



Access, Quality and Cost:
e-Learning's Contribution

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Executive Summary

Instructional technology can be a cost-effective means to address the higher education challenges of access and quality. In fact, the most effective uses of educational technology are those in which the e-learning strategy is explicitly derived from the strategic plan and mission of the institution. This paper draws from WebCT's institutional partners around the world to identify some exemplary applications of e-learning to expand access and improve quality.

Expanding Access to Education

There are a number of challenges to expanding access that instructional technologies are well suited to address. Use of the technologies can be a key element of the strategy to:

- ⇒ Reach non-participating learners in a mode or location convenient for them
- ⇒ Accommodate expanded enrollment without major facilities investments

Examples of institutional programs with similar strategic aims are presented from Tennessee Board of Regents, Ohio State University, and Deakin University.

Enhancing Excellence in Teaching and Learning

The widespread use of instructional technology has the potential to improve educational outcomes overall and assess learning outcomes in innovative ways. A number of research studies indicate that blended mode learning can lead to higher outcomes than either traditional or online learning alone. New quality assessment opportunities presented by e-learning should also be planned for long-term. Examples are provided from University of Central Florida and University of Southern Maine.

Controlling Costs of Enterprise-wide E-Learning

Utilizing technology to help achieve strategic aims will necessitate an enterprise-wide approach to e-learning. Standardization of infrastructure, and collaboration within and among institutions, can make the wide-scale usage of proven e-learning solutions more cost-effective. Examples are provided from Purdue University and E-Learning Consortium Hamburg.

An Exemplary Approach to Access, Quality and Cost

The University System of Georgia is a leader in addressing the issues of access, quality and cost of education throughout the state of Georgia.

Expanding Access to Education

Institutions around the world are confronted with the challenge of expanding access to education. The demand for increased access comes from a number of different pressures: an increasing percentage of the population participating in higher education; workforce retraining for a dispersed population; population growth in a specific geography; and global demand and opportunities for specialized programs. Regardless of the reason for expanding access to education, technology should be seen as an enabler to:

- ⇒ Reach students who can't (or won't) come to campus
- ⇒ Accommodate more learners with a given physical infrastructure
- ⇒ Prepare to support lifelong learning

Expanding the reach of universities is a key element to widening participation and fair access. Aside from lack of desire, there may be many reasons that individuals do not engage in higher education. Often central in those reasons is the need to work and support a family, which makes traditional campus-based education inconvenient. Being able to accommodate learners who need more schedule flexibility is one key component. Offering more program options to learners than just those offered at the local campus will also be increasingly important to university systems.

However, widening access can also run the risk of demand for on-campus courses outstripping the supply of buildings and classrooms. Expanding capacity - not facilities - will be necessary to meet the demand. E-Learning technology is a proven way to expand an institution's enrollment capacity without the capital outlays for new construction. Institutional infrastructure can be built virtually rather than physically, often at lower cost.

Typically when people think of widening access with e-Learning, they think of distance learning. The online degree program (rather than "online courses") is only one model by which access to education can be expanded. There are a number of other blended models, which combined with course or curriculum redesign, can have a significant impact on a university's enrollment capacity. If institutional capacity does not expand despite increased enrollments, unintended consequences, such as lengthening the time to graduation or reductions in retention rates, may occur. Below are examples from three institutions in the US and Australia who have already seen significant success in addressing the challenge of expanding access.

Tennessee Board of Regents - The Tennessee Board of Regents (TBR), the 6th largest higher education system in the US, established the Regents Online Degree Program (RODP) to raise overall level of educational attainment in the state of Tennessee and to remain competitive as a destination for business and industry. The TBR wanted to expand the percentage of residents attaining bachelor's degrees to compete with the national averages. Research indicated the problem was pressure to opt out of higher education due to family and career demands. The RODP's mission is to use technology to improve access to high quality, affordable, student-centred learning opportunities through cooperation among TBR institutions. In less than two years, the RODP has grown to offer 5 degree programs online, serving 3,500 students in Spring term 2003.

Ohio State University - The institution identified that certain introductory courses that were key requirements for many majors/concentrations were chronically full and unable to meet student enrolment demand. Much of this limitation was created by the size of physical classrooms and was leading to lengthening the time to graduation. Ohio State redesigned the curriculum to eliminate bottlenecks by employing a "buffet" approach to their Introductory Statistics course. The course was componentized and offered online in addition to the traditional offering. Students progressed through the course module by module and received credit for their progress even if they didn't complete the whole course in a single term. In the first year the buffet model was offered, 150 additional students successfully completed the course.

Deakin University - Deakin aims to be Australia's most progressive university, internationally recognized for the relevance, innovation and responsiveness of its teaching and learning, research, partnerships and international activities. The University

specializes in student-centered education and lifelong learning. Deakin provides opportunities, not only for distance learners from metropolitan areas, but also for students from remote and isolated areas, international students, mature-age students and indigenous Australian students to access the benefits of higher education. More than 12,000 of Deakin's 29,000 students are distance learners. There are approximately 2,500 international students studying Deakin's courses in Australia and through out the world.

Enhancing excellence in teaching and learning

As higher education institutions and systems seek to widen access, the need to maintain quality standards is clear. However, what is potentially even more important is the opportunity to improve educational outcomes overall and to assess learning outcomes in innovative ways, through the widespread use of instructional technology - course management systems in particular. We see three key ways that educational institutions are utilizing technology to enhance excellence in teaching and learning:

- ⇒ Offer blended learning/mixed mode courses
- ⇒ Analyze learner activity data
- ⇒ Redistribute excellent learning objects

Offer blended learning/mixed mode courses. Particular attention should be paid to mixed mode courses in which a portion of the classroom time is replaced with virtual learning activities. In addition to expanding access, there are a number of research studies that indicate blended mode learning can lead to higher outcomes than either traditional or online learning alone. In fact, the research by Murray Goldberg at the University of British Columbia, which led to the founding of WebCT, had just those results. The ability of blended learning to better address varied learning styles is one proposed reason for these types of outcomes.

Analyze learner activity data.

In the traditional classroom, there is limited data and metrics that can be used to measure quality or intervene with students having difficulties. Often no objective data is available until a mid-term grade. In comparison, some course management systems collect lots of data about how students interact with the system during the learning process (e.g. which pages of content, how much time, how often a self-assessment was taken, etc.). This provides two opportunities for higher education to improve quality and student outcomes. First, instructors have the ability to track each of their students' learning activities so they are able to view if a student is falling behind or not keeping up with their reading material. This enables them to proactively intervene prior to students' achieving failing grades or dropping out. Utilizing this data at the instructor-student level should be promoted in training initiatives and rewarded in practice.

Second, and possibly more importantly, the collection of this learning activity data also gives institutions the opportunity to assess quality across the curriculum by aggregating the data for analyses by assessment and institutional researchers. Once there is a critical mass of learning activity taking place online, institutions will be able to analyze outcomes as well as activity patterns to better determine what leads to student success and use those insights to improve the overall quality of the educational offerings. Assessment frameworks will take time and research to develop the appropriate and proven methodologies for utilizing this data. As more and more students experience at least a portion of their learning through academic enterprise systems over time, this type of assessment should be planned for as part of the long-term quality assurance framework for higher education institutions and accreditation reviews.

Redistribute excellent learning objects.

One way to raise the quality of the online learning experience is through collaboration among departments, schools, or institutions regarding the development of content for online learning. As investments in course content increase with the expansion of online learning, it will be important that institutions have planned for how to reuse and distribute content. The effective reuse of content helps to assure that institutions are not constantly reinvesting by having others unknowingly recreating learning objects to serve the same objectives. Having a standards-based content repository model by which high-quality learning objects can be shared or repurposed will be needed to avoid silos of inaccessible content. Content sharing infrastructure will also play a key role for consortia or systems needing to deliver degree programs through multiple institutions.

University of Central Florida - The University of Central Florida has long been a leader in using learning technologies to both expand access and to assess the educational outcomes of their online learning programs. From the beginning of its e-learning efforts, UCF has focused on assessing the performance of students in mixed-mode and fully online courses. The institution aggregated an extensive data set of over 80,000 students who have completed web-enhanced, mixed-mode, or fully online course since 1996. UCF research demonstrates that students in mixed-mode and fully online courses have generally outperformed students in similar classes based on the traditional teaching model. Analysis of a large enrollment political science course offered in mixed-mode serves as an example where the mid-range 50% of outcomes ranged from 68.9 to 85.1 in the face-to-face course but ranged from 81.6 to 88.5 in the mixed mode course.

University of Southern Maine - The University of Southern Maine was unable to offer the advanced level curriculum that they desired in their psychology department due to the percentage of resources that they were expending teaching introductory courses. They redesigned their introductory modules into mixed-mode courses (reducing 50% of in-class time) in order to deliver a higher quality total psychology curriculum. Without sacrificing quality of the introductory courses, they were able to expand enrolments from 75 to 125 and develop new advanced course offerings to enhance the program quality.

Controlling Costs of Enterprise-wide e-Learning

Many universities around the world are already well down the path of developing an online learning strategy and investing in the infrastructure required. The most cost-effective way to leverage technology in the pursuit of wider access and improved quality is to leverage the investments and expertise already in place. The course management system has proven to be a critical component of this infrastructure, and good practices have been established. The fastest time to impact access and quality goals will be enabled by utilizing solutions and expertise proven around the world. However, there are a number of ways that the utilization of those solutions and practices can be made more cost-effective through standardization of infrastructure and collaboration within and among institutions, including:

- ⇒ Standardization
- ⇒ Integration
- ⇒ Growth planning
- ⇒ Shared services

Standardization.

Gartner Research found that higher education institutions can reduce costs while enhancing faculty and student ease-of-use by centrally supporting a single course management system (CMS). As of 2002, 73% of institutions around the world have named a single CMS as a campus standard. Fully 38% of institutions have standardized on WebCT, more than any other CMS. However, policy has often led practice, and many institutions diminish the cost savings by allowing each campus to make their own standardization decision. Often this is a result of the perception that a single solution cannot serve the needs of all the different university constituents, or a lack of an enterprise-wide strategy for e-learning. Institutions who are successfully implementing an enterprise-wide e-learning strategy are typically using a single solution that is flexible enough to allow significant autonomy to different academic schools or departments.

In the same report, Gartner identifies ease-of-use for students and faculty as the leading factor driving institutions to standardize on single platform, followed by reducing the redundant license fees associated with multiple products, and lowering the costs of technical support for multiple systems. In addition, institutions that standardize on a single e-learning system do so to leverage the CMS's features and to integrate more easily with campus ERP systems.

Integration.

As e-learning systems join the ranks of other mission-critical campus applications, the importance of seamless integration between the CMS and the student information system cannot be understated. A well-thought-out integration strategy and the proper application toolset will minimize the headaches associated with complex systems integrations, and will help ensure the long-term success and viability of e-learning as a central component of campus technology. Integration becomes critical as the frequency and volume of e-learning activities grows because it allows larger number of students to be served more quickly and reduces investment required in day-to-day administrative tasks such as enrollment updates and login/password support. Custom integrations based on a proprietary framework should be avoided when possible to contain maintenance costs and keep systems reliable. When custom integrations are necessary, maintenance costs can be limited by using standards-based interfaces as part of a well structured software development kit.

Growth planning.

Anticipating growth of e-learning programs is very important as institutions plan to fund and invest in those activities. Having strategies for how the institution will support its e-learning infrastructure in a period of both enrollment growth and e-learning adoption growth will be critical to maintaining high service levels and achieving satisfaction among end users of the e-learning system. Through WebCT's annual surveys, we have observed that on average, support groups consistently underestimate the annual growth in use of their e-learning systems by a significant amount. This can lead to higher aggregate spending levels (e.g. on hardware, software and staff) due to the frequency with which institutions are replacing or compensating for solutions that do not scale or grow with their needs.

Shared services.

Technology and e-learning capabilities and strengths vary widely among institutions, and there is ample opportunity for collaboration. "Shared services" refers to the joint funding of e-learning infrastructure and/or the support of common infrastructure to reduce aggregate costs. Shared services collaboration can involve varied members within a consortium of independent institutions, a university system, or multiple campuses of a decentralized university. Of course, standardization on a common course management system is a necessary first step toward shared services for e-learning.

Shared services can come in many forms, such as joint help desks, training programs, or even joint systems implementation. In a shared system implementation, there is just one installation of hardware and software (and often a distributed support staff) serving multiple campuses or institutions in an enterprise-wide strategy. The cost savings come from eliminating redundancies in hardware and software or the redeployment of staff. The hardware and software are run from a central source, potentially on the campus with the most technical expertise or specialization. In order to achieve consensus in support of a shared services model, a solution must be offered that allows the individual institutions to maintain and control their own brand, pedagogies and teaching approaches, enrollment management, infrastructure integration, and e-learning policies, without affecting the others sharing the system.

Purdue University - Purdue University is implementing a single academic enterprise system to serve all four of its campuses. This is the first time that Purdue has deployed a single standardized technology solution to all of its campuses. Previously, each campus made independent decisions about e-learning as well as other technology platforms. The advantages of the single implementation - including the ability to share content and technology resources - convinced all of the campuses to participate, including campuses previously deployed on a different e-learning platform. Each campus will be integrating their own student information system into the central e-learning installation.

ELCH - A six-university consortium in Hamburg, Germany, has begun to develop a new joint e-learning program. The program, funded by the Hamburg Ministry of Science and the state government, will use a single e-learning system to link all six institutions in the E-Learning Consortium Hamburg (ELCH). The state library will also join the unified content- and technology-sharing e-learning environment. Key to the shared services approach is interoperability with the schools' diverse, proprietary authentication and registration systems, making it easy for schools to participate in the system.

An Exemplary Approach to Access, Quality, and Cost

The University System of Georgia (USG) offers students higher education options at 34 institutions throughout the state, providing a wide range of academic programming, including Certificates, Associate, Baccalaureate, Master's, Doctoral, and Professional degrees. Included in the mission of the Board of Regents is to create an innovative model for resource sharing and usage across multiple institutions. The goals of the state-wide e-learning strategy and implementation are:

- ⇒ Expanding system-wide access and program offerings for every student in the state regardless of their location.
- ⇒ Building a resource network for faculty to share content, courses, curriculum and best practices across the 34-member network.
- ⇒ Building a model to track and monitor student performance across the entire network to provide personalized learning experiences and develop improved academic programs.

One example of the impact e-learning has had at USG is the establishment of the eCore™ program. The eCore program, or electronic core curriculum, consists of specific required courses that are delivered online, ultimately making it possible for non-traditional students to pursue the first two years of a University System undergraduate degree “anytime and anywhere.” Having a single e-learning platform enables the distribution of the eCore for delivery through any institutional enrollment throughout the system while maintaining quality standards. In the 2002/2003 academic year, eCore has supported over 1,000 course enrollments.