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Measuring Success in Web-Based Distance Learning

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The logo for the Center for Applied Research (ECAR) features the letters "ECAR" in a bold, black, sans-serif font. A red, wavy line is drawn across the letters, starting from the left and ending on the right, with a slight upward curve in the middle.

Overview

The explosion of the Internet during the 1990s provided a compelling new vehicle for colleges and universities to extend the reach of the institution and introduce dynamic new teaching and learning environments. Web-based distance learning—defined as instruction delivered at a distance over the World Wide Web, primarily for credit-based courses and programs leading to certifications or degrees—has achieved strong growth in a short time. Eduventures analysis indicates that more than 350,000 students were enrolled in fully online distance-learning programs in 2001–2002, a figure growing more than 40 percent annually.

The research study *Strategies for Supporting Off-Campus Growth*,¹ a collaborative effort between the EDUCAUSE Center for Applied Research (ECAR) and Eduventures, used extensive, structured interviews and selected case studies to identify what factors contribute to successful distance learning initiatives. The study describes the strategic considerations and key institutional competencies necessary to foster online success, and identifies the principal organizational models in use today. Colleges and universities are advised to carefully consider these issues and factors prior to launching a Web-based distance-learning initiative or when auditing an existing program.

The study also highlights another process essential to program success, one that is often overlooked or downplayed: assessment and evaluation. At the root of many of the difficulties encountered by such programs in recent years is a conspicuous lack of rigorous measurement to assist senior administrators' initial and ongoing decision making. Senior administrators interviewed² for the study reported that their institutions are currently capturing little Web-based distance-learning data beyond general enrollment figures and student academic performance. In these still-early days of Web-based distance learning, it is imperative for leaders to identify the key performance metrics tied to program success and to focus institutional attention on assessment and evaluation.

This Research Bulletin offers a set of frameworks for programmatic review of Web-based distance-learning programs. The bulletin also highlights the assessment and evaluation approaches taken by two higher education institutions, Pennsylvania State University and the University of Central Florida. These institutions have made extensive and creative use of assessment to develop and evolve their e-learning programs, gaining valuable experience that is applicable to higher education e-learning programs in general.

Highlights of Measuring and Tracking Web-Based Distance Learning

Measuring Web-based distance learning ideally commences with project initiation and becomes an integrated and dynamic process. The overall assessment program should be (1) focused on measures that are of most relevance to the institution, program, or

course, and (2) tailored to the institution's program objectives. This section gives general guidelines and working examples of Web-based distance-learning assessment.

When to Measure and Track

A comprehensive review of Web-based distance-learning program performance occurs three times: before, during, and after the initiative is launched. These evaluation stages are referred to as needs assessment, formative assessment, and summative assessment.³

- **Needs assessment.** Needs assessment involves the gathering of diagnostic, planning, and benchmarking information before program startup. The resulting assessment objectives and initial diagnostic data can provide clear direction and expectations for an institution's distance-learning efforts.
- **Formative assessment.** The purpose of formative assessment is to improve, adjust, or respond/react to the e-learning environment. Once a Web-based distance-learning program is launched, the institution shifts into a period of formative assessment whereby program administrators and faculty review in-process efforts to identify potential changes. This usually occurs at the programmatic level and at an individual-course level. The findings may then point the institution back to the needs assessment stage and a re-envisioning of its current strategies or model.
- **Summative assessment.** Summative assessment provides information to evaluate, prioritize, and make decisions about e-learning programs. Capturing data and information at the conclusion of the academic term or year allows insights about distance-learning faculty and programs in the same way, for example, that annual admissions data informs the strategies of the admissions office in subsequent years. The Pew Grant Program in Course Redesign, a \$6-million grant program in which 30 institutions are participating, provides an example of a successful summative course assessment.⁴

What to Measure and Track

*I've seen too many people sink into the quicksand of metrics, never to return. The key is not to measure every possible angle, but rather to focus on metrics that are pragmatic and relevant to both human and business performance at the same time.*⁵

—Reinhard Zeigler

This comment indisputably captures the essence of the “what” of measurement. Metrics are of most value when they specifically target the unique objectives of the program and consist of a relatively small set of relevant, practical metrics to create a foundation for longitudinal benchmark data.

Each institution has a distinct set of circumstances and objectives that lead to the introduction of Web-based distance learning. Examples include the desire to explore new pedagogical strategies and techniques, encouragement or pressure from the board

of trustees or president, and emphasis on a community and working-adult service mission. As a result of this range of distance-learning catalysts, the definition of “success,” and the measures derived to assess it, can vary considerably. For example, Bismarck State College in North Dakota, which has launched online programs in Power/Process Plant Technology and Electric Power Technology for companies and employees in the U.S. energy industry, will emphasize different measures from those highlighted by the Massachusetts Institute of Technology (MIT) when evaluating the success of its MIT/Singapore distance-learning partnership.

For colleges and universities interested in developing an holistic view of Web-based distance-learning performance, the simplest strategy may be to measure the programmatic impact and outcomes on the three key constituencies involved—students, faculty, and the institution itself. Table 1 identifies potential metrics and data that institutions might consider collecting to furnish insight into online success.

Table 1. Possible Metrics for Measuring Program Success

Categories	Potential Data
Student-related outcomes	<ul style="list-style-type: none"> ▪ Academic performance ▪ Retention rates ▪ Course/program completion rates ▪ Placement rates ▪ Salary increases
Faculty-related outcomes	<ul style="list-style-type: none"> ▪ Rate/percentage of faculty participation ▪ Technical competency improvements ▪ Enhanced professional development ▪ Expansion/growth of faculty corps ▪ Faculty awards/recognition
Institutional outcomes	<ul style="list-style-type: none"> ▪ Student enrollment and tuition fee growth ▪ Market reach, new market opportunities ▪ Improved classroom utilization ▪ Technology dispersion rates ▪ Alliances and partnerships ▪ Brand enhancement and extension

The ROI Conundrum

ROI—or return on investment—is “a financial calculation that indicates the degree to which benefits exceed the investment for a given project or initiative” or, more generally, the income that an investment provides across a given period of time.⁶ “Measuring ROI” has been one of the prevailing buzz phrases in the corporate e-learning market for the past 18–24 months as vendors and customers strive to assess the benefits attributable to learning management systems, learning content management systems, and the adoption of Web-based training modules. The term has also begun to appear in the vernacular of the higher education community, as budget-conscious trustee boards and senior administrators review the increasing financial implications of information technology expenditures, for such projects as course management systems, upgrades to enterprise resource planning systems, and enterprise portal software, as well as related services and support.

It is important to note, however, that accurate ROI data is more elusive than many corporations had anticipated. For example, in a recent Eduventures survey designed to benchmark corporations’ tuition assistance plans (TAP), only 2 percent of 534 surveyed institutions had been able to implement a process for capturing the ROI of their TAP. This example highlights more generally the challenge of accounting for all the associated program costs and determining the organizational gains derived from training and education. In the higher education community, the challenge of capturing ROI data for Web-based distance-learning programs is further complicated by a number of factors, including

- Emphasis on fulfillment of institutional mission, which is distinctly different from financial returns and performance
- Frequently decentralized cost model in which distance-learning expenditures are dispersed across multiple departments and institutional functions
- Institutional funding sources that conflict with the growth of Web-based distance learning initiatives—for example, a state-funded institution serving out-of-state students with online programs

College and university officials should continue to resist the temptation to pursue ROI as an all-encompassing performance metric for Web-based distance-learning programs. While effectively managing the financial component of an institution’s online programs is critical, ensuring the fulfillment of the academic mission is equally important. Any ROI metric that institutions implement must account for both financial and academic objectives to ensure long-term program success and acceptance. A purely financial ROI calculation may represent one facet of an institution’s effort to benchmark the success of its online efforts, but administrators should recognize its limitations and acknowledge that it is, at best, one of several potentially useful metrics.

How to Measure and Track

The assessment and evaluation strategies from two institutions with notable online learning programs—Pennsylvania State University and the University of Central Florida (UCF)—offer some useful lessons and guidelines for other institutions.

Pennsylvania State University

Chartered in 1855 as the Agricultural College of Pennsylvania, Penn State now comprises seven colleges, the largest of which is the University Park campus in State College, Pennsylvania. Half of Penn State's 80,000 students are enrolled in the 12 schools at University Park. Penn State has an annual operating budget of approximately \$2.3 billion and employs more than 20,000 faculty and staff. In 1997, the university launched the World Campus, its Web-based distance-learning unit, with a \$1.3 million start-up grant from the Sloan Foundation. The World Campus currently serves approximately 10,000 strictly online students in all 50 states, the District of Columbia, and more than 20 countries.

Before launching the World Campus, a study team was established to make recommendations concerning the institution's strategy for Web-based distance learning. The study team's findings were documented⁷ and distributed to numerous university councils and committees in the spring of 1997, providing a compendium of key issues and expectations for Penn State administrators and faculty to review before the World Campus launch. The report described criteria for success, included results of the needs assessment, and laid out extensive institutional and programmatic evaluation plans and metrics.

The criteria for success provided an important foundation for all other assessment:

- The quality and impact of the courses and programs offered
- The effectiveness of the World Campus as a distinct organizational unit dependent on its own revenue-generating activities
- A commitment to "operational excellence" and principles of continuous process and quality improvement

The comprehensive needs assessment for the institution addressed critical topics, including

- Alignment between the World Campus and the institutional mission of Penn State
- Guiding principles for the program that addressed academic issues, faculty participation, student access, and financial resources
- Academic program identification and faculty involvement
- World Campus organization, staffing, and operational strategy
- Program research, evaluation, and criteria for success

- World Campus funding sources and financial plan

The institutional evaluation plans identified the discrete areas to research and evaluate that would provide ongoing data and insight to improve the performance of the World Campus. These review efforts—to be undertaken by various centers and institutes within the Penn State community—represented a set of formative assessment activities to assist the World Campus and institutional leaders in making future programmatic decisions. Table 2 presents an overview of the key areas for assessment.

Table 2. Assessment Areas of Investigation

Categories	Areas of Investigation
Program effectiveness	<ul style="list-style-type: none"> ▪ Program quality ▪ Learning productivity ▪ Learner satisfaction ▪ Retention/completion
Organizational effectiveness	<ul style="list-style-type: none"> ▪ Financial viability ▪ Recruitment patterns ▪ Sustainability ▪ Program growth ▪ Operational efficiency/cost control
Institutional transformation	<ul style="list-style-type: none"> ▪ Impact on the academic community ▪ Adoption of other university innovations ▪ Impact on other institutions ▪ Conversion of measurement into institutional action and policy development

In addition to evaluating these specific areas, the World Campus conducts two regular surveys to monitor changes in the general student population—one that assists in developing a “profile” of World Campus students and another that strives to illuminate the factors contributing to student drop-out in online environments. This well-defined set of evaluation areas and criteria for Web-based success created an important framework not only for those administrators and faculty involved in launching the World Campus but also for other university constituencies that came in contact with the World Campus’s distance-learning activities. Moreover, articulating key areas for assessment and evaluation serves to prioritize institutional decisions and focus individual efforts

throughout the distance-learning program's lifecycle, ensuring consistency in goals and expectations.

University of Central Florida

The University of Central Florida (UCF) is one of 11 public universities in Florida. UCF enrolls approximately 39,000 students and offers 76 baccalaureate, 62 master's, and 20 doctoral programs. According to 2002–2003 academic year figures, 68 percent of students are enrolled in full-time programs, with the balance pursuing part-time programs; nearly 94 percent of all students are Florida residents. In addition to its main campus east of downtown Orlando, UCF offers programs at more than 20 locations throughout the central Florida region. UCF launched its online education offerings during the 1996–97 academic year with eight Web-based distance-learning courses and nearly 125 student enrollments. In 2001–2002, the university delivered 732 online courses and generated nearly 32,000 student enrollments, offering 10 fully online programs and five online graduate certificate programs.

UCF applies the tenets of “transformative assessment”⁸ to evolve and ensure success of the university's Web-based distance-learning strategy and programs. The key tenets of transformative assessment include measurement and evaluation activities that

- link to the institution's mission and goals;
- are conducted over an extended, continuous period of time;
- capture data at the course, program, and institutional level; and
- investigate both student and faculty populations.

For UCF administrators and faculty, this assessment approach has contributed to a culture in which continuous feedback and process improvements are hallmarks of the institution's online learning process. And, as with Penn State's World Campus, UCF's Web-based learning program assessment strategy was in place from the beginning. “Lacking data, anecdotes win,” noted Joel Hartman, vice provost of information technologies and resources at UCF, in describing how decisions generally occur when a dearth of information exists to inform a particular process. The university's early focus on online learning assessment—targeting teaching and learning effectiveness metrics, student and faculty satisfaction, student demographics, and key success factors, among others—has resulted in an extensive archive of data on students and faculty participating in UCF's on-campus and distance-learning Web-based courses. To make their measurement process more meaningful, UCF established an internal taxonomy to distinguish among its Web-based offerings and to provide clarity in assessing different types of online learning experiences. Table 3 highlights the Web-based course categories.

Table 3. Categories of Web-Based Courses*

Course Category	Description
E-course: face-to-face	<ul style="list-style-type: none"> ▪ Traditional classroom course that meets for the regular amount of time ▪ Employs extensive Web-supported resources as a required component of the course ▪ Enriches the learning experience and improves students' technology literacy and skills
M-course: mixed mode	<ul style="list-style-type: none"> ▪ Mixed-mode model that combines face-to-face and online learning experiences; reduces classroom seat time ▪ Reduces instructional costs and improves student performance and retention
W-course: fully online	<ul style="list-style-type: none"> ▪ Web-based distance learning delivered as part of an online certificate or degree-granting program ▪ Aims to provide education access to students for whom distance, convenience, and flexibility are paramount considerations

*Source: Eduventures, "Meeting the Mission," 2001

At UCF, the Research Institute for Teaching Effectiveness (RITE) plays a critical role in assessing the impact of the university's online learning efforts. RITE has helped UCF administrators by providing data to inform planning and decision making and by working closely with existing online-learning groups—the Center for Distributed Learning (CDL) and Course Development & Web Services (CD&WS)—and faculty members involved in Web-based courses and programs. RITE has developed comparative data for each online model across a range of important program metrics, such as student withdrawal rates and contributing factors, faculty course development and administration time, and quality of interaction. This commitment to collecting and segmenting data to generate insights into each type of Web-based learning environment improves the institution's ability to make decisions and apply targeted solutions to online-learning initiatives.

RITE's involvement extends beyond providing analytical support. The department, in conjunction with key distance-learning administrators and staff within the CDL and CD&WS, solicits faculty members to work with RITE staff to collect data and information on Web-based courses. The partnership's goals are two-fold. First, it provides additional data cohorts for investigating teaching and learning enhancements in online-learning environments. Second, it creates research and publishing opportunities for participating faculty and RITE staff regarding Web-based learning strategies and practices. Thus, in fulfilling the institutional objective of continuous feedback and process improvement,

practice informs theory and points practitioners toward new strategies and tactics for effective Web-based learning.

What It Means to Higher Education

A critical first step in institutional efforts to measure success in Web-based distance learning is simply acknowledging the need to measure. As Peter Drucker stated, “If you can’t measure it, you can’t manage it.” Yet few institutions have applied to online-learning programs the type of rigorous assessment applied to other university functions and activities. However, as distance-learning programs mature and as institutions learn from experience, the trend is increasingly toward comprehensive assessment and evaluation.

The value of assessment lies not in analyzing “snapshot” experiences of students and faculty but rather in building a carefully constructed, longitudinal data source that informs programmatic decision making at all levels. Institutions that can collect and use ongoing measurement data to rapidly modify courses and programs will be able to respond more effectively to changing internal needs and external market demands.

Key Questions to Ask

- Has the e-learning program considered assessment across the full development cycle—in the needs-, formative-, and summative-assessment phases?
- Has the institution developed a comprehensive assessment framework that is tailored to the institution’s objectives, programs, and courses?
- If ROI is considered, has it been integrated effectively into an overall measurement process?
- Are measurements considered for different types of online courses and programs, such as face-to-face, mixed-mode, and fully online?

Where to Learn More

- University of Central Florida’s Research Initiative for Teaching Effectiveness (RITE), <<http://pegasus.cc.ucf.edu/~rite/>>.
- Barbara Lockee, Mike Moore, and John Burton, “Measuring Success: Evaluation Strategies for Distance Education,” *EDUCAUSE Quarterly*, Volume 25, Number 1, pp. 20–26.
- Adam Newman and Tom Evans, “Meeting the Mission: E-Learning Implementation Stories from Twelve Postsecondary Institutions,” *Eduventures*, December 2001.
- Pennsylvania State University’s World Campus, <<http://www.worldcampus.psu.edu/pub/index.shtml>>.

Endnotes

1. EDUCAUSE, *Strategies for Supporting Off-Campus Growth*, ECAR Research Study, Volume 3, 2002, <<http://www.educause.edu/asp/doclib/abstract.asp?ID=ERS0203>>.
2. The “senior administrators interviewed” refers to the more than 55 higher education administrators and faculty whom Eduventures interviewed for *Strategies for Supporting Off-Campus Growth*.
3. See the ECAR Research Bulletin “Technology Assessment: Making Sure We Get It Right” <<http://www.educause.edu/asp/doclib/abstract.asp?ID=ERB0221>> for further definition of each of these stages.
4. The courses redesigned through the Pew Grant program are not fully Web-based distance-learning courses as defined in this bulletin. The measurement parameters and expectations of the participating institutions, however, indicate the type of summative assessment that colleges and universities should be considering. Additional information on the Pew Grant program can be found at <<http://www.center.rpi.edu/PewHome.html>> and <<http://www.center.rpi.edu/PewGrant.html>>.
5. Reinhard Zeigler, “The Business ROI of E-Learning,” *e-Learning Magazine*, April 2002.
6. Glen Peterson, “Return on Investment: Gateway to Implementation or Road Map to Success,” *Destination CRM*, June 24, 2002, <<http://www.destinationcrm.com/articles/default.asp?ArticleID=2281>>.
7. “The World Campus: A Report for Discussion by the University Community,” submitted by James H. Ryan, vice president for Outreach and Cooperative Extension, to the World Campus Study Team, April 1997.
8. Joel Hartman, “Transformative Assessment at UCF,” July 2002 presentation. See also resources on transformative assessment from the National Learning Infrastructure Initiative at <<http://www.educause.edu/nlii/keythemes/transformative.asp>>.

About the Author

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