Listening to What We’re Seeing

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Context
• Meaning is shaped by:
  ? People
  ? Culture
  ? Technology
  ? Our understanding of education

Today’s learners
• Digital
• Connected
• Experiential
• Immediate
• Social

Net gen learning preferences
• Peer-to-peer
• Interaction & engagement
• Visual
• Things that matter

Time-constrained learners
• 35% of undergraduates are adult learners
• 87% commute
• 80% work
• 31% of enrollment increases will be in adult learners

Learners

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Types of learning

- Implicit
  - Information is acquired effortlessly or unconsciously (speech patterns; social attitudes)
  - Enables adaptation to new environments by being in them, observing and interacting
- Informal
  - Learning occurs at home, work, among peers
  - Over a lifespan, 90% of time is available for informal learning (79% for school age children)
  - Involves skills and development of an identity (“learning to be”)
  - Legitimate Peripheral Participation
- Formal

Neuroplasticity

- The lifelong ability of the brain to reorganize neural pathways based on new experiences
- Stimuli and activity change brain structures; the brain changes and organizes itself based on the inputs it receives
- Different developmental experiences impact how people think

Children age 6 and under

- 2:01 hours / day playing outside
- 1:58 hours using screen media
- 40 minutes reading or being read to
- 48% of children have used a computer
- 27% 4-6 year olds use a computer daily
- 39% use a computer several times a week
- 30% have played video games

Kaiser Family Foundation, 2003

Culture

- Culture is a system of
  - Shared beliefs
  - Values
  - Customs
  - Behaviors
- Students are often harbingers of social change
  - Relationships and social interaction
  - Self-expression
  - Multiple media
  - Meaning in the network

Multimodal communication

- The Internet is a primary communication tool
  - 81% email friends and relatives
  - 70% use instant messaging to keep in touch
  - 56% prefer the Internet to the telephone
- Communication with images
  - Cell phones
  - Flickr
- Communicating location
  - GPS
  - Finding others in proximity
Do-it-yourself

- People are doing more things for themselves online
  - Online banking
  - Online shopping
  - Learning

Informal learning

- Organic
- Contextualized
- Activity and experience-based
- Self-activated, under learner’s control
- Open-ended engagement

Web as information universe

- 34 million blogs (est.)
- 32 million blog readers
- 400,000 posts per day
- 16,000 posts per hour

Amateurs as authorities

- 5 hours: amount of time an 8th grader plays video games per week
- 77%: By high school, the percentage of students who have played games
- 69% have played games since elementary school
- 100%: By college, nearly all students have experienced games
- 710 million players worldwide
- $10 billion: Gaming industry revenue in 2004

Choice

- MP3 players
  - 22 million American adults have MP3 players
  - 6 million have downloaded podcasts or Internet radio programs
  - Podcasting is expected to reach 12.3 million households by

Timeshifting (e.g., Tivo)

- Choose what you want to watch
- Choose when you watch
- Fast forward or skip

Is it age or IT?

- How do you write most documents? Long-hand or at a keyboard?
- Are you constantly connected? Laptop? PDA? Cell phone?
- How many windows are typically open on your computer?
- Are you a multitasker?
- Do you play video or computer games?
- Do you download music?
- Does your cell phone have a camera?
Technology

Rate of change

Interfaces shaping learning

- World to the desktop: access to
  - Distant experts
  - Collaboration
  - Mentors
  - Communities of practice
- Alice in Wonderland, multi-user virtual environment
  - Participants and avatars and artifacts interact
  - Shared virtual environments
- Ubiquitous computing
  - Wireless devices infuse resources in the real world
  - Smart objects; intelligent contexts

Implications

Connecting with students

- Be engaging; challenge us
- Be responsive: answer voice mails and emails; office hours still matter
- Be seen: we’d like to see you and get to know you outside of class
- Set boundaries: tell us when you’re available
- Be an active participant in class; you are excited about the subject
- Ask students what they think
- Not everything needs to be
Network over content

- Rapid knowledge growth
- The information pace is too rapid for the current model of learning
- Learners will move into different—possibly unrelated—fields over their lives
- Personal knowledge is comprised of a network
- Informal learning is eclipsing formal learning

Social connections

- Social network
- Build your own profile
- Connect with other professionals
- Search for former classmates
- Find potential employees
- Experts’ knowledge is organized around people and concepts

Connecting in virtual worlds

- Students meet and interact with others
- Hands-on learning; apply knowledge and skills in the game
- Rehearsal of skills
- Feedback and help, record-keeping, progress reports
- Role modeling, observation learning
- Interactivity
- Networking
- Interpersonal and social dynamics

Collaboration by design

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- Rehearsal of skills
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- Interactivity
- Networking
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Hallway vs. passageway

- Engaging
Active and collaborative

- SCALE-UP: Student Centered Activities for Large Enrollment Undergraduate Programs
- Class time spent on tangibles and ponderables
- Problem solving, conceptual understanding and attitudes are improved
- Failure rates are reduced dramatically
- "The job is not to teach physics but to teach thinking."

--Beichner & Saul, 2003

Studio approach

All work in progress is public
Thinking is shared
Learn from struggles & success
See choices, constraints, consequences
Social & intellectual practices visible
Enculturation into practice

--Brown, 2005

Participatory

- Goal is to live as long as possible and reproduce
- Ability to survive is linked to the genome; must figure out the genetics involved
- Mating is by "beam ing" between hand-helds

--Klopfer & Squire, 2003

Integrative

- Players briefed about rash of local health problems linked to the environment
- Provided with background information and "budget"
- Need to determine source of pollution by drilling sampling wells and ultimately remediate with pumping wells
- Work in teams representing different interests (EPA, industry, etc.)
Learning-to-be
- National Ecological Observatory Network
- Remote & collaborative environments
- Widely distributed sensors
- Real-time data collection and analysis

Simulations
- Conduct virtual experiments
- Warehouse of parts allows students to create their own experiments
- Lab prep

Experiential

Reconstruction

Formal vs informal
Social

• Students spend more time out of class than in it
• “Capture time” is particularly important for non-residential students
• Learning occurs through conversations, web surfing, social interactions
• Group work
• Spontaneous interactions
• Mingle, share, make connections

Library or information commons

• Space for interaction and exchange
• Food and talk allowed
• Access to integrated resources and support (writing, IT, reference)

Seeing people, meeting people

• Making people visible to each other by using atria, cafés, or windows
• Movable furniture so small groups can form spontaneously
• Wireless access

Harmonize space with learning theory

• Flexibility (quick reconfiguration)
• Comfort (discomfort distracts from learning)
• Sensory stimulation (antiseptic environments don’t focus attention)
• Technology support
• De-centered (no “front” of the room; spaces center on learning, not experts)
• Holistic (the entire campus is a learning environment)

Suggestions
#1: Identify principles

- **Coverage model**: Learning is not just about covering content; it's about developing competency.
- **Knowledge construction**: Reasoning is not linear, deductive or abstract but begins from the concrete and assembles a “mosaic”
- **Interactivity**: This is a connected, interactive generation; collaboration and interaction are important learning principles.
- **Formal & informal**: Learning must occur anywhere, anytime.
- **It's not technology alone**: Technology must support good pedagogy.

#2: Involve students

- **Students as consumers with a choice**.
- **They have a unique perspective on their learning environment**.
- **Input ranges from opinion to action**.
- **Language and perspectives differ; not all students are alike**.
- **“Spend a day in their shoes”**.

#3: Consider the options

- **Visual**: less reading, more visuals.
- **Mixed delivery**: mix online, face-to-face.
- **Engaging**: involvement similar to problem-solving or games.
- **Manageable**: bite-sized chunks of information.
- **Real**: capitalizes on real-world problems; information can be applied to real situations.
- **Social**: interaction with others.

#4: Redefine space

- **Space shaped by learning rather than by instruction**.
- **Socially catalytic space**.
- **A shift from classrooms to learning complexes**.

#5: Align technology with pedagogy

- Don't mistake use for integration.
- Understand what you want students to do.
- Consider the strengths and weaknesses of specific approaches.
- Align media with learning outcomes and pedagogy.

The goal is an organization that is constantly making its future rather than defending its past.

- Hamel & Valiksngas, 2003