The Top Ten

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Only the paranoid survive....

– Andy Grove
Top IT Events of 2000

- Security
  - Denial of service attacks
  - I Love You virus
- Size and competitiveness
  - Microsoft ordered split in two
  - Time-Warner/AOL merger approved
- Napster
- Fall of the dot.com’s (aka dot-bombs)
Top IT Events of 2000, continued

- Service replaces software
  - Everything is now available as a service
  - Navy outsourcing contract for $6.9 billion
- Open source gains ground
- Alternative form-factors challenge the PC as an Internet-access device
  - Cell phones
  - PDAs
  - Pagers
- Wireless is everywhere
- Rise and fall of B2B
Top IT Challenges

- Funding IT
- Faculty development, support & training
- Distance education
- E-learning environments
- Enterprise administrative systems
- IT staffing and human resources
- IT strategic planning
- Online student services
- Advanced network challenges
- Demand for support services

Gandel, 2000
Technology Futures

• Overcoming the limitations of silicon
  – Nanotechnology
  – Quantum computing

• Memory and storage
  – Holographic storage
  – Molecular memory

• Batteries, energy and power
  – Microbatteries
  – Recharging with kinetic energy

• Input and sensors
  – Handwriting
  – Eye tracking
Technology Futures, continued

- Output devices
  - Digital ink and electronic paper
  - Flexible displays
- Pervasive computing
  - Wearable devices
  - Ubiquitous computing
- Virtual reality
- Internet and web technology
  - XML
  - QoS
  - Optical networks
Technology Futures, continued

• Wireless
  – Generation 2.5: 144 Kbps
  – WAP
  – Bluetooth
• Knowledge management
  – Enterprise Information Portals
  – Emerging standards for metadata
  – Search techniques
Top IT/HE Events of 2000

- Consolidation of dot-coms
- Security/privacy concerns
- Kerrey commission
- eArmy project
- Accreditation of new entrants
  - Jones International
  - Cardean
- E-business becomes a part of education
- Ascention of Linux
- Expansion of Internet2 to more institutions
Areas to Watch

- Assumptions
- E-learning
- Partnerships
- Learning objects
- CRM
- Portals
- Accreditation
- Outsourcing
- Sustainability
- Accountability
Assumptions
Assumptions

- The course is the unit of measure for learning
- SCH and FTE are relevant units of measure for distance learning
- Higher education must provide all components of the educational process
- Quality is better in not-for-profit institutions than for-profit ones
- We know the learner profile and student preferences
Why Use IT?

Net-generation institutions use IT for its innovation value

Innovation Values

- Effectiveness
- Efficiency
- Market Expansion
- Competitive Advantage

E-Line

The Economist Business Unit, 1999

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Worldwide Academic vs. Corporate Education Market

1997-2002

International Data Corporation, 1999
Growth of e-learning

- Universities with aggressive programs are seeing growth rates of 200-1000%
- Partnerships between “non-traditional” providers and universities are increasing
- Over 5,000 competitors offer all types of e-learning; no single competitor has more than a 5% market share
- Last year, over 100 e-learning portals entered the market
Partnerships
Value Chain Alternative Providers

Curriculum Development
- Faculties & Departments
- Full-Service Broker (WGU)
- University Spin-Offs (Online Learning.net, NYU Online)
- Educational Publishers
- Market Research Firms
- Software Publishers (CBT Systems, NETG)
- Learning Environments (Convene, Lotus, Microsoft, Blackboard)
- Industry Assn Standards Body (EduCause)
- Training Companies
- Corporate Universities

Content Development
- Software Authoring Tools (WebCT, eCollege.com, Asymmetrix)

Learner Acquisition & Support
- Student Services
- Full-Service Broker (WGU)
- Catalogs (SREC, CVU, NJVU)
- Online Applications (XAP, CollegeEdge, IBM)

Learning Delivery
- Faculties & Departments
- Tutoring and Testing Centers (Sylvan, Kaplan, Princeton Review)

Assessment & Advising
- Teleconferencing Companies (Caliber, One-Touch)
- Online Applications (XAP, CollegeEdge, IBM)
- Training Companies (GP Technologies, Knowledge Universe)
- Corporate Universities

Articulation
- Colleges & Universities (central administration)
- Full-Service Broker (WGU)
- Accrediting Associations & Licensing Agencies

Credentialing

Educational Management Organizations (U of Phoenix, Open U., Harcourt, UNEXT.com)

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UNC and PwC, 1999
Net-Generation Companies

- Online admission applications
  - Embark
  - CollegeNet
  - XAP
- Campus-based portals
  - Campus Pipeline
  - Jenzabar.com
  - Studentonline.com
Net-Generation Companies

- Online procurement
  - CommerceOne
  - Ariba
  - FreeMarkets

- Online course delivery
  - WebCT
  - Blackboard
  - Convene
  - eCollege
Net-Generation Companies

• Supplemental content providers
  – PinkMonkey.com
  – CliffNotes.com
  – Thinkwell.com
  – InstantKnowledge.com
  – Versity.com

• Online libraries
  – Questia.com
  – Net.Library.com
  – ebrary.com
Net-Generation Companies

• Online Textbook Distributors
  – VarsityBooks.com
  – Textbooks.com

• Advising and Tutoring
  – Smarthinking.com
  – Tutor.com
  – Degree Navigator
Net-Generation Companies

- Learning portals
  - click2learn.com
  - Hungry Minds
  - Ziff-Davis
  - SmartPlanet.com
  - Blackboard.com

Kidwell, et al., 2000
Integrating the Value Chain
Categories of Relationships

- **Transactional exchange**: commodity-like product or service (low-bid purchase of PCs)
- **Performance contract**: niche product or service (e.g., outsourcing food service)
- **Tailored engagement**: standard product or process is tailored for customer (e.g., redesign of administrative systems)
- **Strategic alliance**: requires unique expertise, interconnected work and mutual benefit (e.g., Universitas 21)

Adapted from Henderson, 1990
Learning objects
MERLOT is a collection of high quality interactive online learning materials, assignments, reviews, and people.

Discipline Communities
Visit the new MERLOT discipline-specific communities!
- Biology
- Business
- Physics
- Teacher Education

Browse Materials
Select a Subject Area:
- Arts
- Business
- Education
- Humanities
- Mathematics
- Social Sciences
- Science & Technology

Recent News & Events
Virtual Biology

Type: Learning Material

Location: http://www.seoulin.co.kr/~virbio/index.html

Primary Subject: Science and Technology/Biology/Molecular Biology

Category: Science and Technology/Biology/Microbiology

Author: unknown

Seoulin

Description: This site contains detailed animations of several molecular processes including bacterial chemotaxis, MHC presentation, cell cycle, apoptosis, cytoskeleton, nuclear cytoplasmic transport and the
MHC Class I
(Major Histocompatibility Complex
Class I)

Structure
- Consists of a polymorphic 43 kDa heavy chain and a 12 kDa soluble subunit β2-microglobulin (119 aa).

Function
- Antigen-presenting molecule found on all nucleated vertebrate cells.
- Binds an 8 - 10 amino-acid antigenic peptide which originates from the cytosol.
- Presents peptides to CD8+ T cells for immunological surveillance.
- The assembly of this complex takes place in the lumen of the endoplasmic reticulum (ER).
- Most MHC class I molecules in the ER that have not yet acquired peptide are simultaneously bound to the transporter associated with antigen processing (TAP), to the 48 kDa glycoprotein tapasin and to the lectin-like chaperone calreticulin, in a
### User Comments on **Virtual Biology** by unknown

<table>
<thead>
<tr>
<th>Commenter</th>
<th>Personal Evaluation</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>Judith Kandel</td>
<td>★★★★</td>
<td>General Remarks: &lt;br&gt;These animated images of cellular processes are quite detailed and can be helpful in understanding the dynamic nature of molecular interactions. I found it fairly easy to follow those processes that I was familiar with, but it was difficult and often frustrating working with those that were less familiar. Although students might be able to learn the series of events by observing these animations and referring to the descriptions of the components in the right frame, they would need clear objectives and a structured assignment. It certainly can be useful for students who have already been introduced to the topic through lecture or for the instructor during a presentation. A nice feature is the ability to view certain processes under different conditions, for example, bacterial chemotaxis in the presence and absence of an attractant or apoptosis in the presence and absence of a growth factor.</td>
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Other Learning Object Projects

• SCORM: Sharable Courseware Object Reference Model
  – Web-based learning content model
  – Recommended usage model for metadata

• POOL: Portal for Online Objects in Learning
  – management, storage and retrieval of learning objects
  – distribution channel for learning objects
  – Canadian approved educational content
CRM for Higher Education

- Learner-relationship model
- How are students brought into the institution?
- How do students learn?
- How do they receive services?

<table>
<thead>
<tr>
<th>Recruiting</th>
<th>Learning</th>
<th>Service</th>
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<tr>
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<tr>
<td>In-person</td>
<td>Internet</td>
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</table>

Milliron, 2001
Portals
Portals

A portal is:

- Not just a home page
- A customized, personalized, adaptive desktop
- A hub from which users can locate all the web content they commonly use
- A user-centric web page
## Class Schedule

### Autumn Quarter 2000 Class Schedule:

<table>
<thead>
<tr>
<th>SLN</th>
<th>Course</th>
<th>Title</th>
<th>Days</th>
<th>Times</th>
<th>Location</th>
<th>MyClass Link</th>
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<tr>
<td>6740</td>
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<td>MTWF</td>
<td>1030-1120</td>
<td>PAA A102</td>
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<td></td>
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<td>830-1020</td>
<td>PAB 164</td>
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</table>

### Winter Quarter 2001 Class Schedule:

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<th>Times</th>
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</table>
New links for graduate students have been added. To see these, personalize your Student Info page by choosing topics under the new heading, Graduate Student Information. (Aug. 17, 2000)

**Personal Services**

**Employee Self Service**
- Leave
- Earnings
- Taxes
- Retirement & Savings
- Insurance
- Contact Information

**Faculty & Staff Guide** Headlines

**Parking Updates:**
Check the *Timely Tips* from Parking Services to find a list of Seahawk home games, plus where to park when on University business/activities during Seahawks game days.

**New to the Faculty & Staff Guide**
- [Guides to the online financial systems](#)
- [FIN, FASTRANS, and FAST Downloading](#)
- [PAS: Guide to the Online Purchasing and Accounts Payable System](#)
- [Payroll Guide](#)--the Payroll Office is working on new topics for Staff and Payroll Coordinators. This new page will continue to grow in the coming months.
- [UW Procurement Card Program (ProCard)](#)--a departmental tool for streamlining the purchasing process.

**UW Home Pages**
- [UW Home Page](#)
- [UW Bothell Home Page](#)
- [UW Tacoma Home Page](#)

**Email**
- [Email for Students](#)
- [Email for Employees](#)
- [UW NetID Services](#)-- Manage your UW NetID Services.

**Weather**

**Current Weather**
Wednesday, August 23, 2000 at 15:08. Temperature: 77°F, 25°C (73°F, 23°C wind chill). Winds: 11 mph from the NW (13 mph gusts). Barometric pressure: 29.90 in (1012 mb). Relative humidity: 40%. The sun rose today at 06:17 and will set at 20:06. The moon was an crescent (40% of full).

Provided by the [Dept. of Atmospheric Sciences](#)

**Seattle Forecast**
- this afternoon...sunny. highs in the upper 70s to mid 80s. north winds 5 to 15 mph.
- tonight...mostly clear. lows in the lower to mid 50s. north winds 5 to 15 mph easing overnight.
- Thursday...mostly sunny after patchy morning clouds or fog. cooler. highs in the mid 70s and upper 80s.

Provided by the [Dept. of Atmospheric Sciences](#)

**Directories**
Regulation and accreditation
Competency Standards Project

• Student outcomes and attainment
  – Each degree or credential requires successful student completion of a defined assessment or set of assessments that covers the learning outcomes identified.
  – The institution regularly benchmarks its learning experiences and assessment outcomes against those of other institutions, as well as against industry and professional standards.

CHEA, 2000
Competency Standards Project

• Responsiveness to students
  – Students are successful in locating appropriate learning experiences consistent with the competencies they wish to master—either from the institution itself or from another learning provider.
  – The institution ensures that students are properly prepared for assessments by periodically evaluating their readiness through an appropriate mentorship process.
Competency Standards Project

• Organizational alignment and support
  – The institution’s mission clearly articulates a commitment to responsiveness to students and outcomes-based instructional approaches that clearly distinguish it from traditional seat-time, credit-hour-based institutions.
  – The institution’s budgetary and organizational structures are clearly aligned with and are configured to support appropriate levels of student achievement and responsiveness to students.
Outsourcing
Outsourcing

• Potential to outsource multiple functions:
  – Help desk
  – Application development
  – Operations

• Extension of current activities or a replacement?

• Solution to the shortage of IT workers?
Sustainability
“Traditional” Economic Model

Goldstein, 2000

Cost
Revenue

Build the Campus
< Many Years >
Renew the Campus
Technology-Mediated Economic Model

Startup (Courseware Development)  < Time >  New (or Enhanced) Courseware

Cost  Revenue

Goldstein, 2000
Accountability
How Do We Measure Our Success?

Learner View
- Does IT support student needs?
- Is adequate support available?
- Is training adequate?

Financial View
- Cost of IT
- Replacement cycle cost
- Return on investment

Anticipating the Future
- What is the competitive environment?
- How are we performing relative to other institutions and other countries?

Internal Processes
- Is IT being used to improve student services?
- Is IT being used for efficiency and effectiveness?
- Use of e-business

Capacity Enhancement
- Are students prepared for careers?
- Are faculty and staff ready for new technology and pedagogy?
- Does IT use support growth of the economy?

Oblinger, 2000
“Change is 30% logical and 70% emotional. The soft stuff is the hard stuff.

– Price Pritchett
The Top Ten

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