and custom feedback, and student access to a personal online gradebook.

Technical Tools

A distributed learning system does require certain technical tools. Although the Web server (usually running a flavor of Unix/Linux or Windows NT) ultimately determines what you can

and can't do, Web authoring tools and course management software are also essential ingredients.

For authoring Web pages, good entry-level programs include Claris HomePage, Adobe PageMill, and Netscape Composer (incidently, free). Feature-rich programs include Macromedia Dreamweaver, Adobe GoLive, and MS FrontPage (full edition). Online content production can also be enhanced with Macromedia Director and Flash (for animated effects), Realworks Presenter and Producer (for creating streaming video and audio), and Adobe Acrobat Creator. In fact, Acrobat's PDF format has become the de facto standard for transmitting documents across the Web, and is an excellent choice for posting instructor-created materials quite effortlessly on the Internet.

In addition to these tools, it would be well to consider a group conferencing system, some form of Web-based assessment, and/or course management software. Asynchronous group conferencing lies at the heart of an online class. Software, such as SoftArc's FirstClass or O'Reily's WebBoard, can provide support for private/public/moderated conferencing and attaching files, and facilitate electronic submission and collection of homework assignments. Web-based assessment programs, such as Virtual Learning Technologies' CyberExam or Macromedia's CourseBuilder, support multiple-choice, T/F, fill-in-the blank, matching, and short-answer questions. They also allow for practice and timed quizzes, automatic grading and custom feedback, and anonymous surveys and evaluations.

Course management software, however, is the most comprehensive solution to creating a consistent e-learning environment. Although there are various possibilities, Blackboard and WebCT currently occupy dominant positions. With either of these software solutions, you have an integrated set of components for developing and delivering interactive courses over the Web. Features include threaded discussions, synchronous chat, secure student evaluation, student tracking, grade management, e-mail, file transfer, and a structured environment for course materials. Although course management software represents a significant investment, it eliminates the need for separate web authoring, group conferencing, or Web-based assessment programs, while providing a consistent interface for the entire learning environment.

Suggested Techniques

In creating a distributed learning system, it is not enough to simply purchase the tools. These must also be used effectively to create a motivating, user-friendly learning environment.

From a technical aspect, web pages should be designed so that individuals with a normal dial-up connection should have to wait no more than 5 seconds for a page to download. Rather than including large graphics, for example, utilize a thumbnail of the graphic that the student can click to view the full graphic. Also, while streaming audio (such as RealAudio) is acceptable over a dial-up connection, video is not; although class lectures in video can be distributed to students through other formats (such as VHS, VCD, and DVD). Although Web pages should support browsers up to 2 years old, it is also a good idea to provide students with a CD-ROM containing the latest version of Internet browsers and required plug-ins.

From an educational standpoint, it is advisable to implement an online orientation for students, as well as weekly chatrooms for admissions or financial aid. Some distributed learning programs, such as the MPH program at Johns Hopkins, utilize a non-credit required course to serve as an introduction to e-learning for all who would pursue a degree program online. Other techniques (also see Figure 7) that have been found effective include the posting of FAQs (Frequently Asked Questions), sending students virtual flowers and cards to reinforce learning, and having one or two peers review a student's paper before it is submitted to the instructor.

Figure 7: Instructor Support Strategies (adapted from Buchanan, 2000)

1. Have all course materials prepared and loaded by the beginning date of the course (students often like to review all materials prior to course inception)
2. Check into the class at least once daily (criticisms of distance learning courses often surround a lack of interaction and feedback from instructors)
3. Develop activities that promote interactivity and socialization among students (without face-to-face contact, such activities become vital)
4. Work closely with the library and other institution departments to ensure that distance students are adequately served
5. Work in a "no-post" day once a week (students will greatly appreciate the down time, which guards against Web-based course burnout)

Dilemmas and Challenges

In 1997, the Western Cooperative for Educational Telecommunications surveyed 310 institutions offering distributed learning programs. Results indicated that 37% relied on faculty rather than support personnel to provide technical assistance to students, 25% did no separate marketing of these programs, 40% had no provision for counseling or career orientation, 75% offered no opportunities for social interaction among distance learners, and 89% had no provisions for serving students with disabilities. Findings such as these point out some of the challenges facing distributed learning. These include fundamental factors such as accessibility, affordability, and quality. What can administrators and faculty do in response to these challenges?

Administrators must first recognize that an effective distributed learning is complex and may require redefining the institutional mission and modifying its organizational structure. They must also determine the role that information technology will play in the teaching/learning process and the roles of faculty and support staff under the distributed learning paradigm. They must allocate adequate resources to ensure a quality program, recognizing that a distributed learning system will require substantial start-up funding and specialized personnel. They must actively market the online programs (recognizing that online degree programs tend to attract more students than do individual courses) and be prepared to deal with the negative implications of high enrollments (especially since some institutions are already stretched to the limit in providing on-campus programs). Finally, administrators must

maintain quality control and articulate clearly to their constituencies what a networked learning paradigm is and what it is capable of doing.

In the case of teachers, a philosophical and pedagogical shift is required that involves distancing oneself from the culture of the classroom—the belief that face-to-face teaching is the default setting for learning. It means dealing with negative preconceptions regarding technology and change—sometimes seen as threatening or deskilling. It may mean dealing with large classes and delegating certain functions to teaching assistants. It will likely involve a restructuring of evaluation—from pencil/paper assessments to problem-based learning. Most importantly, it will involve creating a sense of academic community in a virtual world. This is particularly crucial given that a large proportion of distributed learning students place a high value on the existence of an online learning community while taking the course (Bruce, 2000). Along these lines, Rosenblum (2000) observes that "the requirements for online courses to contain highly interactive content, well-developed online communities, and self-assessment tools to chart student progress will become increasingly important to schools interested in recruiting and keeping an online audience."

Results and Rewards

Although the implementation of distributed learning presents challenges, it can also yield significant rewards. Distributed learning systems are scalable and have been shown to be cost-effective. They can serve to maintain or increase institutional enrollments, thus having the potential for generating strong revenues. Distributed learning also allows for the formation of global partnerships and makes the institution highly visible, a factor that seems to increase alumni involvement and support. Collaborative curriculum development is encouraged; multiple learning styles are supported through alternative media; and students are exposed to new technologies. Underserved student populations are reached and isolated students are provided with connections to the broader world, while the educational experience for on-campus students is simultaneously enriched.

Although distributed learning is of relatively recent vintage, research studies have supported its effectiveness. Everhart (2000), for example, found that teacher/student communication increased 50% in the connected learning environment over the traditional classroom. Furthermore, this communication became more efficient and effective—teachers and students were more prone to get right to the point, while less vocal and outgoing students were more apt to join in on the discussions.

Other researchers have looked at the comparability of the quality of online instruction with traditional methods. Gubernick and Ebeling (1997) compared the standardized achievement test scores of the online graduates of the University of Phoenix with the graduates of on-campus programs at three Arizona public universities and found that the scores of the online graduates were 5-10% higher. Similarly, investigators at the University of Michigan concluded that computer-based instruction yielded higher average scores than traditional instruction (Vasarhelyi & Graham, 1997).

One of the most methodologically sound investigations to evaluate the effectiveness of online instruction was conducted at Cal State, Northridge. Students in a statistics class were randomly divided into two groups. One group attended class as usual—listening to lectures, handing in homework assignments, and taking examinations. The other group took an online version of the course, completing assignments on a World Wide Web site, posting questions and comments to an electronic discussion list, and meeting with their professor virtually in an Internet chat room. After an orientation session, students in the virtual class went to the classroom only for their midterm and final exams. On both tests, the online students outscored their traditional counterparts by an average of 20 percent (McCollum, 1997).

Conclusion

There is really no longer a question of whether institutions of higher education should offer distributed learning options. Today's traditional forms of higher education setting simply cannot meet the projected learning needs of the future. The question now is how to serve these students well. As Eric Parks (1998), President and CEO of ASK International, notes, "Creating exceptional web-based learning isn't about being a great technologist or using fancy media. It's about… focusing all your attention on your learners and their needs."

Who, then, will be the winners in distributed learning? Institutions that have strong leadership, with clear goals for distributed learning and a commitment to do it well. Institutions with customized products and services, and a willingness to create alliances with partners. Institutions that offer high-quality online courses and programs—appropriate content, well-designed media, and effective interaction. Institutions with a forward-thinking faculty, strong traditions of student support, and a strategic reallocation of resources.

Distributed learning offers a bright horizon for higher education. Today, however, you must capitalize on the window of opportunity that e-learning brings to the education of the future.

About the author: John Wesley Taylor V, PhD, brought home his first computer, a Commodore 64, in 1981. Subsequently, he has continued to explore the applications of technology in education, serving as Director of Academic Computing Services at Andrews University, initiating distance education programs at Montemorelos University, and currently coordinating the development of a distributed learning system at the Adventist International Institute of Advanced Studies (AIIAS), a General Conference institution serving the Asia-Pacific region. He may be reached at taylor@aiias.edu.

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Stanford University: stanford-online.stanford.edu
University of Alberta: www.atl.ualberta.ca
University of Central Florida: distrib.ucf.edu
University of Florida: www.fcd.ufl.edu
University of Maryland University College: www.umuc.edu/distance
University of Pheonix: online.phoenix.edu
University of Texas at Dallas: www.utdallas.edu/dept/mgmt/mims/mims.html
Virtual Learning Technologies: www.vlearning.com
WebCT: www.webct.com
Western Cooperative for Educational Telecommunications: www.wiche.edu/telecom/
Western Governors University: www.wgu.edu

Online Resources

Adult Education and Distance Learner's Resource Center (www.geteducated.com)
> *Offers articles and resources on distance learning, You can also sign up for the Virtual University Gazette, a free monthly newsletter covering the Internet University movement.*

Chronicle of Higher Education (www.chronicle.com)
> *The Chronicle of Higher Education, one of the most well-respected industry publications, offers access to past and present issues of its weekly as well as daily news briefs. There are plenty of detailed sections: information technology, distance education, publishing, jobs and more; there are special features, such as a reader for related magazines and journals and a list of Internet resources.*

Distance Education at a Glance (www.uidaho.edu/evo/distglan.html)
> *A comprehensive overview of topics in distance education, including guides in areas such as teaching strategies, evaluation, research, videoconferencing, and copyright issues.*

Distance Education Clearinghouse (www.uwex.edu/disted/home.html)
> *A site offering access to an excellent collection of distance education resources, including news briefs, recent publications, and information on conferences, and legislation. And if you're new to distance education, there are definitions, glossaries and a guide to introductory materials on the Web.*

Distance-Educator.com (www.distance-educator.com)
> *A site established several years ago by professionals in the field of educational communications to provide a distance education resource. Well organized and easy to navigate, the site offers solution starting points for a variety of people: learners, instructors, policy makers, researchers, hardware providers, software providers, and more. Don't miss the KnowledgeNetbook, which has a glossary, statistics and history of distance education.*

DISTED (www.disted.com)
> *An online guide to distance education. Interact with distance ed students. Links to online distance learning resources.*

Educause Review (www.educause.edu/pub/er/erm.html)
> *An online journal exploring the impact of educational technologies on higher education. See also the homepage of Educause (www.educause.edu), an organization dedicated to transforming education through information technologies.*

Journal of Library Services for Distance Education (www.westga.edu/library/jlsde/)
> *A peer-reviewed e-journal, international in scope, publishing refereed articles focusing on the issues and challenges of providing research/information services to students enrolled in formal post-secondary distance education.*

Peterson's Guide to Distance Learning (www.petersons.com/dlearn/)
> *Database search for accredited distance learning courses and programs. Also a few relevant articles and news items.*

University of Colorado (www.cudenver.edu/~mryder/itc_data/net_teach)
> *An extensive listing of online resources focusing on teaching and learning via the Internet.*

USDLA (www.usdla.org)
> *Home page of the United States Distance Learning Association, an association to promote the development and application of distance learning for education and training. Links to many distance learning resources.*

Virtual University Journal (www.mcb.co.uk/virtual-university-press/vuj/welcome.htm)
> *The Virtual University Journal provides a unique online publication with an international focus dedicated to the publication of papers relating to research, innovative thinking and/or practice in the field of distance learning.*