NeoMillennial Learning Styles: Implications for Higher Education

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The Evolution of Education

- shifts in the knowledge and skills society values
- development of new methods of teaching and learning
- changes in the characteristics of learners

emerging information technologies are reshaping each of these
“Learning Styles”

- Sensory-based
  - Visual, auditory…

- Personality-based
  - Myers-Briggs…

- Aptitude-based
  - Multiple Intelligences

- Media-based
“Millennial” Learning Styles- I

1) Web rewards comparing multiple sources of information, individually incomplete and collectively inconsistent (mindlessly accumulating or seeking, sieving, synthesizing)

2) Digital media and interfaces encourage multi-tasking (superficial, easily distracted data gathering or a sophisticated form of synthesizing new insights)
“Millennial” Learning Styles -II

Personalization and Customization

3) Customized services based on data-mining for personal characteristics and behaviors

4) “Napsterism”: recombining others’ designs to idiosyncratic configurations

(Me ++, William Mitchell, ‘03)
Evolving toward Distributed Learning

- Sophisticated Methods of Learning and Teaching
  - Guided learning by doing
  - Apprenticeships, mentoring
  - Learning communities
- Orchestrated across classrooms, homes, workplaces, community settings
- On demand, just-in-time
- Collaborative

distributed across space, time, media
“Next Generation” Interfaces for Distributed Learning

- **World to the Desktop:**
  Accessing distant experts and archives for knowledge creation, sharing, and mastery

- **Multi-User Virtual Environments:**
  Immersion in virtual contexts with digital artifacts and avatar-based identities

- **Ubiquitous Computing:**
  Wearable wireless devices coupled to smart objects for “augmented reality”
What is a MUVE?

- A representational container that enables multiple simultaneous participants to access virtual spaces configured for learning.
- A place where learners represent themselves through graphical avatars (persona) to communicate with others’ avatars and computer-based agents, as well as to interact with digital artifacts and virtual contexts.
- A learning experience that provides diverse activities in support of classroom curriculum.
Findings from Gaming Research

Massively multi-player online games (MMOG) and complementary fan-fiction offer rich learning and identity formation, but peripherally linked to life.

Everquest game has 77th largest economy; over 120,000 fan-fictions online about Harry Potter.
River City—Interface

View and Actions Space

Virtual Space

Display Space

Functions Space

Communication Space

Toolbar Space

MUVEES
Welcome to MUVEES
(Multi-User Virtual Environment Simulator)

MUVEES is an engaging way to learn advanced science techniques. It includes related multimedia and virtual reality teaching and learning science.

Please select from the following options. If this is your first time visiting MUVEES, we suggest using the tutorial to familiarize yourself with MUVEES before beginning.

* Tutorial on MUVEES - helpful for first time
Findings from Our Research

- enhancing motivation (challenge, curiosity, beauty, fantasy, fun, social recognition)
- reaching learners who don’t do well in conventional classroom settings
- learning both sophisticated content and higher order skills
- building fluency in distributed modes of communication and expression -- rhetoric

http://muve.gse.harvard.edu/rivercityproject/
Powerful Pedagogical Models

✓ guided inquiry learning with active construction of knowledge
✓ apprenticeship/mentoring relationships
✓ collaborative learning: social exploration of multiple perspectives

How People Learn
(National Academy Press, 1999)
http://www.nap.edu/books/0309070368/html
Situated Learning

- constellations of architectural, social, organizational, and material vectors that aid in learning culturally based practices
  - apprenticeship (the process of moving from novice to expert within a given set of practices)
  - legitimate peripheral participation (tacit learning similar to that involved in internships or residencies)
Learning Community

A culture of learning, in which everyone is involved in a collective effort of understanding

✓ Shares and develops a repertoire of resources: experiences, tools, stories, ways of addressing recurring problems
✓ Allows a close connection between learning and doing
✓ Addresses the informal and tacit aspects of knowledge creation and sharing

Within courses (lc-light) and in world (community of practice)
Distributed-Learning Communities

✓ Range of participants’ skills and interests goes beyond geographic boundaries
✓ Asynchronous media enable convenient participation and deeper reflection
✓ Emotional and social dimensions intensified by synchronous virtual interchanges
✓ Broader range of participants engage in dialogue

Mediated, Situated Immersion
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Ubiquitous Computing

- One-to-one student to tool ratio
- Wireless Mobile Devices (WMD) offer approximately 60% of the computing power of laptops of a few years ago (a WMD is approximately 10% of the cost of a modern laptop)
- Wireless mobile computing – instant on, anytime, everywhere, and in the hand of the user

“Smart objects” and “intelligent contexts” enable “augmented realities”
Augmented Reality

- Each team has a GPS (Global Positioning System) device
- The GPS knows your real location
- The team walks around and investigates
- The immersive simulation combines physical world and virtual world contexts.
Mystery@MIT

– Players briefed about rash of local health problems linked to the environment

– Provided with background information and video briefings

– Need to determine source of pollution by drilling sampling wells, interviewing virtual people, accessing virtual databases, analyzing water samples, and rapidly reaching a conclusion
‘Map’ Screen

-- Where you are
  (orange triangle)
– Game “People”
  (pink squares)
– River Stations
  (blue icons)
– Indoor Places to check
  (yellow icons)
Virtual Characters

- Walk over to a pink square. These are Virtual Characters.
- A picture of the Virtual Character will pop up on the screen.
- Click ‘Interview’ or ‘Cancel’ The interview will be saved.
Three Roles

• Each player on a team has one of three roles:
  – Environmental Scientist
  – Engineer
  – Reporter

• Each role has UNIQUE skills so work as a team!

• Virtual Characters may also tell different things to each role, so pay attention!
Drilling Wells

- Choose
  - Sites to Sample
  - Sampling Methods
    - Influence budget, accuracy, and timeliness of samples
Conducting “Desktop” Research

• Triggering of media events at specified locations
  – library → web documents
  – machine shop → video interviews with personnel
A Different Model of Pedagogy

- Experiences central, rather than information as pre-digested experience (for assimilation or synthesis)
- Knowledge is situated in a context and distributed across a community (rather than located within an individual: with vs. from)
- Reputation, experiences, and accomplishments as measures of quality (rather than tests, papers)
“Neomillennial” Learning Styles

1) Fluency in multiple media, valuing each for the types of communication, activities, and expressions it empowers

This goes beyond “millennial” learning styles, which center on working within a single medium best suited to one’s style and preferences
My Distributed Learning Course

http://my.gse.harvard.edu/icb/icb.do?course=gse-t502

- face-to-face interaction
- videoconferencing
- wireless, handheld devices
- small group collaboration via groupware
- synchronous interaction in virtual environment
- asynchronous, threaded discussion
- informal website-based learning experiences
- shells for course authoring

New Forms of Rhetoric
“Neomillennial” Learning Styles

2) Learning based on collectively seeking, sieving, and synthesizing experience, rather than individually locating and absorbing information from some single best source.

This goes beyond “millennial” learning styles in preferring reflective, communal learning via diverse, tacit, situated experiences over solo integration of divergent, explicit information sources.
“Neomillennial” Learning Styles

3) Co-design of learning experiences personalized to individual needs and preferences

This goes beyond “millennial” learning styles, which emphasize selecting a pre-customized variant from a range of services offered
Implications for Strategic Planning: Infrastructure

- **Wireless Everywhere**: Total coverage of campus, subsidize uniform mobile wireless devices offering convergence of media (phone, PDA, gaming, Internet)
- **Multi-purpose Habitats**: Develop layered/blended/personalizable places rather than specialized locations
- **Augmented Reality**: Create smart objects and intelligent contexts (RFID tags and transceivers)
- **“Mirroring”**: Design virtual environments that replicate physical settings
Implications for Professional Development

- **Co-Design:**
  Developing learning experiences students can personalize

- **Co-Instruction:**
  Utilizing knowledge sharing among students as a major source of content and pedagogy

- **Guided Social Constructivism and Situated Learning:**
  Infusing case-based participatory simulations into presentational/assimilative instruction

- **Assessment Beyond Tests and Papers:**
  Using peer-developed and peer-rated forms of assessment
Beyond McLuhan

- Media shape their messages
- Media shape their participants
- Infrastructures shape civilization