Learning Technologies: Past, Present and Future

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Ways to Participate

1. E-mail your questions and comments to gary@brandon-hall.com

2. TWEET! – send Twitter messages to your followers, and to me at @gwoodill - use #BrandonHall in your tweets so we can find them

3. Text Chat during the webinar – we will monitor and respond
Agenda

- A review of past learning technologies
- A theory about technology innovation lifecycles
- Differences between Version 1.0 and Version 2.0
- Q &A
Learning without Technologies

Wetware
What is a Technology?

Early Technology

[Image of early technology artifacts]

[Image of book cover: "Things that Make Us Smart: Defending Human Attributes in the Age of the Machine" by Donald A. Norman]
Cave Drawings
Oral Language

Story Telling

Understanding Cultural Narratives
Exploring Identity and the Multicultural Experience
LINDA WATKINS-GOFFMAN
Written Language

Alphabetization
“The Lecture”
Print Technology

Printing Press
Classroom Technologies

Early Classroom
Disciplinary Technologies

Monitorial Education
Disciplinary Technologies

Bio-Power – Immobilization of Bodies

Industrialization = Standardization and Control

Post-Industrial = Creativity and Innovation
Object Teaching

Teaching Aids
Electric/Electronic Technologies
Multimedia Technologies (1996)


Theory of Innovation

- Mastering the Dynamics of Innovation by James M. Utterback
- Dealing with Darwin by Geoffrey A. Moore
- The Innovator’s Dilemma by Clayton M. Christensen
- Disrupting Class by Michael B. Horn & Curtis W. Johnson
Technology Innovation Cycle

Problems → New ideas and tinkering →
Technology Innovation Cycle

Problems → New ideas and tinkering → New Technology → (Version 1.0 – old applications)
Technology Innovation Cycle

Problems → New ideas and tinkering →

New Technology → (Version 1.0 - old applications)

← Resistance and Hype →
Western Union (1876) – “This telephone has too many shortcomings to be seriously considered as a means of communication.”
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Thomas Watson, Chairman, IBM (1943) – “I think there is a world market for maybe five computers.”
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Thomas Watson, Chairman, IBM (1943) – “I think there is a world market for maybe five computers.”

AT&T (1970) – “No commercial use for computer networking” – gave computer networking back to US Defense Department after a 6 month trial
Technology Innovation Cycle

Problems → New ideas and tinkering →

New Technology → (Version 1.0 - old applications)

← Resistance and Hype →

New Technology → (Version 2.0)
Technology Innovation Cycle

Problems ➔ New ideas and tinkering ➔

New Technology ➔ (Version 1.0 - old applications)

Resistance and Hype ➔

New Technology ➔ (Version 2.0)

New Applications (“Content”) ➔
Technology Innovation Cycle

Problems $\rightarrow$ New ideas and tinkering $\rightarrow$

New Technology $\rightarrow$ (Version 1.0 – old applications)

$\leftarrow$ Resistance and Hype $\rightarrow$

New Technology $\rightarrow$ (Version 2.0)

New Applications (“Content”) $\rightarrow$

New Services $\rightarrow$
Technology Innovation Cycle

Problems → New ideas and tinkering → 

New Technology → (Version 1.0 – old applications)

←Resistance and Hype →

New Technology → (Version 2.0)

New Applications ("Content") →

New Services →

New Integrative Solutions →
Technology Innovation Cycle

Problems → New ideas and tinkering →

New Technology → (Version 1.0 – old applications)

← Resistance and Hype →

New Technology → (Version 2.0)

New Applications (“Content”) →

New Services →

New Integrative Solutions →

New Problems →
Technology Innovation Cycle

Problems $\rightarrow$ New ideas and tinkering $\rightarrow$

New Technology $\rightarrow$ (Version 1.0 – old applications)

$\leftarrow$ Resistance and Hype $\rightarrow$

New Technology $\rightarrow$ (Version 2.0)

New Applications ("Content") $\rightarrow$

New Services $\rightarrow$

New Integrative Solutions $\rightarrow$

New Problems $\rightarrow$ Cycle starts with new players
Theory of Innovation

Products → Applications → Services

Applications Innovation Curve (Content/Processes)

Technology Innovations Curve

Services Innovations Curve

E-Learning is here

“Solutions”
Theory of Innovation

Products ➔

Technology Innovations Curve
Theory of Innovation

Products ➔ Applications

Applications Innovation Curve
(Content/Processes)

Technology Innovations Curve
Theory of Innovation

Products → Applications → Services

Applications Innovation Curve
(Content/Processes)

Technology Innovations Curve

Services Innovations Curve
Theory of Innovation

Products ➔ Applications ➔ Services

Applications Innovation Curve
(Content/Processes)

Technology Innovations Curve

Services Innovations Curve

← “Solutions” ➔
Theory of Innovation

Products → Applications → Services

Applications Innovation Curve
(Content/Processes)

Technology Innovations Curve

Services Innovations Curve

E-Learning is here

← “Solutions” →
“We look at the present through a rear-view mirror. We march backwards into the future.”

Marshall McLuhan
Steamship 1.0
Electric Light 1.0

This Room Is Equipped With Edison Electric Light.

Do not attempt to light with match. Simply turn key on wall by the door.

The use of Electricity for lighting is in no way harmful to health, nor does it affect the soundness of sleep.
Automobiles 1.0
“Trafficators”
Supportive Technologies

Some learning technologies are SUPPORTIVE of the current way of doing things:

*Examples:*

- Virtual Classrooms
- Presentation Software
- Authoring Tools
- Assessment Tools
- Learning Management Systems
Disruptive Technologies

Other learning technologies are DISRUPTIVE of the current way of doing things:

Examples:

Global Networking
Artificial Intelligence
Peer to Peer Technologies
Collaboration Software
Learner generated content
Wearable computing
Theory of Innovation

- Sustaining Technology
- Incremental Changes
- Dominant Design
- Proliferation of Product Offerings

Product Performance

Innovation

Time
Figure 2-2. Dominant Design and Numbers of Competing Firms

- Y-axis: Number of Competitors
- X-axis: Time

The graph shows the number of competitors over time, peaking around the 10th time unit and then declining.
Theory of Innovation

Product Innovation Curve

- Peaking technologies
- Ascending technologies
- Maturing technologies
- Developing technologies
- Declining technologies
Theory of Innovation


Affective Computing
Avatars
Classroom Response Systems
Data Mining
Decision Support Software
Gesture and Facial Recognition
Haptics
Mashups and Web Services
Personal Learning Environments
Smart Labels and Tags
Telepresence
Wearable Computing

Developing technologies
Theory of Innovation

Product Adoption Curve (2006)

Ascending technologies
Social Networking Tools
Web Feeds
Simulation Tools
Social Bookmarking
Personalization
Semantic Web
Mobile Technologies
Wiki Tools
Location Tools
Gaming
Blogs
Agents
Robotics
Theory of Innovation


Peaking technologies

- Collaboration Tools
- Search Engines
- Intelligent Tutoring
- Visualization
Theory of Innovation


Maturing technologies
- Animation Software
- Assessment Tools
- Audio and Podcasting Tools
- Authoring Tools
- Browsers
- Communications Tools
- Competency Tracking Software
- Content Management Systems
- Display Technologies
- E-Portfolio Tools
- Graphics Tools
- Learning Management Systems
- Learning Objects and Repositories
- Metadata, Ontologies, Taxonomies
- Natural Language Processing
- Peer-to-Peer Technologies
- Portals
- Presentation Tools
- Rapid E-Learning Tools
- Video and IPTV
- Virtual Reality
- VoIP and Telephony
Theory of Innovation

Product Innovation Curve (2006):

- Computer Assisted Instruction
- Computer Based Training (CBT)
- CD-ROM
- DVD-ROM
- Floppy Disks

Declining technologies
The Big Picture

Training Technologies (1996)

- Peaking technologies: Text Only Internet
- Ascending technologies: Compact Discs, Web 1.0
- Maturing technologies: CBT
- Developing technologies: Overheads
- Declining technologies: None
The Big Picture


Peaking technologies
- Web 1.0

Ascending technologies
- Web 2.0/Clouds
- Robotics/Agents

Maturing technologies
- Compact Discs
- Text Only Internet

Developing technologies
- Declining technologies
The Big Picture

Training Technologies (2009)

Peaking technologies
- Web 2.0

Ascending technologies
- Robotics/Agents
- Collective Learning

Maturing technologies
- Web 1.0

Developing technologies
- Compact Discs

Declining technologies
The Big Picture

Training Technologies (2014)

- Collecting Learning
- Robotics/Agents
- Web 2.0/Clouds
- Bio-learning
- Web 1.0

Peaking technologies

Ascending technologies

Maturing technologies

Developing technologies

Declining technologies
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Big differences between Version 1.0 technologies (Supportive) and Version 2.0 technologies (Disruptive).
Summary

- There has been an “explosion” of learning technologies since the mid-1990s
- Theory of innovation lifecycles suggests that change is discontinuous
- Big differences between Version 1.0 technologies (Supportive) and Version 2.0 technologies (Disruptive)
- Market is starting to consolidate
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Web 2.0 tools (especially Social Media) are now prominent.
There has been an “explosion” of learning technologies since the mid-1990s. Theory of innovation lifecycles suggests that change is discontinuous. Big differences between Version 1.0 technologies (Supportive) and Version 2.0 technologies (Disruptive) are prominent. Market is starting to consolidate. Web 2.0 tools (especially Social Media) are now prominent.
There has been an “explosion” of learning technologies since the mid-1990s. Theory of innovation lifecycles suggests that change is discontinuous. Big differences between Version 1.0 technologies (Supportive) and Version 2.0 technologies (Disruptive). Market is starting to consolidate. Web 2.0 tools (especially Social Media) are now prominent. Need to experiment with the new tools – “low cost failure.”
Adding Sensors to the Collectivity

by GARY WOODILL on JUNE 16, 2009

If we take James Lovelock’s “Gaia Hypothesis” seriously (and I do), that the planet earth is an evolving living organism, then we may be witnessing the evolution of its “senses” as billions of mobile phones become sensors linked together. As an article in the Technology Quarterly supplement of last week’s *Forbes* (June 8th-June 12th) discusses, the world’s 4 billion mobile phones and their software have added new and interesting capabilities that can add to the “collective intelligence” of the human race (and according to Lovelock, to the planet).
Brandon Hall Research Reports

- Online Learning Games for Employee Training
- Online Learning Games for Employee Training
- Building and Fostering Virtual Learning Communities
- Planning and Evaluating Business Needs for an Enterprise Learning Management System
- Mobile Learning
- Mobile Learning Comes of Age
Thank you!
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