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<th><strong>Title</strong></th>
<th>Moving on from e-Learning: Searching for disruptive pedagogies</th>
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<tr>
<td><strong>Author(s)</strong></td>
<td>Hedberg, J</td>
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Moving on from e-Learning: Searching for disruptive pedagogies

John G Hedberg
Macquarie University, Sydney

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!

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)

Limited models of learning

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.

How teachers use e-learning

<table>
<thead>
<tr>
<th>Purpose</th>
<th>No.</th>
<th>Low %</th>
<th>High %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplement face-to-face</td>
<td>724</td>
<td>39.0</td>
<td>77.1</td>
</tr>
<tr>
<td>Partial alternative to face-to-face</td>
<td>100</td>
<td>2.4</td>
<td>11.1</td>
</tr>
<tr>
<td>Support block/intensive mode</td>
<td>64</td>
<td>3.7</td>
<td>12.2</td>
</tr>
<tr>
<td>Online unit supplemented with print/electronic materials</td>
<td>41</td>
<td>1.4</td>
<td>9.0</td>
</tr>
<tr>
<td>Support print-based distance teaching and learning</td>
<td>66</td>
<td>2.3</td>
<td>31.7</td>
</tr>
<tr>
<td>Teach fully online unit</td>
<td>67</td>
<td>2.2</td>
<td>12.2</td>
</tr>
<tr>
<td>Total</td>
<td>1130</td>
<td>100.0</td>
<td>-</td>
</tr>
</tbody>
</table>

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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)

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

Disruptive innovations

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

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)

Sustaining innovations

• The obverse of disruptive innovations

Sustaining innovations

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

Anatomy of e-Learning

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

Searching for disruptive pedagogical innovations …
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

Learning Objects?

- “Any digital resource that can be reused to support learning.” (Wiley, 2002)
- But essentially digital resources (assets) and learning activities

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?

Quest Atlantis — 3D MUVE

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

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

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

Oral Physiology
Learning outcome: Membrane names of teeth
Activity: Identification
Assessment: Labelled diagram

Restorative Dentistry
Learning outcome: Describe methods to reverse tooth decay
Activity: Case study
Assessment: Diagram

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

Anthropology
Learning outcome: Identify different teeth shapes
Activity: Classification
Assessment: Naming

Oral Anatomy
Learning outcome: Evaluate the age of teeth
Activity: Case study
Assessment: Progress

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

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
Object for multi-modal representation

LAMS — reusable pedagogical objects

Moving learning management systems toward digital repositories ...

LMSs vs Digital repositories

G-portal project

The G-portal
The-G-portal

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

Social networks

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

Activity types

<table>
<thead>
<tr>
<th>Rule focus</th>
<th>Logical Problems</th>
<th>Practice strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Story focus</td>
<td>Story problems</td>
<td>Linking ideas</td>
</tr>
<tr>
<td>Incident focus</td>
<td>Incident problems</td>
<td></td>
</tr>
<tr>
<td>Strategy focus</td>
<td>Diagnosis solution problems</td>
<td>Generating new strategies</td>
</tr>
<tr>
<td>Role focus</td>
<td>Dilemmas</td>
<td>Multiple perspectives</td>
</tr>
<tr>
<td></td>
<td>Social dilemmas</td>
<td></td>
</tr>
</tbody>
</table>
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

Engaged learning continuum

- 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

Comparing continuums

<table>
<thead>
<tr>
<th>The Engagement Continuum</th>
<th>Engaged Learning Continuum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive Interest</td>
<td>Transfer</td>
</tr>
<tr>
<td>Dynamic Interaction</td>
<td>Translate</td>
</tr>
<tr>
<td>Flow</td>
<td>Transcend</td>
</tr>
</tbody>
</table>

Searching for the disruptive!

<table>
<thead>
<tr>
<th>Teacher use</th>
<th>Student Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentational</td>
<td>Using PowerPoint in a lecture</td>
</tr>
<tr>
<td>Using PowerPoint to report back</td>
<td>Building a game using web page</td>
</tr>
<tr>
<td>Generative</td>
<td>Using an outliner to generate a text structure</td>
</tr>
<tr>
<td>Representational (transduction)</td>
<td>Using Excel to convert numbers &amp; to show relationships</td>
</tr>
<tr>
<td>Representational</td>
<td>Using PowerPoint to report back</td>
</tr>
<tr>
<td>Representational (transduction)</td>
<td>Using Excel to convert numbers &amp; to show relationships</td>
</tr>
</tbody>
</table>

E-learning possibilities

<table>
<thead>
<tr>
<th>Engagement</th>
<th>Dynamic Interaction</th>
<th>Flow state</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-Learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning outcomes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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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References