eLearning

An opportunity for

Hyderabad Chapter, IODevUni

Contents

- Some Beliefs
- What is eLearning?
- How Effective is eLearning?
- eLearning Industry and Market
- How to Implement eLearning?
- What can you do?

Some Beliefs

Changing Educational Needs

- Emphasis on performance rather than mere knowledge
- Can't hide behind bureaucratic cocoon
- Changing career paths
- Need to be intrapreneurial and/or entrepreneurial
- Lifelong education
- Learning to learn more important than immediate subject content

Six Beliefs

1. Internet technology is the key to a profound revolution in learning.

2. There is an enduring and important role for traditional classroom instruction.

3. Learning is a continuous, cultural process—not simply a series of events.

4. The broad field of learning encompasses more than education and training.

5. You do not necessarily have to be in the education or training business to create opportunities for e-Learning.

6. Strategy development and implementation are never really finished.　　　　　　　　　　　　[Rosenberg 2001]

What is Learning?

- In the context business, it is the process by which people acquire new skills or knowledge for the purpose of enhancing their performance.

- It enables an individual or groups of of individuals to work faster, better, and smarter so that they and their organizations (or employers) reap business benefits.

[Rosenberg 2001]

The Role of Training/Instruction

It is used when it is necessary to shape learning in a specific direction—to support learners in acquiring a new skill or to utilize new knowledge in a specific way or to a specific level of proficiency, and perhaps within a specific time frame.

Four Elements of Training/Instruction

1. An *intent* to enhance performance in a specific way, typically derived via needs assessment and reflected in learning goals and instructional objectives.

2. A *design* reflecting the instructional strategy that is best suited to the learning requirement and the learner's attributes, as well as a measurement strategy that gauges the effectiveness of the training/instruction.

3. The *means and media* by which the instruction is conveyed.

4. In high accountability situations, a more formalized *assessment or certification* capability. [Rosenberg 2001]

Learner Needs

1. **Access**:

   technical infrastructure, empowerment, flexibility, time.

2. **Comprehensive approach**:

   right content (information that is reliable,   accurate, complete, organized and labeled for easy retrieval and use), *right format*, and *continuously available.*

3. **Balance:** *between training and information, etc.*

   [Rosenberg 2001]

Business Needs

1. Information: right info to the right people at the right time

2. Open Culture

3. Effective technology

[Rosenberg 2001]

Approaches to Effective Training

1. Goals that are meaningful and motivational
2. Learning by doing—the power of simulations
3. Learning from mistakes
4. Robust coaching and feedback
5. Expert modeling and stories
6. Authenticity
7. Reuse after learning

[Rosenberg 2001]

Organizational Learning

- Continually expanding an organization's capacity to create its future.

- It is necessary to nurture a knowledge-creating and knowledge-sharing *culture*.

Why have traditional universities resisted e-learning?

- Reluctance to treat knowledge as a commodity, owing to the spirit of free research and the desire to combine it with teaching, and professional development.

- Lack of suitably trained people.

- Lack of facilities.

- Lack of government support.

Why most Computer-Based Training (CBT) exercises have failed

1. The content wasn't any good.
2. The learning wasn't authentic.
3. Form over substance.
4. One size didn't fit all.
5. The technology was a barrier.
6. It was useless after the initial use.
7. The learning wasn't reinforced.
8. There was no support for it.
9. It went against the culture.
10. It was just plain boring.
11. It was "shovelware".

A transformation is under way.

- Training   ➔ Performance
- Classroom   ➔ Anytime…anywhere
- Paper   ➔ Online
- Physical   ➔ Networked facilities
- Cycle time   ➔ Real time

[Rosenberg 2001]

Why training and education through technology?

- Improving the quality of education and training.
- Making training more accessible.
- Promoting training transfer by making it more job-related.
- Ensuring material is current.
- Allowing complex skill sets to be tested efficiently.
- Reducing costs and improving productivity.

[Kelly 1998]

What is eLearning?

What is eLearning?
[eEurope]

- "The use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration."

- Learning as a social process, offering possibilities for collaboration with other learners, for interaction with the content and for guidance from teachers, trainers and tutors.

- These learner-centered approaches put the learners back in command, with a wealth of learning resources at their fingertips, customized to their individual needs.

- Teachers and trainers, however, continue to play a central role, using virtual and traditional face-to-face interactions with their students in a 'blended' approach.
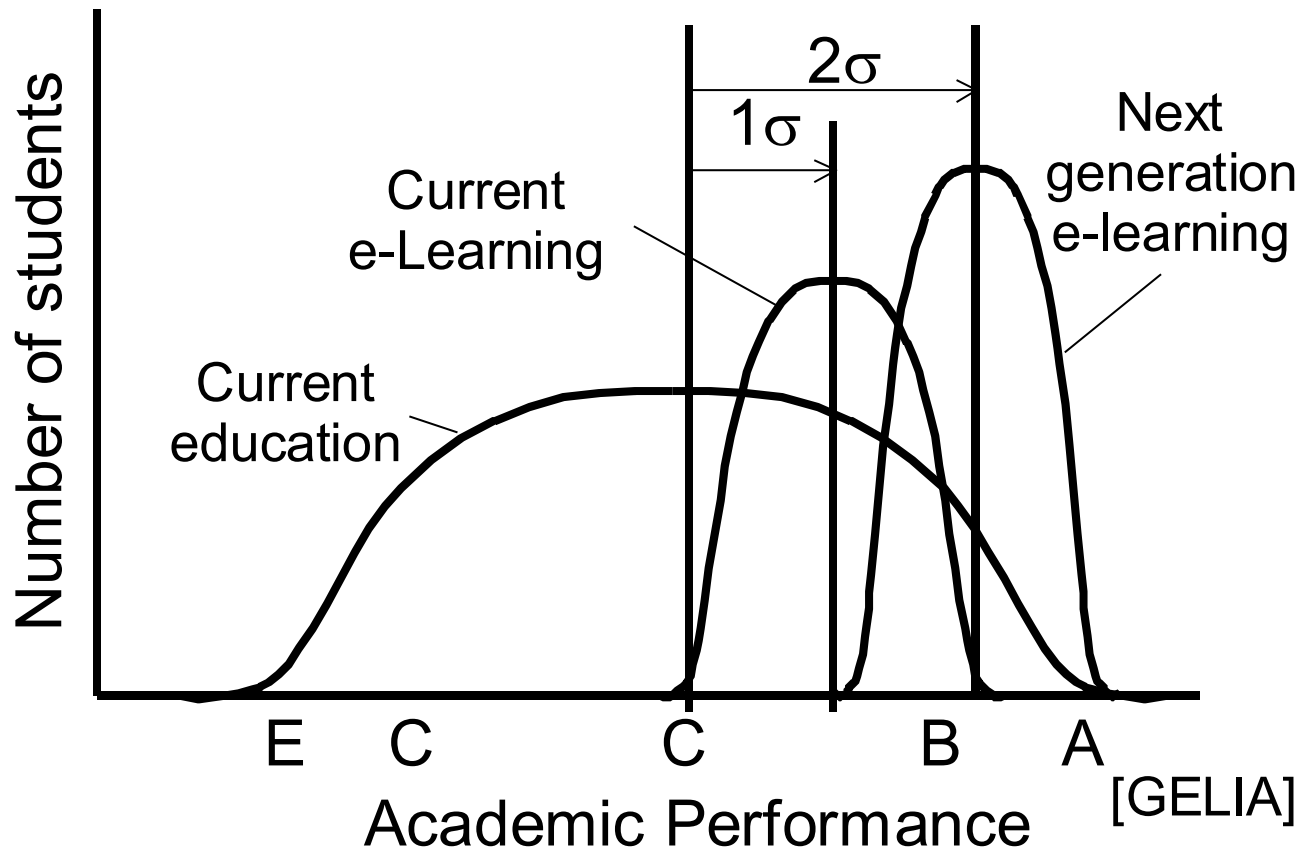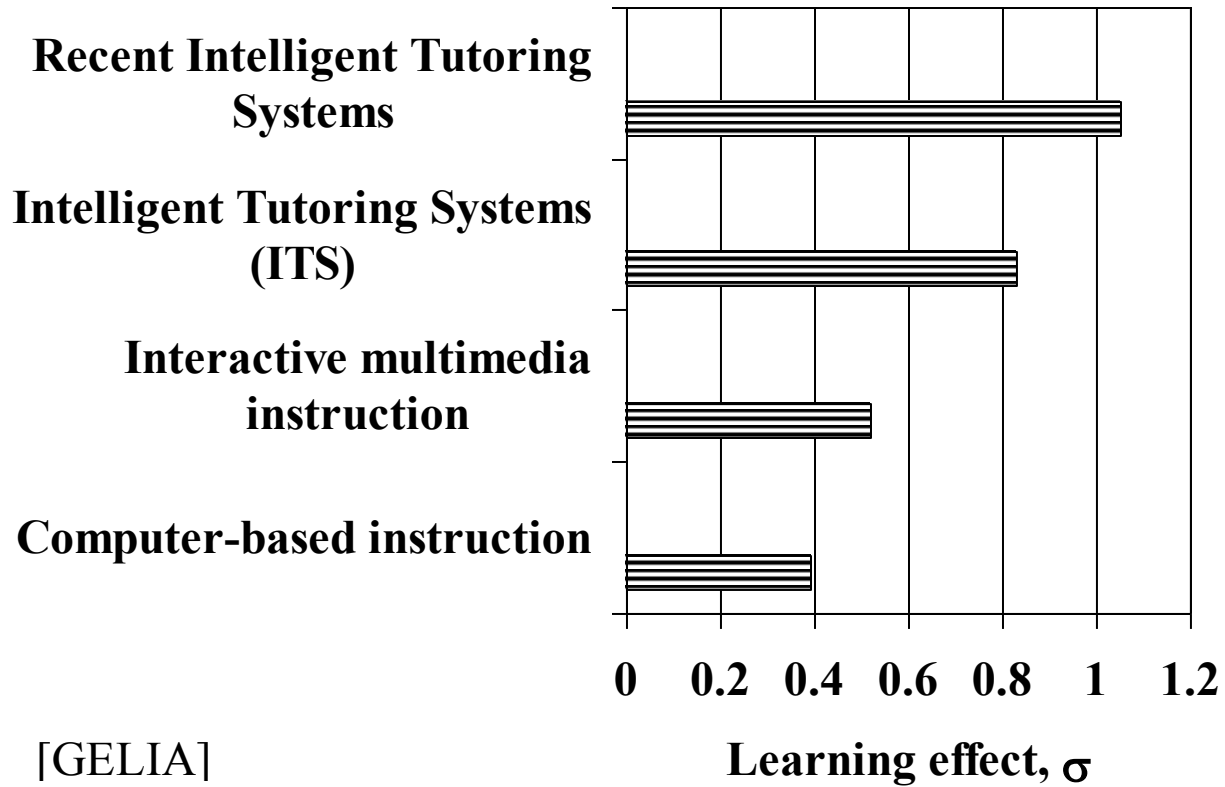
eLearning Defined

The use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance.

Three criteria:

1. It is networked, which makes it capable of instant updating, storage/retrieval, distribution and sharing of instruction or information.

2. It is delivered to the end user via a computer using standard Internet technology.

3. It focuses on the broadest view of learning—learning solutions that go beyond the traditional paradigms of training.   [Rosenberg 2001]
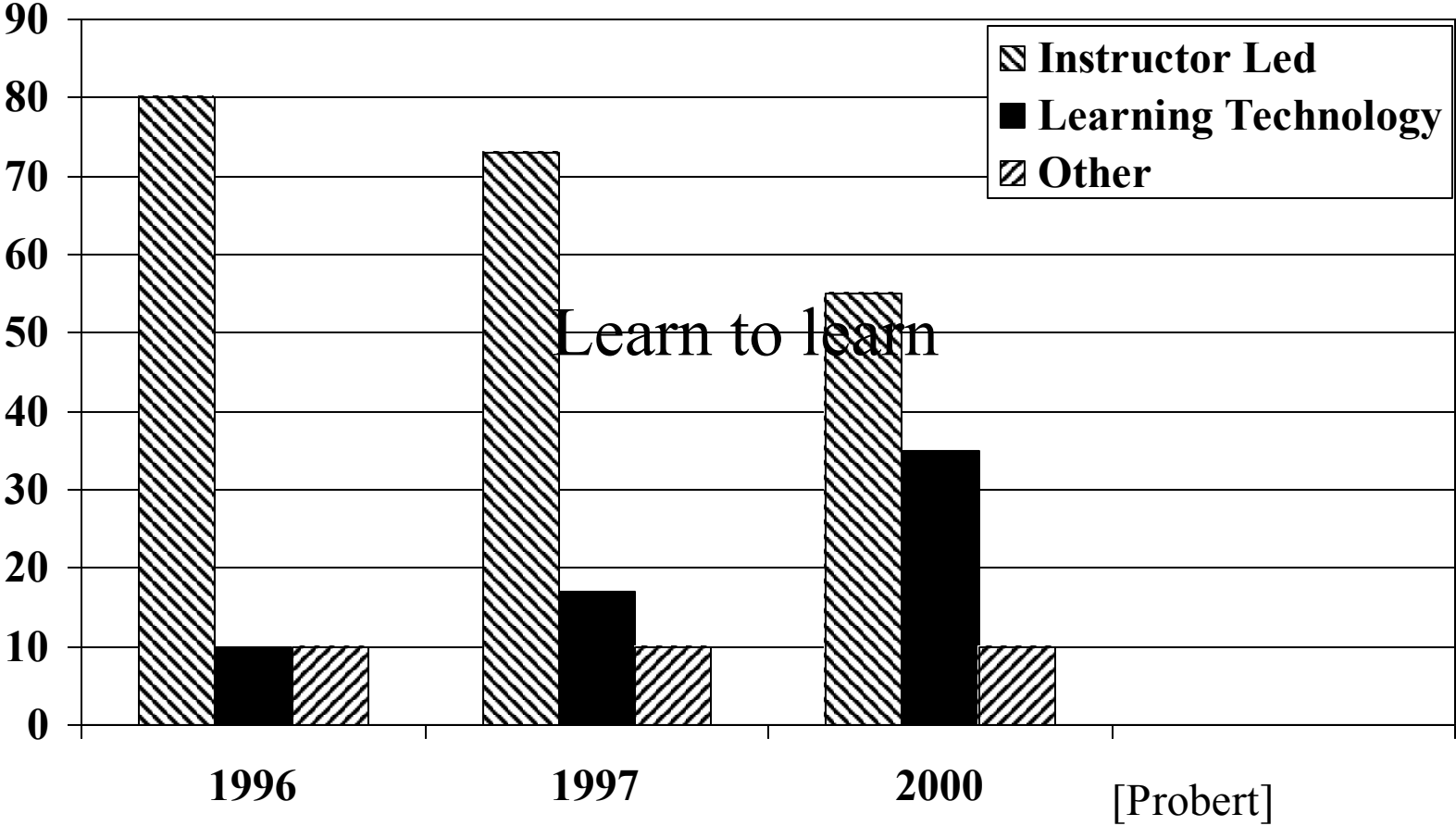
How effective is eLearning?

Recent Intelligent Tutoring Systems

Intelligent Tutoring Systems (ITS)

Interactive multimedia instruction

Computer-based instruction

0   0.2   0.4   0.6   0.8   1   1.2

[GELIA]   **Learning effect, σ**

Learning Technology Trends

% Usage

Learn to learn

Legend:
- ⊠ Instructor Led
- ■ Learning Technology
- ⊡ Other

Years: 1996, 1997, 2000

[Probert]
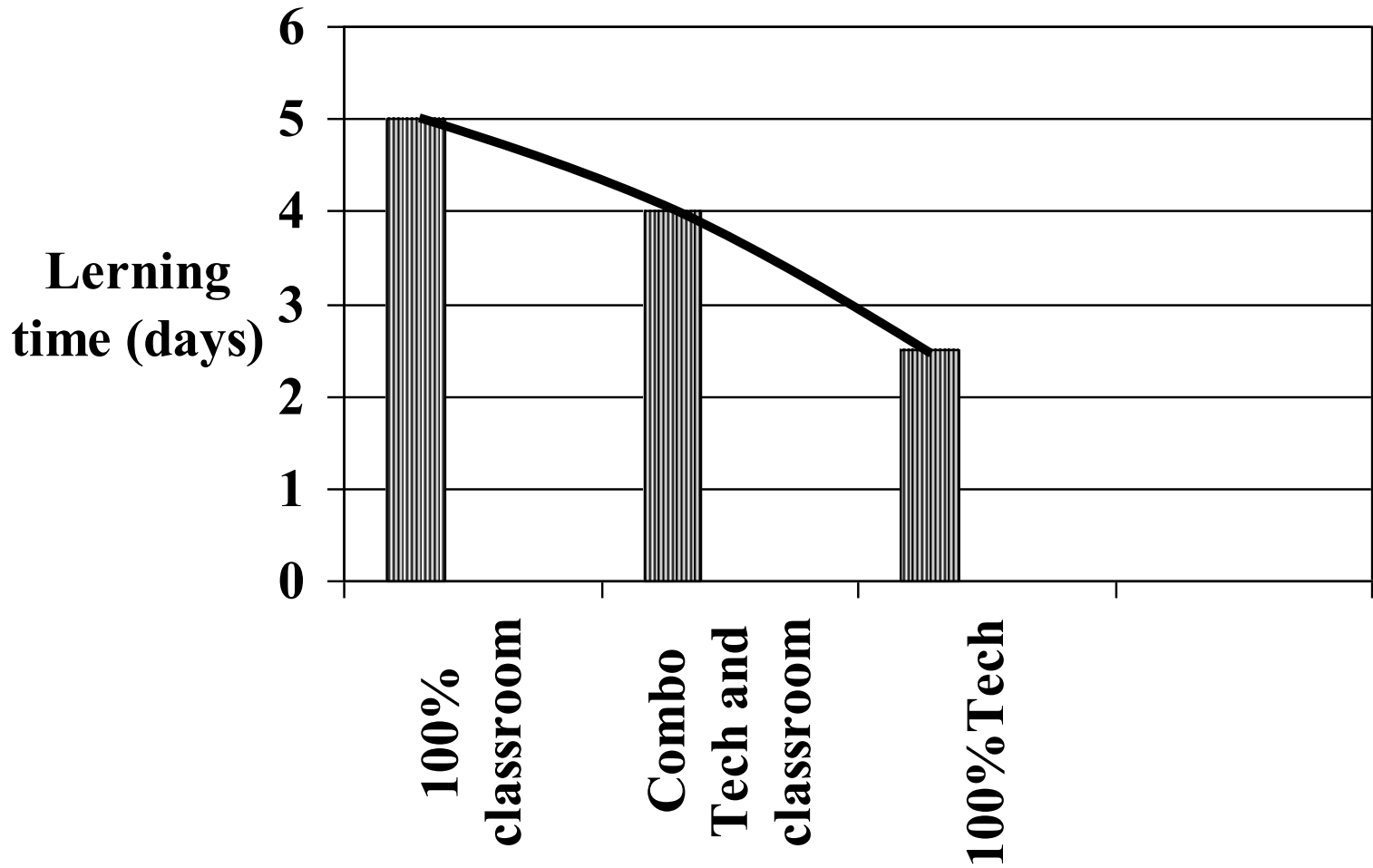
Benefits of e-Learning

1. Lower costs
2. Enhanced business responsiveness
3. Consistent or customized messages, depending on the need
4. Timely and dependable content
5. 24/7 learning
6. Elimination of user "Ramp-Up" time
7. Universality
8. Community building
9. Scalability
10. Ability to leverage corporate investment in the Web
11. Provision of increasingly valuable customer service

[Rosenberg 2001]

eLearning can transform education at every level.

- It can make high-quality educational experiences available to those whose location, economic, and personal constraints have prevented them from pursuing their educational goals.
- These learners also represent a wider student market for universities and other education establishments.

e-Learning benefits

- Learning can take place anywhere, anytime.
- Cost savings via the elimination of travel expenses.
- Just-in-time access to content.
- Higher retention of content.
- Online training is less intimidating to learners.
- Less employee turnover.
- eLearning maps to the way people work.

How companies benefit?

ASTD's 1996-98 survey of 2500 firms worldwide including 575 publicly traded firms in US:

- An increase of US$680 in a firm's training expenditures per employee generates, on average, a 6% improvement in TSR (total shareholder return).

- Firms in the top half of the study group had an average TSR in the following year of 36.9 % , I.e., 45% higher than market average.

Everybody benefits

- Individual learners gain access to world-class educational resources without traveling or taking excessive time away from work and home.

- Colleges obtain new channels and revenue sources from students who might otherwise be unable to take advantage of offerings.

- Communities have a new capability by which to raise the quality of life for their citizens, enabling basic skill development and offering the retraining that can provide a more qualified and adaptive labor market.

The Impact

- The workforce = Economic engine

  Adaptation and flexibility

- Lifelong learning =Quality of life

  The 'Three Careers' Paradigm

- A flexible industrial base = National security asset

- Create a $300 billion marketplace

[Probert]

eLearning Industry and Market

UK Government Initiative

- Department for Education and Skills (DfES) launched an initiative in 2001 called UKeUniversities or UKeU Ltd.

- UKeU is funded by DfES. At the outset, it was organized as a separate commercial enterprise that is expected to become self-funding and profitable over the next few years.

- UKeU will provide a comprehensive e-learning platform and support e-learning-based degree courses and modules for a broad student market around the world.

- UKeU is also responsible for developing its market and providing the marketing channel for these offerings.

- With this organization, universities benefit because they can continue to focus on and own the content on the educational side, while UKeU provides the capabilities and skills in marketing, sales, learning design, content development, and platform operation and support.

- All parties then share the benefits and costs. Universities can oversee and control the process through this structure that includes board representation, the representative body for all UK universities, and, of course, DfES.

- The first courses were developed with three leading UK universities and are now in operation.

- The modular design of the courses gives students the flexibility to tackle courses in the best way for them, given their personal schedules.

- Online support is available to students through such tools as chat rooms, e-mail, a real-time online forum for collaboration, and asynchronous conferencing.

- Course tutors and 24/7 technical support staff are also available.

- This model may herald a new spirit of cooperation where government sponsorship can support universities working collaboratively with private enterprise to leverage the capabilities needed to exploit e-learning at a larger scale.

- Many governments and higher education authorities around the world are looking closely at the UKeU model.

- Accenture is participating with UKeU to examine how it could use this model within the business world to provide a more cost-effective and adaptable means of providing academic educational content to companies.

eEurope

- At the Lisbon European Council on 23 and 24 March 2000, the Heads of State and Government set the Union the objective of becoming "the most competitive and dynamic knowledge-driven economy in the world".

- Europe which, enjoys one of the highest levels of education, and has the necessary investment capacity, still lags far behind in the use of the new information and communication technologies.

eEurope Objectives

- to provide all schools with access to the Internet and multimedia resources by the end of 2001
- to equip all classrooms with a fast Internet connection by the end of 2002
- to connect all schools to research networks by the end of 2002;
- to achieve a ratio of 5-15 pupils per multimedia computer by 2004
- to ensure the availability of support services and educational resources on the Internet, together with on-line learning platforms for teachers, pupils and parents, by the end of 2002
- to support the evolution of school curricula with the aim of integrating new learning methods based on information and communication technologies by the end of 2002.

eLearning Guild™

- It is a community of Practice for designers, developers, and managers of eLearning.

- Publishes the on-line "e-journal".

- Hosts a comprehensive e-Learning knowledge-base.

University of Phoenix, USA

- UofPhx has 163,627 students half in UofPhx Online.

- It has 17,200 instructors, 128 campuses in 26 states, and Internet delivery worldwide.

- It is pioneering digital learning with centralized curriculum development. Four color textbooks are "just not working."

- This first vertically integrated higher ed company is making rEsource a learning platform its centerpiece.

- It took four years and $10 million investment to integrate course administrative tools, content, and student services. Book parts and "developer portal" solicit, own and manage content from any author. Buying of hard copy is fading away.

e-Learning Centre

- It is the world's largest *free* information resource about e-learning.

- Its main focus is on adult e-learning, i.e. e-Learning in the Workplace, in Higher Education and in Continuing Professional Development.

- Its website contains links to thousands of *selected* and *reviewed* e-learning articles, reports, examples of best practice, vendors of e-learning products and services, as well as e-learning conferences, seminars and workshops

- It also provides a range of e-learning services to *organizations* (businesses, universities, colleges, charities, etc.), as well as to e-learning *individuals* (e-learning professionals, educators, trainers, managers, etc) to help with their own professional development.

eLearning industry

- 3 segments: Content, Services, and Delivery
- Content (largest): off-the-shelf titles that provide training on a variety of general topics and customer specific content that must be custom developed.
- Services (fastest growing): outsourcing of e-Learning content development, implementation or consulting to third parties.
- Delivery: technology to host, deploy, manage and track e-Learning users and content.   [Mirus]
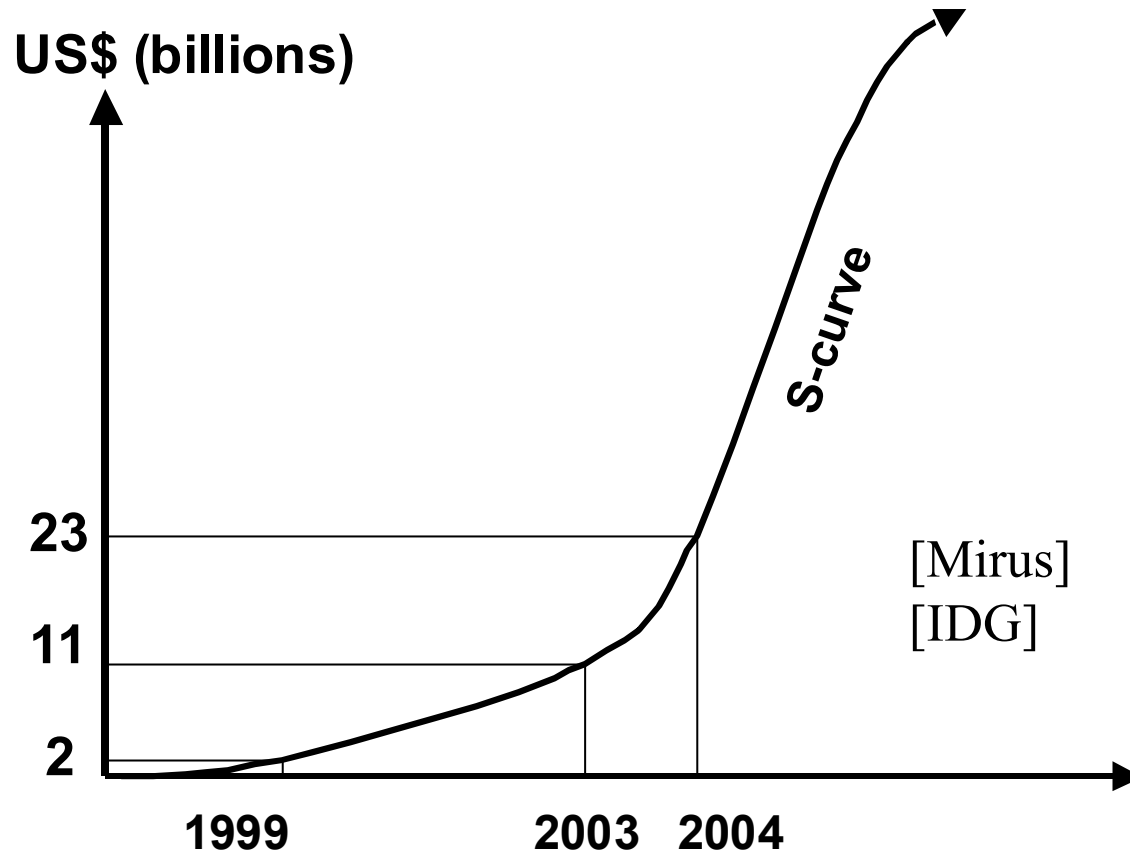
U.S. eLearning industry

- Already worth over $10 billion in revenues.

- Now spreading beyond corporate and government sectors into all the market sectors.

- The academic market is set to experience massive growth in e-Learning in what academic experts are calling the ``Internet tsunami."

- New competitors are entering the market, and the shape of next-generation products is unfolding now.

- Second generation products will allow the industry to expand and advance dramatically in the period between 2006 and 2011.   [brandon-hall.com]

eLearning Market Drivers

- A resource crunch for skilled workers and the need for enhanced productivity.

- An increasingly mobile work force that is globally distributed.

- Current and emerging technologies offer greatly enhanced learning experiences.

- The transformation from a traditional business models into the e-business paradigm requires a significant level of learning/training across the organization.

- Time-to-market (cycle times) are decreasing.

- Time to deploy/hire is shrinking.

eLearning Industry Worldwide

eLearning Market (1999)

- Corporate training: US$62.5b.

- 24% increase in 5 years.

- US$4.5b on infrastructure.

- US$15b on outside services (66% increase in 5 years).

How to Implement eLearning?

Barriers to e-Learning

- Learning Object Repositories (i.e. How and where do you store intellectual property?)
- Lack of business models and confusion
- Slow development of standards
- Systematic misunderstandings about the learning process (e.g. "Lecture is dead.")
- Cultural barriers and generation gap [Jane Lee]

How do you implement eLearning in a college?

- Do you start at the periphery in an area such as continuing education and let it gradually spread to the rest of the college?

- Does this create channel conflict for learning?

- Will resistance come from professors and researchers?

- How do you best combine the benefits of traditional teaching and tutoring models with the opportunities that e-learning technologies and capabilities provide?

The Parallel

Training Development Now

Software Engineering Then

Solution: Reusable Components

Issues

Marketplace Approach

Capturing Domain Expertise

Intellectual Property

[Probert]

Remember the Past…

- Software Crisis of the 70's & 80's

  Few Skilled Developers

  High Demand

  Inconsistent Methods
  "One-Off" Systems

- Solution

  Object-Oriented Paradigm, Design Patterns

  Reuse of Objects, Patterns

  [Probert]

…So We Don't Relive It

- Training Crisis of the New Millennium

  Few Skilled Developers

  High Demand
  Inconsistent Methods
  "One-Off" Systems

- Solution

  Component Based Training

  Development, Templates
  Reuse of Components, Templates

  [Probert]

What is a Component?

Any Coherent, Isolated Construct that Provides Value in Meeting a Training Objective

A Graphic …. logo, scenery, picture
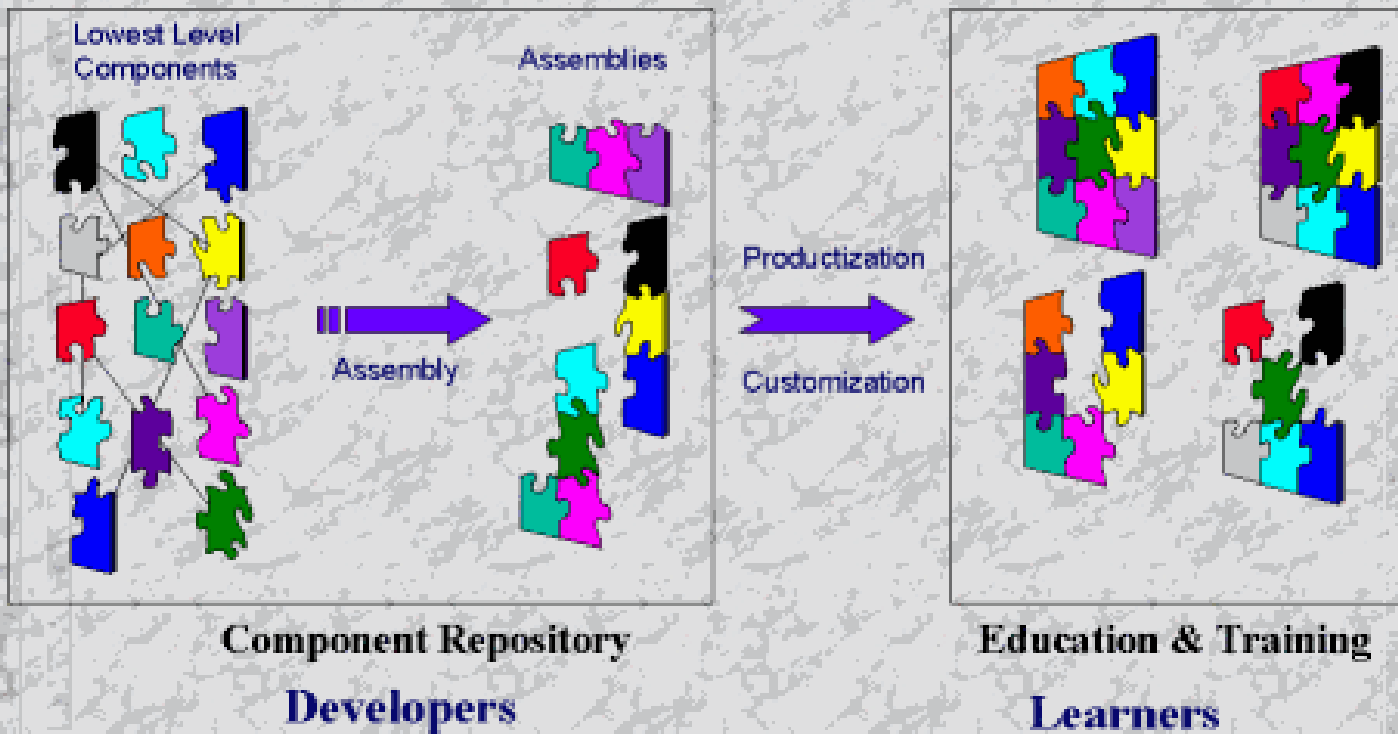
A Hunk of Text …. quote, paragraph

An Executable … applet, program

An Interface … an ODBC query tool

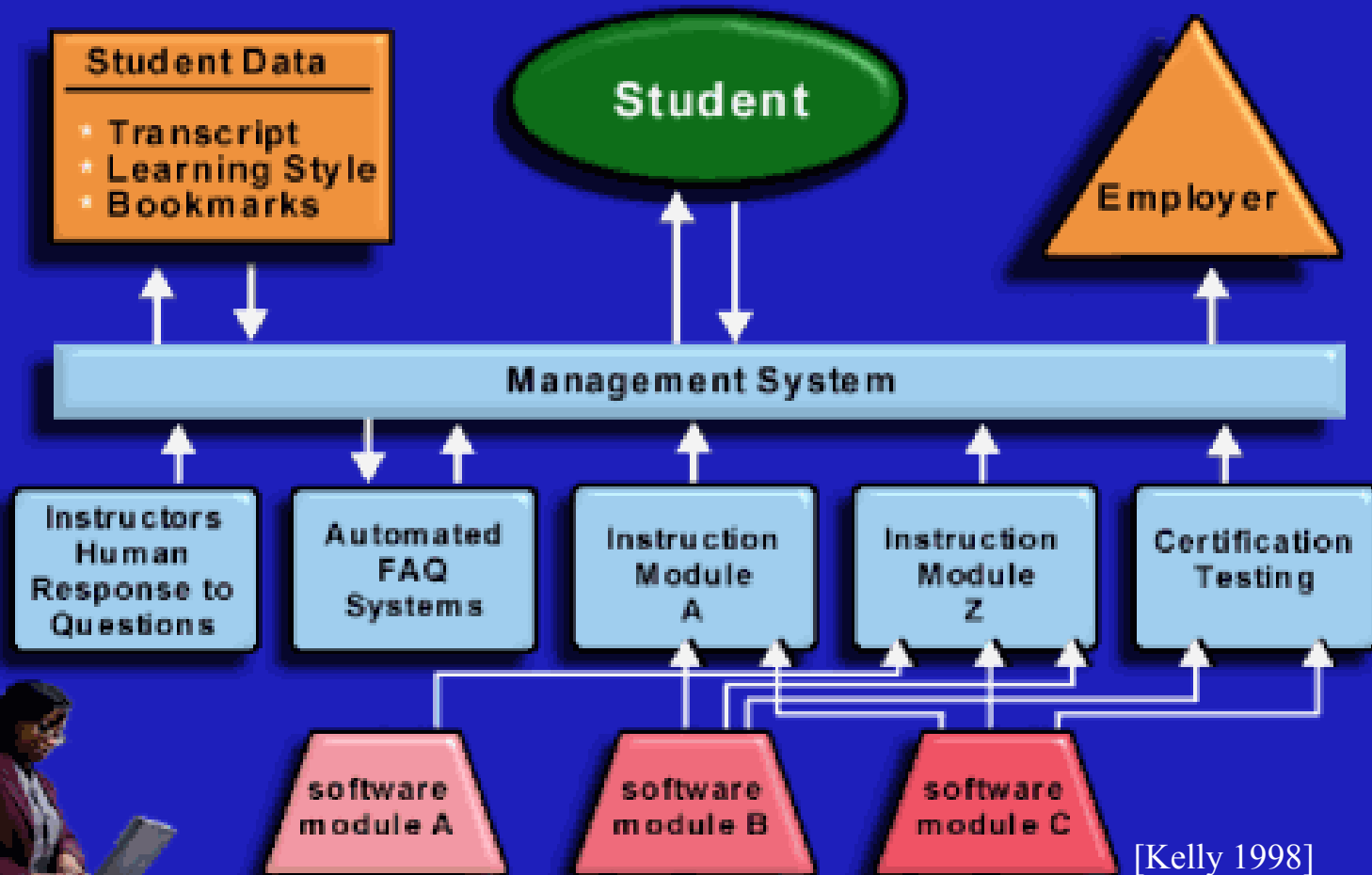*A Course … "Using FFTs in Image Processing"*

[Probert]

Reusable Training Components

[Probert]

Creating a New Learning Architecture

Student Data
- Transcript
- Learning Style
- Bookmarks

Student

Employer

Management System

| Instructors Human Response to Questions | Automated FAQ Systems | Instruction Module A | Instruction Module Z | Certification Testing |

software module A

software module B

software module C

[Kelly 1998]

Benefits of Component-Based System

- Empowers organizations of all sizes to be able to tailor instruction to their unique needs.

- Provides more flexibility and power to students to get individualized training anytime anywhere.

[Kelly 1998]

Benefits of Reusable Components to Developers

- Reduce the Barrier to Entry for New Developers by Reducing

  Time and Tool Cost

  Need for Broad Expertise

- Decrease the Granularity of the Unit of Value

  Easier to Sell to a Broader Market

  Increase Positive Competitive Forces   [Probert]

Principle: Distribution

Use the Existing Infrastructure

- **Recognized Value of Certification**

  Credits, Diplomas, Certificates

- **Value of the Existing Institutions**

  Needless Change?

- **Appropriate Training Materials**

  Evaluate Training Materials

- **Transition to the Web**   [Probert]

Principle: Intellectual Property

- Equivalent to Publishing

- An Audit Trail Can Deter Theft

- Contractual Agreements Create Binding Constraints

[Probert]

Principle: The Web is the Repository

- Allow Components to Reside Where it is Convenient to the Developer

- Exploit the Hidden Capacity of the Web

- Use a Registry

  Locate and Manage Access
  Product Distribution
  Management of Financial Information
  Real Time Operation   [Probert]

Principle: Capture Domain Expertise

- Easier to Create Developers than Domain Experts
  Existing Infrastructure
    - *Colleges, Universities*
    - *Corporate Intranets*
    - *Training Vendors*
    - *Cottage Industry in Training Components*
- Requires and Assistance Framework
    - *Lydia, Macromedia Authorware, Indusa, …*
    - *Training Development Centers*   [Probert]

Training Development Centers

- Mission: Develop <u>Developers</u>

- Assistance Program

  Tools, Techniques, Technology Hands-On, Mentoring

- Physical Assets and Equipment

  A Consortium Provides Initial Facilities and mentoring Personnel. Host Provides Space and <u>Commitment</u>

- Benefits

  Create Hundreds of Developers Quickly
  Accelerated Technology Insertion
  Coherent Methodology: Component Reuse, Standards

  [Probert]

Macromedia Authorware 7

- A leading visual authoring tool for creating rich-media e-learning applications for delivery on corporate networks, CD/DVD, and the Web.

- Develops accessible applications that comply with learning management system (LMS) standards.

- Released in June 2003.

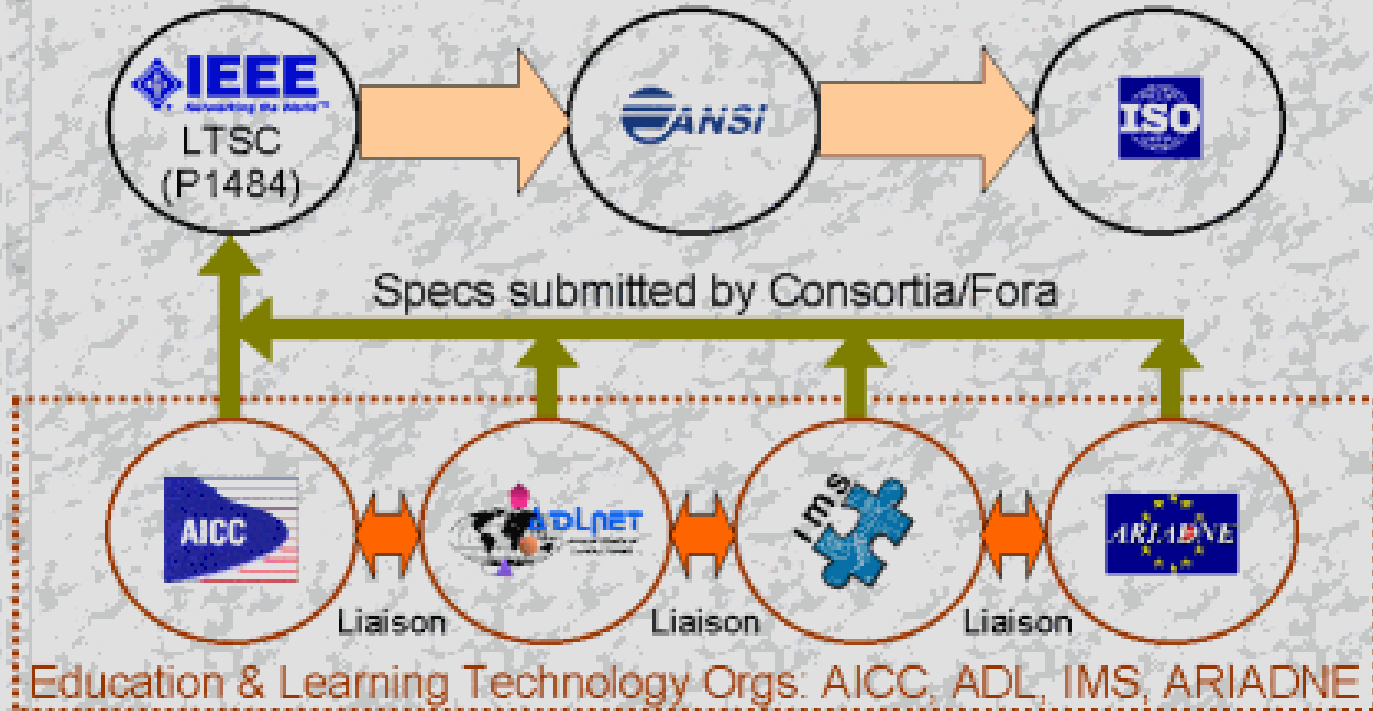- Full version coss about USD3000. A smallr academic version can be obtained for about USD900.

Indusa, Ahmedabad

- "One product which has considerable potential in [India] is eLearning, which facilitates distance education."
- "This product enables interaction between student and teacher…"
- "It also has chat facilities…"
- Students and teachers can even speak to each other [through Web conferencing]."
- "We are in talks with colleges in Pne and Ahmedabad, and also various public schools."

[Business India, p. 121, December 8-21, 2003]

Interoperability Standards & Specifications

IEEE, ANSI, ISO: Accredited Standards

Specs submitted by Consortia/Fora

Education & Learning Technology Orgs: AICC, ADL, IMS, ARIADNE

[Probert]

Keys to Success

1. Sustainable government or collective sponsorship.

2. Participation and support from major universities or colleges.

3. Advanced multimedia skills.

4. Learning design expertise. Content must be presented in a compelling way (not just online lectures, for example), and collaborative offerings must be planned with proper technology in place.

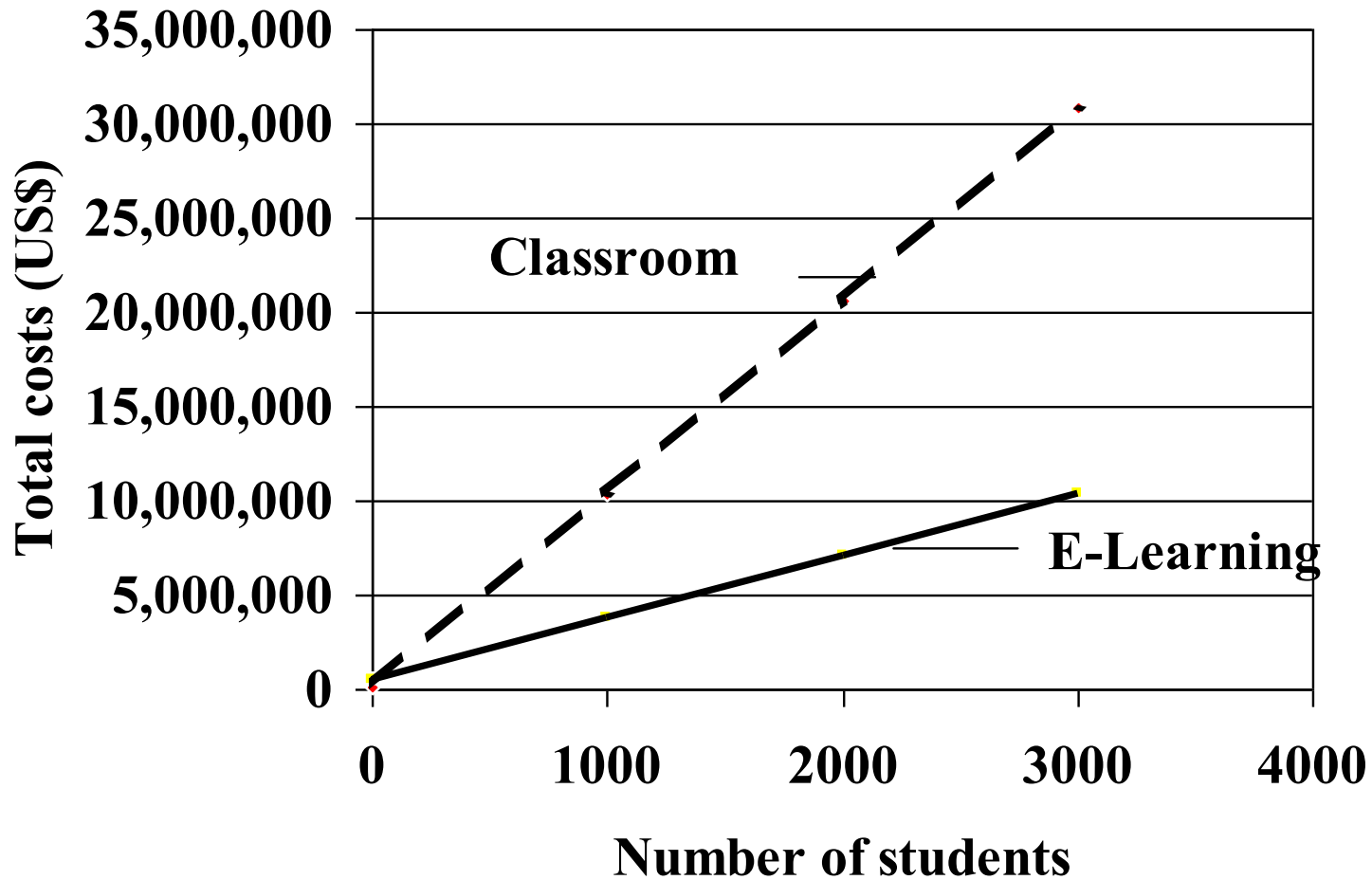5. A committed and commercially savvy management team.

Learning Objects Created by Communities

- Sub-class of Internet objects
- May be Web pages, e-mail messages, people profiles, video clips, audio clips, applets, executable programs, textual passages, question banks
- Contents: intention of author, chunked enough to thread, points of view, exercises, objectives

"E-Learning is good, e-Learning is great—so give us money."

Datapoint	Classroom	E-Learning
No. of students a year for 3 years	1,000	1,000
Length of program	5 days	3 days
Estimated development costs	$100,000	$300,000
Estimated maintenance costs over years 2 and 3 (30% of development costs per year)	$60,000	$180,000
Delivery costs over 3 years	$3,000,000 ($200 per student day)	$150,000 (Admin. costs of $50 per student per yr)

Travel costs ($1,000 per student trip, 50% students travel)	$1,500,000	0 (desktop, same building or home-based learning)
Cost of labor diverted to learning	$5,220,000	$3,132,000
Cost of labor diverted to travel	$522,000	0
Total costs	**$10,402,000**	**$3,762,000**
Total fixed costs	$160,000	$480,000
Total variable costs for 1,000 students	$10,242,000	$3,282,000

What can you do?
(Via IODevUni or otherwise)

- Task Force
- Initially for internal needs
- After 2 years, to serve global business goals
- Business Plan (at least short term)

Consortium

Deployment of human resources, funding

City eLearning Center
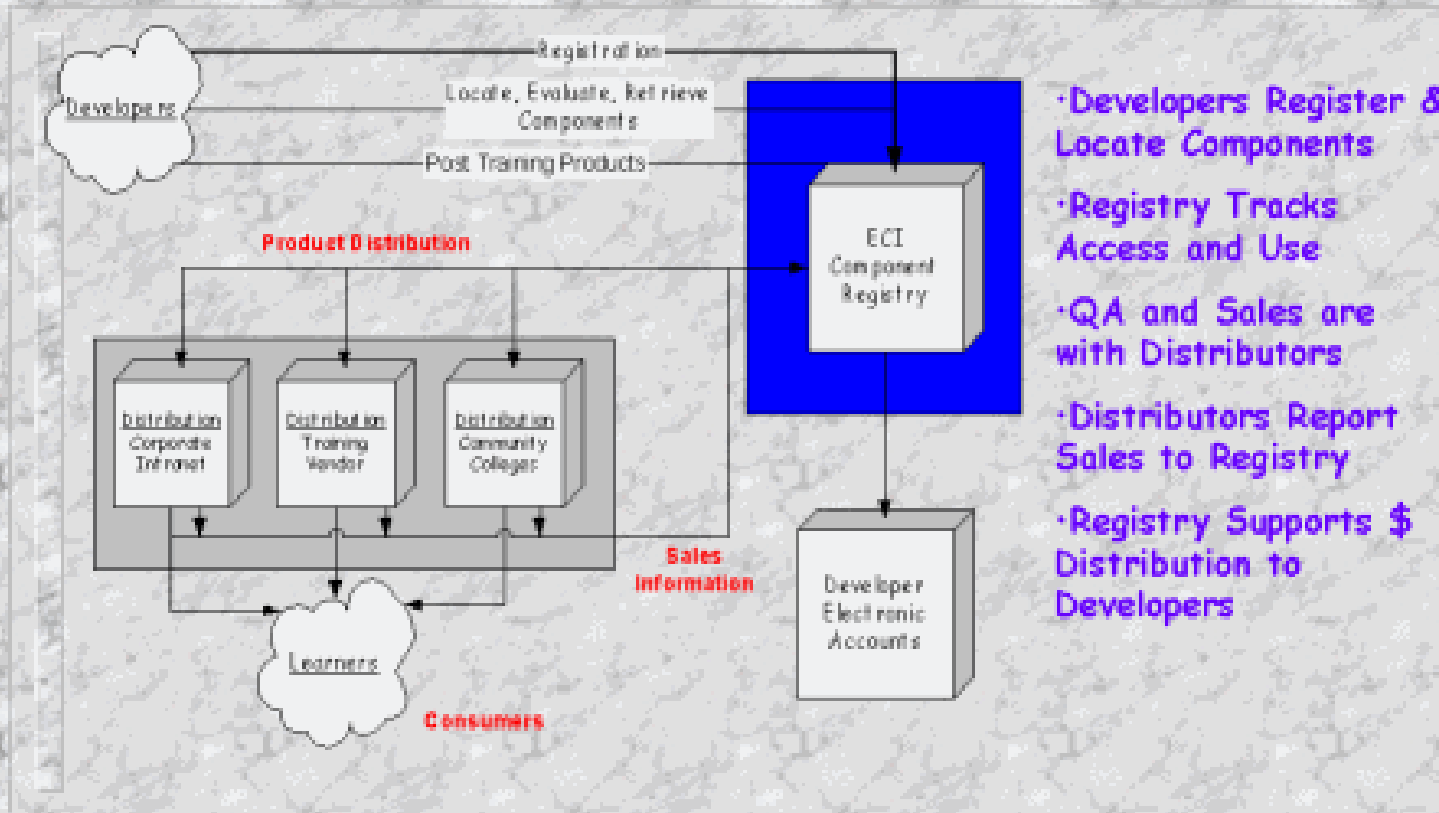
City Training Development Center

Link up with commercial eLearning center(s) in USA

So, A.P. captures a major share of the world eLearning outsourcing market complementing its roles capture of BPO and software development markets.

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The ECommerce Model

· Developers Register & Locate Components

· Registry Tracks Access and Use

· QA and Sales are with Distributors

· Distributors Report Sales to Registry

· Registry Supports $ Distribution to Developers

[Probert]

Lydia- The Developer's Assistant

Definition – Learning Object Classes

- Tool - e.g., calculator
- Template – e.g., curriculum framework
- Content – e.g., video clip demonstration
- Distribution – e.g., agent directs display,
                                    presentation to target