



Stanford Center for Professional Development
Stanford University

Choices and Challenges

Lessons Learned in the Evolution of Online Education

Dr. Andy DiPaolo
Executive Director, SCPD



News Items

- **Stanford, Yale and Oxford extend an independent, not-for-profit alliance -- AllLearn -- offering online learning programs.**

September 2004

- **MIT's OpenCourseWare initiative offers course materials online for free access worldwide.**

October 2003



- **Universitas 21, an international network of universities, moves forward with Thomson Learning to deliver online education worldwide.**

August 2003

- **State University of New York Learning Network, a collaboration between 50 institutions, enrolls over 70,000 students, a 32% increase in one year.**

May 2004



- **European Commission advances \$13.3B plan to promote online university education.**

May 2003

- **Intel and Microsoft work with universities to develop company-specific online graduate degrees.**

January 2004



- **NextEd partners with 25 higher education institutions to deliver online education throughout Asia via the Global Education Alliance.**

September 2001

- **New York University shuts down its virtual university spin-off company, NYU Online.**

January 2003



- **University of Phoenix Online enrolls over 110,000 in degree programs, a 52% increase in one year. Now the largest provider of online degrees in North America.**

June 2004

- **Barnes and Noble University – an “edumarketing” initiative from a book seller - enrolls 200,000 online students.**

January 2003



- **Harcourt Higher Education, a for-profit, online, degree-granting college closes after spending \$10M.**

September 2001

- **Japan's University Council recommends students in national universities should be allowed to earn up to half of their undergraduate degrees online.**

November 2002



- **Univ of Massachusetts Online grows over 40% in one year. Now totals 11,000 students and \$10M revenue annually with growth projected at over 50% for next year.**

March 2004

- **Scotland's Interactive University exceeds all targets and enrolls more than 60,000 online students in 20 countries in first 18 months.**

July 2004



- **UK eUniversities Worldwide designed to provide global online degrees from UK's best universities fails after spending \$63M.**

May 2004

- **Australian universities launch aggressive advertising campaign in a bid to maintain share of lucrative overseas online education market.**

May 2004



- **After spending over \$30M Columbia University closes Fathom, its money-losing online learning venture.**

January 2003

- **Cisco and General Motors link online learning and university partnerships to business strategies.**

February 2004



- **Sloan Foundation contributes over \$60M to 60 universities during the last 10 years to develop asynchronous learning networks.**

July 2004

- **United Nations and partners launch Global Virtual University to meet the needs of the developing world.**

June 2003



Where are we headed?

- **Access to learning independent of:**
 - **Time**
 - **Distance**
 - **Economic status**
 - **Physical disability**
- **Move instruction, not people to:**
 - **Save time**
 - **Reduce cost**
 - **Increase capacity**
 - **Meet student, industry & govt needs**
 - **Improve learning**
 - **Provide choice**
 - **Generate revenue**



“The risks of a scientifically illiterate nation in the 21st century are too great for business as usual. It is a simple fact that work will migrate to the nation with the most skilled work force.”

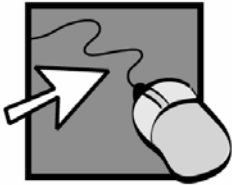
**Spenser Abrams
U.S. Secretary of Energy**



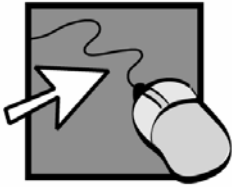
The Challenge for Education Providers

What Do Online Learners Want, Need and Expect?

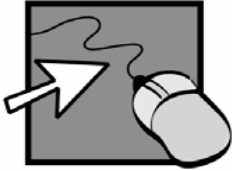




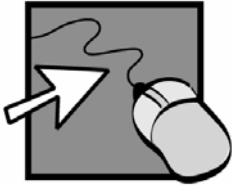
- **Assume responsibility for increasing personal market value. Busy yet anxious to learn.**
- **Access to learning anytime and anywhere. Time and availability is more important than cost for mobile learners who want on-the-go, 24/7 wireless connection to education.**
- **Convenience and flexibility with a range of course and program delivery options and multiple avenues for learning.**



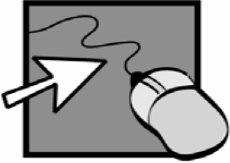
- **A choice of synchronous, asynchronous, and blended learning options.**
- **A wide range of online degree, professional certification and credentialing options – not just random online courses – with flexibility around when classes start and end. Push is for modular instruction versus courses.**



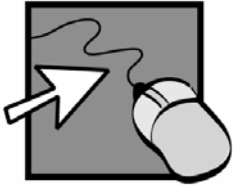
- **Well-designed, engaging, intellectually challenging and continuously updated courses which facilitate the transfer of learning to direct application. Mastery of content - not seat time – is the goal. “Learning pull” – or demand-driven education -- is preferred.**
- **Emphasis on active, outcome-oriented, scenario-based learning using real, vivid and familiar examples. Think games!**



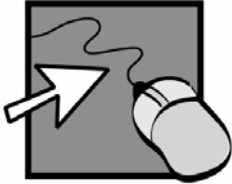
- **Control of the pace, sequence and mode of learning. Impatient with inefficient methods. Want to multi-task while learning.**
- **A customized learning experience based on assessment of knowledge gaps, previous experience, personal learning styles and preferences. Shift from “just-in-case” to “just-in-time” to “just-for-me” learning.**



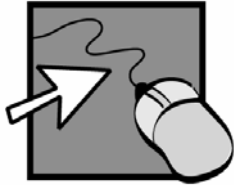
- **Provisions for e-advising, e-coaching and e-mentoring.**
- **Participation in a “networked learning community” including interaction with instructors, tutors, peers and experts.**
- **Practice collaboration by working in geographically dispersed learning groups, especially in an international context.**



- **Access to online providers with a recognized brand and reputation. Will consider a mix of higher education, professional associations, publishers, government agencies, libraries, corporations and ?? -- but want formal “certification” for the effort.**
- **Preview of courses and review of evaluations before registering.**



- **World-wide access to library resources and advanced databases with instruction on how to evaluate and apply the information.**
- **Outstanding support services with a focus on “student as customer.”
Elimination of delays and inefficient procedures regarded as essential.**



- **Continuous, prompt, and meaningful forms of assessment and feedback.**
- **Competitive and variable pricing.**
- **Ongoing educational renewal over an entire career with commitment from providers to support learning for a lifetime.**



“Motorola no longer wants to hire engineers with a four-year degree. Instead, we want our employees to have a 40-year degree.”

***Christopher Galvin
Former President and CEO Motorola.***



Higher Education Online



“A Market in Transition”



The Higher Ed View

- **3700 universities in U.S. with 15M students.**
- **84% of four-year colleges offered internet delivered courses in 2003, a 62% increase since 2000.**
- **In 2002 over 70% offered online classes to external audiences in business, education, technology, engineering, and healthcare.**

Sources: Eduventures, Think Equity Partners, International Data Corp, eMarketing, Distance Ed & Training Council.



The Higher Ed View

- **Approximately 4M students in U.S. doing courses at a distance in 2003.**
- **More than 1.6M students in U.S. took an online course in 2002 and more than 1/3 took all classes online.**
- **Online learning enrollments growing 33% annually and expected to hit 5M by 2005.**

Sources: Eduventures, Think Equity Partners, International Data Corp, eMarketing, Distance Ed & Training Council, Sloan Foundation.



The Higher Ed View

- **The distance-learning market for online degree programs growing 40% annually.**
- **In 2004 more than 900,000 students enrolled in fully online degree programs at both profit and non-profit institutions generating \$4.5B in tuition revenue, a 30% increase in one year.**

Sources: Eduventures, Think Equity Partners, International Data Corp, eMarketing, Distance Ed & Training Council, Slaon Foundation.



The Higher Ed View

- **In 2004, 2.2M degree-seeking students in U.S. enrolled in online courses. CAGR of 33%.**
- **Annual revenue for online learning expected to be \$11B by 2005.**
- **Global demand for higher education online forecast to reach 45M online students by 2025.**

Sources: Eduventures, Think Equity Partners, International Data Corp, eMarketing, Distance Ed & Training Council, Sloan Foundation.



The Online Education Landscape

- **Individual universities**
- **Higher education collaborations.**
- **Virtual universities.**
- **Higher education for-profit spin-offs.**
- **Commercial certification institutions.**
- **Corporations, publishers, associations, entrepreneurs and partnerships.**



Online Education Collaborations

- **Illinois Virtual Campus**
- **Florida Virtual Campus**
- **Missouri Learner's Network**
- **Michigan Virtual University**
- **University of Maryland Univ College**
- **Penn State World Campus**
- **UMass Online**



Online Education Collaborations

- **Kentucky Virtual University**
- **SUNY Learning Network**
- **Southern Regional E-Campus**
- **Ohio Learning Network**
- **Arizona Regents University**
- **Western Governors University**
- **California Virtual University**



University For-Profit Spinouts

- NYU Online *
 - Fathom/Columbia*
 - Duke Corporate Education
 - Babson Interactive
 - National University
 - eCornell
 - UMUC Online *
 - GW Learning Solutions
 - Virtual Temple *
- * failed



“Higher education institutions will lose an increasing share of the growing post-secondary education market to other, non-traditional providers.”

Gartner Group



From a Venture Capital Prospectus

Education:

- **Is the most fertile new market for investors in many years.**
- **Presents the opportunity for very large scale activities.**
- **Has many disgruntled current users.**



From a Venture Capital Prospectus

- **Generates a large amount of revenue and its market is increasing and becoming global.**
- **Poorly run, low in productivity, high in cost, and relatively low technology utilization.**
- **Existing management is sleepy after years of monopoly and is ripe for takeover, remaking and profits.**



“Although the gold rush attitude and the corporate cowboys of a few years ago have subsided, there is still enough good news to make online higher education attractive to entrepreneurs.”

American Council on Education



Online Education Entrepreneurs

- **University of Phoenix**
- **Corinthian College**
- **Cardean/UNext**
- **Kaplan Colleges**
- **Jones International**
- **DeVry Institutes**
- **Capella University**
- **Thomson Learning**
- **Sylvan/Laureate**
- **Strayer University**



Online Education Entrepreneurs

- NextEd
- NETg
- SkillSoft
- DigitalThink
- Career Ed Corp
- Powered, Inc.
- FT Knowledge
- EDT Learning
- Thingq
- eCollege



Online Education Entrepreneurs vs. Higher Education

- **Focus on student needs and competition.**
- **Nimble, flexible, responsive, and speedy to market.**
- **Commercial grade marketing, sales, design and production skills.**



Online Education Entrepreneurs vs. Higher Education

- **Larger investments, more resources.**
- **Applies incentives and rewards to attract faculty and experts.**
- **No university bureaucracy and strict evaluation measures.**
- **Regard education as a commodity.**



The Online Education Market Continues to Churn...

- **Successfully implemented with mixed elements of hype and reality.**
- **Lots of competitors from start-ups to well regarded names. Creative partnerships evolving.**
- **Online education companies beginning to extend beyond adult learners to traditional students.**
- **When in doubt the student chooses a brand with a well-known reputation and will pay for that relationship.**



In online education it sometimes feels as if...

- **You're driving a new car down an unfamiliar road**
- **Without a map**
- **To get to an unknown destination at breakneck speed**

It may sometimes seem like the best strategy is doing nothing.



Choices and Challenges in Delivering Online Education



Stanford Online



Stanford University

- Recognized as offering outstanding education and research programs.
- Research volume: \$828M annually



- Students:
 - 6,731 undergrad
 - 7,608 graduate
- Faculty:
 - 1,714



Stanford University

“Stanford University fosters a climate where collaboration with industry thrives, generating both breakthrough discoveries and the science and technology that can support continuous innovation. With a long history of very productive relationships with



corporations of all sizes, from startups to mature, successful enterprises, Stanford provides firms with education, research partnerships, consulting, and connections to world class faculty and students.”

Stanford Corporate Relations



“What our engineers and managers are saying is that the demands of their jobs are such that they can’t get away from work. Since they are working 60 hours a week, any education they get has to be at their convenience and available online .”

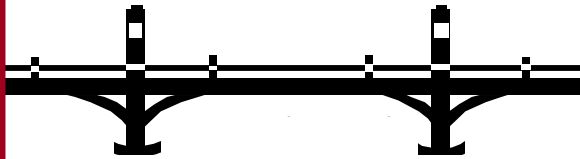
**Manager of Engineering Education
*AMP, Inc.***



Bridging Stanford and Industry



**Stanford University
Curriculum**



Industry Education



**Academic
Programs**

**Professional
Education**



Stanford Center for Professional Development

Bridging Stanford and Industry



Stanford Center for Professional Development



- **Collaborates with Stanford faculty and industry experts.**
- **Designs and delivers academic and professional education programs to engineers, scientists, managers and executives using a variety of e-learning technologies and campus programs.**



SCPD Customers

Top 30 in 2003

- Sun Microsystems
- Cisco Systems
- General Motors
- Lockheed Martin
- Agilent
- Intel
- Hewlett Packard
- Oracle
- Synopsys
- Nvidia
- Ford
- NASA-Ames
- IBM
- LLNL
- Space Systems/Loral
- United Technologies
- Xilinx
- Nat'l Semiconductor
- Cadence Design
- Altera
- AppliedMaterials
- NUS America
- Toyota
- Compaq
- AMD
- Microsoft
- Juniper Networks
- Adobe Systems
- Cypress Semiconductor
- Electronics for Imaging

Total = 420



SCPD Delivery Systems

- Five TV channels
- Two-way video
- Satellite
- Videotape
- Multimedia
- Online
- On campus
- Corporate sites
- Blended approaches



Stanford Instructional TV Network
Stanford Online





Stanford Online Vision



**To make
Stanford's rich
intellectual
content accessible
and convenient,
addressing the
educational needs
of today's busy,
mobile student.**



Stanford Online

The screenshot shows a Microsoft Internet Explorer browser window. The address bar contains the URL: <http://scpd.stanford.edu/scpd/students/Video/embed.asp?Stream=http://lang.stanford.edu/spring/m>. The page header identifies the "Stanford Center for Professional Development" at "STANFORD UNIVERSITY".

The main content area features a video player on the left showing a man in a white shirt. To the right is a slide titled "ME217 off@ Stanford" with the subtitle "What does 6 Sigma mean in real life?". The slide compares 3-sigma and 6-sigma processes:

Process	Defects per Million (ppm)	Real-world Example
3 σ	2700 ppm (66,810 ppm)	5 Emergency landings at Chicago O'hare airport / day
6 σ	0.002 ppm (3.4 ppm)	1 Emergency landing in all US airports in 10 yr

Additional statistics on the slide include "5000 Malpractice cases/ week" and "5 Malpractice cases/ 10yr". A navigation bar at the bottom of the slide includes "Questions? Contact us", "Course Homepage", "Video", "Chat", "Discussion Group", "Online Courses", and "Tech Center".

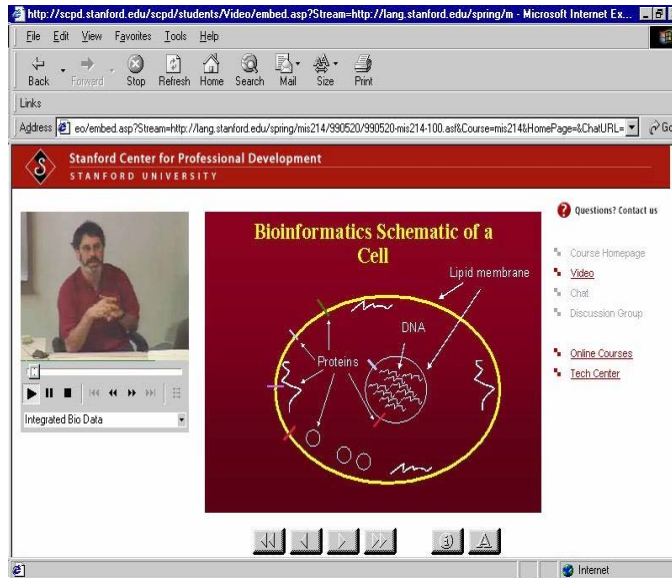
- Delivers academic and professional education courses worldwide.

- Pioneered at Stanford, became award winning, recognized model.



Stanford Online

- Over 2500 online courses since 1997.
- Courses updated quarterly to maintain currency.
- Approach is transparent to faculty.
- First online MS degree in engineering and science.





Choices and Challenges in Delivering Online Education



**Scotland's Interactive
University**



- **Joint initiative between Heriot-Watt University, Scottish Enterprise and Scottish universities in collaboration with 40 universities in 20 countries.**
- **Programs from foundation to doctoral level.**
- **Mix of e-learning and locally based tutoring.**
- **Learning model: content (online course material), context (local tutor) and community (student interactions)**
- **Enrolls 60,000 students in first 18 months.**
- **www.interactiveuniversity.net**



Online Education



Lessons Learned



Lessons Learned

- **Online learning attracts students who would not otherwise have taken courses.**
- **Convenience and choice is critical for students at all levels – including campus students.**
- **Best for motivated, disciplined, self-directed, mature students.**



Lessons Learned

- **Greatest online opportunities for universities are in professional education and corporate development especially in the “skilled sectors.”**
- **Equal emphasis in developing an online program needs to be placed on business, pedagogy and technology factors.**



Lessons Learned: Business

- **Online initiative needs to be consistent with institution's mission, strengths and areas of distinction.**
- **Must begin with a clear, worthy strategic mission and keep it close to core faculty and competencies. Use traditional academic structures to accelerate development.**



Lessons Learned: Business

- **Design online education initiative as a way to extend and enhance - not replace - academic programs. Develop a “focused niche” to meet a market need. Position it as a complement to existing programs.**
- **Aim for the “sweet spot” -- intersection of audience needs and wants, faculty interests, university strengths and what people will pay for.**



Lessons Learned: Business

- **Think course-to-certificate-to-degree progression. Interdisciplinary programs matched to research initiatives are highly valued. Online versions of existing courses are easier to start than new ones.**
- **Recruit best faculty by offering incentives and rewards. Address faculty concerns regarding ownership of intellectual property and increased demands and impact on workload.**



Lessons Learned: Business

- **Start small: pilot with existing students, alumni and focus groups. Benchmark against competition. Experiment, adapt, improve. Think scalability. Use the “build it once, use it often” approach.**
- **Develop financial model that covers costs and investments with revenue distributed to participating departments and faculty. Point out non-revenue values of faculty participation.**



Lessons Learned: Business

- **Build strong e-services teams to provide personal contact and act as guides for students. Use customer relationship management tools to track everything.**
- **Online students want more than branding and image - they want credentials from a recognized organization that will aid in career growth and continue to exist.**



Lessons Learned: Business

- **If possible, create a unified university brand. Strong brands with weak programs will diminish the reputation of the university.**
- **Identify every possible service interaction with student and try to make it positive and satisfying. Apply the “moment of truth” concept.**



Lessons Learned: Business

- **Collaborations can be productive in sharing costs, establishing best practices and achieving scale.**
- **Consider outside partnering for development, management, marketing and distribution of online courses, but be careful around the business/university clash of cultures and values.**
- **Question everything like an entrepreneur.**



Lessons Learned: Pedagogy

- **It's not just the content. Online students want engagement and recognition for classes, certificates and degrees.**
- **Need to create a “community of learners” with synchronous and asynchronous interactions between students, faculty, TAs and experts.**
- **Provide students with electronic access to learning resources, tools and facilitators.**



Lessons Learned: Pedagogy

- **Focus on small class sizes to foster interaction and community.**
- **Offer online labs and simulations with opportunity for group collaboration.**
- **Teach faculty how to teach online.**
- **Don't try to replicate the classroom online, but be a realist and build incrementally.**
- **Consider blended or layered learning.**



Blending: A Powerful Model

- **Pre-class online activities.**
- **Cohort group meets face-to-face.**
- **Asynchronous and live online sessions.**
- **Additional face-to-face sessions.**
- **Online post-evaluations.**
- **Continuing online discussions forums.**



Lessons Learned: Pedagogy

- **Develop rigorous assessment program on access, learning, cost effectiveness, learner satisfaction, and faculty satisfaction.**
- **Develop “bite-sized” chunks – small, self-contained units such as courselets.**



Stanford Online Courselets

- **Self-contained, integrated set of learning materials designed as an online custom tutorial.**
- **Fills knowledge gaps for learners.**
- **Offers self-tests and indexing to determine placement.**
- **Pacing determined by the student.**



Courselet Examples

- **Microscopy Techniques for Materials Characterization**
- **Systems Analysis with Random Processes**
- **The Heart and Circulatory System**
- **Introduction to Mechatronics**
- **Link Equations**
- **MOS Capacitors and Transistors**
- **RF Technology for Plasma Processing**
- **Digital Electronics Lab Experiments**
- **Junction Diodes and Bipolar Junction Transistors**



Lessons Learned: Technology

- **It's not about technology, it's about learning!**
- **Create or outsource to obtain uniform course format, easy course development, interoperability and scaling. Use established standards.**
- **Provide technical support 24/7.**
- **Capitalize on the unexpected and have the courage to stop doing.**



The Promise and Peril of Online Education



“What Are the Challenges?”



Online Learning Challenges for the University of the 21st Century

- **Meeting expectations for program development and delivery: collaboration, connectivity, and application.**
- **Acting on political, financial and technology mandates.**
- **Addressing the blurring of higher ed boundaries and new competition.**
- **Building an institutional culture, structure and reward system supportive of change.**



Online Learning Challenges for the University of the 21st Century

- **Creating targeted online learning ventures to achieve institutional advantages.**
- **Developing collaborations, partnerships and alliances.**
- **Measuring online learning program quality and effectiveness.**
- **Appointing leaders with focus, passion and vision.**



“The scarce resource today is not bandwidth, but people who can create and innovate in the knowledge age.”

R.Birnbaum

“How Academic Leadership Works”



Questions and Conversations

- **Andy DiPaolo**
adp@stanford.edu
(650) 725-3000
- **Stanford Center for Professional Development**
<http://scpd.stanford.edu>



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Questions? Contact us



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SCPD's Professional Education (ProEd) unit helps participants advance in their fields and expand their networks through a wide range of short courses in bioinformatics, clinical informatics, computer science, engineering, and management. Courses are offered in a variety of distance learning instructional formats, as well as on campus.

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