# The Economics and Industrial Organization of e-Learning: An introduction

*Andreas Ortmann, Ph.D.*

**Bank Austria Professor 2000 - 2001**
**Center for Economic Research and Graduate Education**
**Charles University**
**Prague, Czech Republic**

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# Why study e-Learning?

- **Personal interest: Invitation of Jones International to develop a course on boundedly rational decision making**

- **Virtual CERGE-EI?**
  - **Prep courses online?**
  - **Micro, macro, or econometrics core course on-line?**
  - **Advanced courses on-line?**
    - **What can not be taught on-line?**
    - **What can not be taught well on-line?**

# Why study e-Learning? [Continuation 1]

- Arguably the most consequential aspect of e-commerce worldwide
  - Education sector in the USA is second-largest industry, a $750 billion giant
  - Impact on traditional providers of higher (post-baccalaureate) education (in the USA)
  - Acceleration of a re-definition of higher (post-baccalaureate) education (in the USA)
  - Investment in Human Capital has high returns

# Why study e-Learning? [Continuation 2]

- **The next global success story of the U.S. economy**
  **(following the lead of computer hard- and software, movies, popular music, and academic journals)**

- **We know preciously little about e-Learning**
  - **an emerging industry**
  - **mostly proprietary data**
    **- we don't understand yet what the viable business models are**

# [note to myself]

- **We do know**
  - 50% of U.S. colleges and universities offered some form of distance learning in 2000, offering more than 50,000 university-level courses
  - 90 percent of colleges and university will offer e-Learning within three or four years (IDC)
  - At least 35 US states either have a virtual university or other statewide organization to deliver or promote distance education.
  - U.S. Department of Education supports more than 100 e-learning projects (important because participating institutions are granted certain waivers)
  - Army has started its University Access Online program ($453 million)
  - Venture capital keeps flowing to e-learning, slightly down from $ 400 million in the first quarter to $320 million in the second; in 2000 94 % of all total private investments in the education industry were dedicated to e-Learning up, from 38 % in 1996.
  - 7 Canadian institutions created a Canadian Virtual U (Fall 2000).
  - Canadian Advisory Committee on Online Learning urged more spending on distance education (Spring 2001)
  - EU's recent e-Learning action plan of 28.3.2001 (13.3 billion euros);Germany earmarked 430 million euros for e-learning initiatives.
  - Of world's 10 biggest distance institutions the majority of them are in the third world. China Central Radio and Television University has 1.5 million students, two thirds of them in degree programs; it broadcasts radio and TV lectures to students at 2,600 branch campuses and 29,000 study centers. The government ordered China Central to expand its total enrollment by 100,000 students each year.

# e-Learning: What is it?

- distance learning by means of digital or other electronic media

- can take various forms
  - instructor-led (synchronous)
    an online replication of the brick-and-mortar classroom situation
  - .
  - .
  - self-study (asynchronous)
    essentially a sophisticated version of programmed self-study guides

- there's a lot of interesting experimentation with content/presentation
  - UNext/Cardean U, SCIL, ...

# e-Learning: How good is it?

- Difficult to say because of incredible variety of on-line offerings
- Emerging consensus:
  - On average, not any worse than what we have, possibly better
  - It works better for some than for others
  - A function of the self-discipline a student has
  - A function of the quality of the course

# e-Learning: How good is it? [Continuation 1]

- Content is not sufficient
  - The MIT OpenCourseWare initiative.

    Aim: to post all MIT course materials -- lecture notes, problems sets, syllabi, exams, simulations, and even video lectures -- on publicly accessible websites
  - Did someone make a really bad call?
  - Or, is there more to learning than content?

    - One possible explanation: interaction between teachers and students is essential.
    - Another possible explanation: peer effects(e.g., Ortmann & Paalandi 2001).
- Quality (control) of content is absolutely necessary!
  - Providers of e-Learning don't have a captive audience any longer.
  - Sham-lectures will cause students to go "channel surfing"
  - Sham-courses in corporate settings will be identified by "learning management systems"

# e-Learning: How good is it? [Continuation 2]

- Undisputed fact: people increasingly use digital or other electronic media to learn
  - high-school kids (Florida High School initiative)
  - soldiers (Army & Navy on-line initiatives)
  - people who want to increase their skills (University of Phoenix Online Division, Schwab University, Bloomberg University, ... )
  - people who learn for entertainment (Barnes & Noble University and its eight “campuses”)
  - .
  - .

# e-Learning: The benefits

– Just-in-time training
  - accessible anytime, from anywhere
    (at home, at work, or traveling)
  - up-to-the-minute coursework
  - when needed

– Cost effectiveness
  - no travel costs
    (opportunity cost of time as well as out-of-pocket expenses)

# e-Learning: The benefits [Continuation 1]

– From the home page of the UOPX Online website:

> "The University of Phoenix Online offers you the unparalleled convenience and flexibility of attending classes from your personal computer. In small groups of eight to fifteen, or working one-on-one with an instructor, students are discussing issues, sharing ideas, testing theories - essentially enjoying all of the advantages of an on-campus degree program, with one important exception. No commute!"

– Hall's (1997) review of 130 case studies finds

- time savings from 20 - 80%, with 40 - 60% being the most common range of time savings
- reduction in travel and entertainment costs of at least 50%.

– Other recent estimates tend to be even higher (e.g., DigitalThink, Setaro, etc.)

# e-Learning: The benefits [Continuation 2]

– (high fixed costs but) comparatively low marginal costs (Setaro, on Hall 1995, Allen 2000)
  - custom multi-media
    - 20 % in first year of implementation?
    - up to 50 % in second and third year of implementation?
  - off-the shelf multi-media
    - 45 % in first year of implementation?
– More consistent course delivery! (No life performance, unedited, with all its vagueries)
– More effective learning? (Repetition is easy!)

# e-Learning: The benefits [Continuation 3]

– Assessment
  - ... of individual skill levels before taking a course
  - ... of learning that happened/return of investment

  ("... makes it easy ... to monitor progress and create detailed usage reports")

– Retention of employees/customers/productivity tool
  - American Society of Training and Development (ASTD) studies
  - The wide-spread belief that continuing education is a pre-condition for competitive advantages, has found its material reflection in numerous well-known corporate universities (e.g., Motorola University, Cypress University, etc.) www.managementskills.co.uk/articles/univer.htm).

# e-Learning: The costs

"Costing is a very murky business." (Bishop, of Maryland UC, as quoted by Carr 2001)

- Six recent case studies suggest that "universities are hovering close to the break-even point with their distance-learning programs" (Carr 2001).
- commissioned by Sloan Foundation - conducted at Rochester Institute of Technology, the University of Illinois at Urbana-Champaign, the University of Maryland's University College, and Drexel, Pace, and Pennsylvania State Universities
  - studies had to rely on estimated-cost projections
    - How to allocate costs for librarians, CIS, etc.?
    - What if faculty members cease to be the virtual university?
  - participating schools members of Sloan Foundation's

# e-Learning: The costs [Continuation 1]

– Online programs are “bloody expensive to develop and develop well.” (Myers, as quoted by Carr 2001)
  - U of Maryland UC spent more than $1 million on online MBA program
  - UNext/Cardean reported to spend up $1 million per course

– UNESCO/WorldBank report in 2000 found that at the 10 biggest distance education providers, the majority of them in the third world, the cost of education per student is on average one third (!) the cost at traditional institutions in the same country.

# e-Learning: The costs [Continuation 2]

– University of Phoenix Online
  - currently about 18,000 students online
  - growing at 50 percent annually
  - highly profitable (although still in building mode)
  - online courses more expensive (20%) than on-location courses

– Caliber Learning Network
  - bankrupt

# e-Learning: The industrial organization

The market for e-learning is currently highly fragmented with no established industry model for growth and profitability. (Learning Tree International, Inc. 10-K for the fiscal year ended September 30, 2000, p. 6)

APOL/UOPX, DV, STRA, CECO-EDUT, COCO, EDMC-ARGY, ESI, WIX, QEDC (now Kaplan)

- degree-granting and accredited for-profit educational providers
- provided in 80's and 90's skills -- often to non-traditional students -- that the traditional providers of post-secondary education did not provide
- all of them have now e-learning initiatives

# e-Learning: The industrial organization [Continuation 1]

- IT content providers and certifiers - the "parallel universe" ( Adelman 2000)
  - a system of certification of very specific skills (such as "Certified Novell Engineer" or "Certified Cisco Design Associate" or "Microsoft Certified Solutions Developer", all of them with their own acronyms). [Interestingly, this segment of post-secondary education has already reached a stage where have certification for high school students.]
  - Who provides these courses? And who certifies them?
    - Little is known about the industrial organization of this new area of post-secondary education research. There is no dominant provider at this point.

# e-Learning: The industrial organization [Continuation 2]

– Other providers:
  - Major content providers
  - Learning infrastructure/platform
  - Learning management systems

# *e-Learning: Some major content providers*

- Army University Access Online initiative
- Navy University Online initiative
- Athabasca University
- "The Alliance of Four" - alliance of University of CA at Berkeley's extension program, Pennsylvania State University's World Campus, University of Washington, University of Wisconsin's Learning Innovations program.
- Capella University
- Cardean University/UNext
- DigitalThink
- EuroPACE - a trans-European network of universities and their partners in education and training, i.e. private enterprises, regional and professional organisations and public authorities, centered at Leuven.
- Jones International University
- Kaplan Colleges
- Learning Tree
- New School Online University
- Open University Online

# *e-Learning: Some major content providers* [Continuation]

- Fathom Knowledge Network - consortium of universities (Columbia University, London School of Economics and Political Science, The University of Chicago, the University of Michigan), publishers (Cambridge University Press, XanEdu), and other institutions (The British Library, The New York Public Library, American Film Institute, Woods Hole Oceanographic Institution, RAND, etc.) that provides online access to a wide range of topics and resources, many of them free.
- New York School of Continuing and Professional Studies
- OnLineLearning.net/UCLA Extension Services
- Universitas21 - global network of 18 "highly regarded" universities in Canada, USA, Europe, Australia, New Zealand, Singapore, Hongkong, and China that tries to develop – supported by Thomson Learning -- a global e-University.
- University of Maryland University College
- Western Governors University - 45 participating organizations, some of them well-known (Texas Tech, Brigham Young, SkillSoft).
- Worldwide Universities Network - founded in June 2001, includes Pennsylvania State U, U of CA at San Diego, U of Illinois at Urbana-Champaign, U of Washington, U of Wisconsin at Madison, U of Bristol, U of Leeds, Manchester U, U of Sheffield, U of Southampton, U of York.
- XanEdu

# *e-Learning: infrastructure/platform providers*

Blackboard
Click2Learn
Centra
DigitalThink
Docent
E-College
Element K
Powered
Saba
SmartForce
Thinq
WebCT

# *e-Learning: Learning management (service) providers*

- In recent study, Brendan Hall compared 61 Learning Management systems.
- The key players are

  Docent

  Isopia (just bought up by Sun Microsystems' Educational Division)

  Saba

  Thinq

  WebCT

  WebEx Communications

# *e-Learning: industrial organization issues*

– ”competency-based" education rather than degrees?

- WGU’s “competency-based education” - one’s “skills and knowledge acquired at other universities, on the job, or just through life,” may be counted toward one’s WGU degree
- Assessment as the new buzzword, certification as the most prominent example:
  - the “parallel universe” (Adelmann)
  - www.gocertify.com, www.about.com/compute/certification

– a course is not a course is not a course

– quality assessment and assurance
(e.g., Klein-Leffler 1981, Shapiro 1983, Wernerfelt 1988, Tirole 1996)

- how to guarantee quality in a fragmented industry?
- “*The name of the game is branding”*

– scalability

- how to ride down the average costs curve?
- scale/scope economies in post-secondary education?

# e-Learning: Speculations

– e-Learning is here to stay.

- e-Learning will become the dominant mode of delivery for corporate T&D
- e-Learning will penetrate the higher education market
  - ✔ currently only 30% of classes use web-pages to distribute class materials and resources
  - ✔ currently only about 5 % of campuses have adopted enterprise-wide platforms.
  - ✔ within 2 years as many as 50% of campuses will have adopted enterprise platforms (Eduventures)
  - ✔ examples will emerge of online providers that deliver quality online courses in a cost-effective manner
  - ✔ private for-profit developers will be the key providers of such quality courses

# e-Learning: Speculations [Continuation 1]

- e-Learning will consolidate over the next decade, with very few dominant players and a very competitive fringe
- Should this make us worry?
  - e-Learning has the chance to increase the quality of teaching/quality of learning.
  - Return to the Greek model of teaching and learning?

# e-Learning: Speculations [Continuation 2]

– Importantly

- e-Learning will increase access to education/training in transition and developing countries.
- In Central and East European transition economies, as well as developing countries, e-Learning may be the only way not to drift further away from the knowledge frontier.