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Slide 1

Moving on from e-Learning: Searching for disruptive pedagogies

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John G Hedberg

Slide 2

A premise…

- Online learning requires:
  - A rethinking of learning activities
  - Exploration of how interactions are managed and facilitated
  - Choice of the right tool for the pedagogical task
- and for widespread implementation
  - Disruptive innovations and pedagogies!

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Slide 3

On academic shovelware…

- The extent to which a student gains the same pedagogical benefit from a printout of your Web resources as from the resources themselves is the extent to which you have done nothing of pedagogical value by using the Web.   (Fraser, 1999)

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Limited models of learning

Gain learner's attention before attempting to teach.

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Slide 5

What is happening now?

- ATN Universities survey of 20,000 students and 800 staff
  - provide a *description* of the use of e-learning;
  - determine the *impact* of the use of e-learning;
  - provide information to assist in the further *development* of programs to support the use of e-learning.

Alexander, Hart et al (2004)

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How teachers use e-learning

	Purpose	No.	%		Low %	High %
All ATN	Supplement face-to-face	724	68.2	ATN Range	39.0	77.1
	Partial alternative to face-to-face	100	9.4		2.4	11.1
	Support block/intensive mode	64	6.0		3.7	12.2
	Online unit supplemented with print/electronic materials	41	3.9		1.4	9.0
	Support print-based distance teaching and learning	66	6.2		2.3	31.7
	Teach fully online unit	67	6.3		2.2	12.2
	Total	1130	100.0		-	-

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How teachers use e-learning

Types of use:

1. **Information only**
   (**52.5**% average, 25.6% low, 71.6% high)
2. **Information and unmoderated discussions**
   (**15.5**% average, 9% low, 24.3% high)
3. **Information and moderated discussions**
   (**31.9**% average, 15.4% low, 53.0% high)

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How teachers use e-learning

ATN
N=1094

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What is the student experience?

- Access
  - Access content
  - Easy to access material
- Personal benefits
  - Saves students money
  - Complete tasks at convenient times
  - Juggle studies
- Disadvantages
  - Time commitment
  - Inadequate computer skills

- Learning connections
  - Discuss ideas
  - Stay connected to other students
  - Gauge progress on discussion board
  - See other students' questions
  - Ask an uncomfortable question
  - Stay connected to teaching staff

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Disruptive innovations

- A new technological innovation that displaces an existing dominant technology (Clayton Christensen, 2003)

High quality use

Disruptive...

Low quality use

Performance

Time

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Disruptive innovations

- The decline of Aristotelian dialogue with the rise of textbooks.
- Ramus and his "method" in the 1500s

Walter J. Ong (2005). *Ramus, Method, and the Decay of Dialogue : From the Art of Discourse to the Art of Reason*. University of Chicago Press.

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Textbooks and representation of id...

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Dialogic literacy

- In every kind of knowledge-based, progressive organization, new knowledge and new directions are forged through dialogue….The dialogue in Knowledge Age organizations is not principally concerned with narrative, exposition, argument, and persuasion (the stand-bys of traditional rhetoric) but with solving problems and developing new ideas. (Bereiter & Scardamalia, 2005)

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Sustaining innovations

- The obverse of disruptive innovations

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No 18

Sustaining innovations

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No 19

Using what the technology affords!

- Technology has enabled visual and aural information display within software
- Prevailing educational theory is based more on situativity and cognition, and is problem-focused
- Technology supports constructivist philosophical orientation
- Increased recognition of social collaboration as part of learning
- Computer-Mediated Communication allows collaboration breaking the nexus of time and location
- Increasing modularisation of individual elements that are retrieved from databases and employed in varied contexts

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No 20

Anatomy of e-Learning

Outcome	Interactive Activity	Digital Asset	Support	Assessment
Create Evaluate Synthesize Analyze Apply Understand Recall	Diagram/Map Journal Tutorial Case study Presentation Game WebQuest Experiment Role playing Troubleshooting Diagnosis Composing	Drawing Photograph Diagram/ Map Text Simulation Animation Video Clip Audio Clip Musical score	FAQ Contextual help Links to checklists Self checking Collaboration with others Links to further resources	Self-test/Quiz Essay/Report Journal Prognosis Hypothesis Classification Plan Visual representation Game Simulation Presentation

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Searching for disruptive pedagogical innovations …

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Example practices & tools

- Games as a learning strategy
- Learning objects
- Digital Repositories
- Creative uses of the technologies (building on multiple modalities and multi-literacies!)
- Social networks and the internet
- Communities of learners and communities of practice
- Open source software and new tools — blogs and wikis

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Quest Atlantis —3D MUVE

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Learning Objects?

- "Any digital resource that can be reused to support learning." (Wiley, 2002)

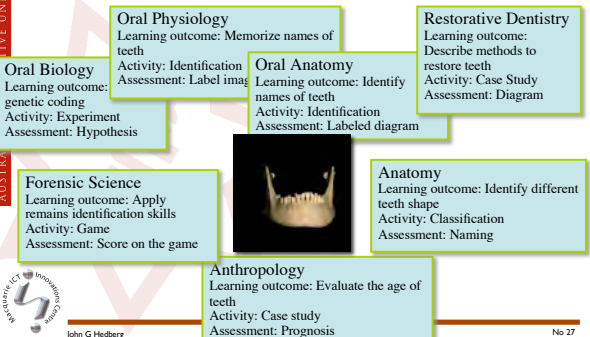- But essentially digital resources (assets) and learning activities

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Digital asset reusability

Oral Physiology
Learning outcome: Memorize names of teeth
Activity: Identification
Assessment: Label image

Restorative Dentistry
Learning outcome: Describe methods to restore teeth
Activity: Case Study
Assessment: Diagram

Oral Biology
Learning outcome: genetic coding
Activity: Experiment
Assessment: Hypothesis

Oral Anatomy
Learning outcome: Identify names of teeth
Activity: Identification
Assessment: Labeled diagram

Forensic Science
Learning outcome: Apply remains identification skills
Activity: Game
Assessment: Score on the game

Anatomy
Learning outcome: Identify different teeth shape
Activity: Classification
Assessment: Naming

Anthropology
Learning outcome: Evaluate the age of teeth
Activity: Case study
Assessment: Prognosis

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Reuse attributes

- ✓ isolating digital assets from activities?
- ✓ level of granularity?
- ✓ particular teacher dependency?
- ✓ design reusability?
- ✓ identifying key attributes?
- ✓ generic templates or shells?
- ✓ transferability to other domains?

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Content object options

- Information display
  - Matrix display eg choosing columns to match
  - Swapping representation mode eg data to graph
  - Hierarchy eg organisational chart
  - Process eg flowchart
- Conceptual models
  - Presenting models of real world phenomena
  - Manipulating parameters to "see" relationships
- Contextual representation
  - Data linked to context
  - Collect evidence from context

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Object for multi-modal representation

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LAMS — reusable pedagogical objects

http://lamscommunity.org/

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Moving learning management systems toward digital repositories …

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LMSs vs Digital repositories

Learning Management Systems (LMS)
- allow instructor to organize resources in a predetermined structure which prescribes a fixed learning strategy.

VS

Digital Libraries
- allow users to take control of their choice of resources, choosing ways of representing and using the resources, creating new resources and even developing their own learning strategies.

G-portal

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Slide 5

G-portal project

- digital repository that affords multimodal representations
- hosting digital assets, that students can use it to solve an authentic problem based on real world resources.
- allows students to explore the information, process the information, solve the problem posed and perhaps even form new attitudes and reflections of their role in the natural environment

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The G-portal

- G-portal provides more than just a spatial context for accessing Geographic information

No 37

The-G-portal

- G-portal provides for conversion of information between representational forms

Profile 6(v)

No 38

PBL with Digital Libraries

http://www.dlese.org/dds/index.jsp

No 40

Social networks

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Blogs & social assessment

- Blogs can allow individual students to present their ideas and manage the process
- Students can critique each others work
- Students can review work within the same class but also across different years — vertical assessment

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Exploring other tools for collaborative learning

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Activity types

Rule focus	Logical Problems Algorithmic problems Story Problems Rule-using problems	Practice strategies
Incident focus	Scenarios Decision making Case study tasks	Linking ideas
Strategy focus	Troubleshooting Diagnosis solution problems Strategic performance tasks Design tasks	Generating new strategies
Role focus	Dilemmas Social dilemmas	Multiple perspectives

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Engagement Continuum

- To be engaged is to be enticed into interacting
- The more attentive the learner is to the task, the more complete the engagement
- Our goal is to "crank up" the engagement continuum

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Comparing continuums

The Engagement Continuum	Engaged Learning Continuum
↓ Passive Interest	↓ Transfer
↓ Dynamic Interaction	↓ Translate
↓ Flow	↓ Transcend

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Engaged learning continuum

- Transfer
  - Transfer conventional instructional tools, strategies, communication and delivery to a technology-enhanced learning environment
- Translate
  - Redefine and shift conventional instructional tools, strategies, communication, and delivery to the technology-enhanced learning environment
- Transcend
  - Go beyond conventional instructional tools, strategies, communication, and delivery to invent new paradigms for teaching and learning

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Searching for the disruptive!

	Teacher use	Student Use
Presentational	Using PowerPoint in a lecture	Using PowerPoint to report back
Generative	Using an outliner to generate a text structure	Building a game using web pages
Representational (transduction)	Using Excel to convert numbers & to show relationships	Write a script then use iMovie to create a narrative documentary

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e-learning possibilities

Engagement	Passive Interest	Dynamic Interaction	Flow state
e-Learning	Transfer	Translate	Transcend
Applications	• Online lecture notes • PPT presentations • e-Reserves	• Web resources • Interactive simulations/applets • Media databases • Multimedia presentations • Interactive e-texts • webQuests • Blogs	• Dynamic knowledge collection • Immersive Problem-based gaming • Remote instrumentation • Interactive presentations • WIKIs
Learning outcomes	• Computer literacy • Comprehension • Convenience and accessibility • Time management • Community building	• Visual literacy • Collaboration/cooperation • Critical thinking • Alternative learning strategies • Information analysis	• Problem-solving • Reflection • Contextual learning • Community building

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Next steps for disruptive pedagogies

- Recognize students' time poverty
  - Use the affordances of blended learning and appropriate technologies to help them cope with this
- Increase integration of activities and learning strategies that support integration
- Use portfolios to indicate learning journey and illustrate a trajectory
- Facilitate student benchmarking of work (against other students) and support networks and relationships
- Rethinking learning activities such that technology is integral to understanding not an "add-on"
- Changing assessment to focus on using concepts in problem solving (rather than recall of information)

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No 60

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No 61