Grounded Pedagogical Models
for
E-Learning

Nada Dabbagh, PhD
George Mason University
June 7, 2005

Innovations in E-Learning Symposium
Presentation Outline

- What is grounded design?
- What is distributed learning?
- Why is distributed learning an appropriate theoretical and pedagogical construct for e-learning?
- What are the implications of grounded design for e-learning based on the principles of distributed learning?
- What is the role of learning technologies in the design of e-learning?
Grounded Design or Practice

Think about design in a hierarchical fashion starting with the **roots** of any learning environment or learning system which include:

- psychological, pedagogical, technological, cultural and pragmatic foundations (*Hannafin & Land, 1997*).

Begin by examining epistemological beliefs, cognition, theory, and research

- Broad to specific through successive implementations that link theory to practice to ensure that design methods are linked consistently with given foundations and assumptions.
Epistemology, Theory, Model, Strategy, Tactic or Learning Activity

- Epistemological beliefs – theory of knowledge or cognition (objectivism vs. constructivism)
- Learning theories that attempt to explain epistemological beliefs (information processing vs. activity theory)
- Pedagogical models attempt to bridge theory and practice by providing a concrete description of the theory
- Models break into prescriptions or instructional strategies and eventually into tactics or learning activities
Example

- Epistemological beliefs align with objectivism or behaviorism
  - Cognitive Information Processing (learning theory)
    - Model for Learning and Memory
      - Instructional Strategy (Gagne’s events of instruction)
# Gagne’s Instructional Events

<table>
<thead>
<tr>
<th>Learning Processes</th>
<th>Instructional Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. attention alertness</td>
<td>1. gaining attention</td>
</tr>
<tr>
<td>2. expectancy</td>
<td>2. informing learner of objectives</td>
</tr>
<tr>
<td>3. retrieval to WM</td>
<td>3. stimulating recall</td>
</tr>
<tr>
<td>4. selective perception</td>
<td>4. presenting the stimulus</td>
</tr>
<tr>
<td>5. encoding (LTM)</td>
<td>5. providing learning guidance</td>
</tr>
<tr>
<td>6. responding</td>
<td>6. eliciting performance</td>
</tr>
<tr>
<td>7. reinforcement</td>
<td>7. providing feedback</td>
</tr>
<tr>
<td>8. cueing retrieval</td>
<td>8. assessing performance</td>
</tr>
</tbody>
</table>

Dabbagh © 2005
For other examples see ...

The Instructional Design Knowledge Base (IDKB)

- Theories and Models
  - Instructional Strategies
Distributed Learning - Assumptions

- Reason is the source of knowledge - *rationalism*
- Knowledge is always under construction taking on new meanings relative to the activity in which it is being explored - *knowledge is situated*
- Knowledge is socially mediated or constructed
  - social framework or culture surrounding a learning context
  - Learning is a social process
- Knowledge does not belong to an individual, rather,
  - knowledge is an open network that is distributed in social, cultural, historical, and institutional contexts (Duffy & Cunningham, 1996)
Distributed Learning - Foundations

Rooted in social constructivism
- Attributed to Vygotsky
- Social context and culture

Knowledge is perceived as:
- belonging to and distributed in communities of practice (CoP) or environments of participation

Distributed cognition, situated cognition, cultural knowledge, social knowledge, social cognition
Distributed Learning - The Model

- So, if knowledge or cognition is *distributed* then learning is *distributed*
- Distributed Learning Model (*good fit for e-learning*)
  - Globalization and learning as a social process are inherent and enabled through telecommunications technology
  - The concept of a learning group is fundamental to achieving and sustaining learning
  - The concept of distance is blurred or unimportant
  - Teaching and learning events are distributed across time and place, occurring synchronously and asynchronously through various media
  - Learners are engaged in multiple forms of interaction: learner-learner, learner-group, learner-content, and learner-instructor (Dabbagh & Bannan-Ritland, 2005).
Distributed Learning Models

Other models or pedagogical constructs that can be used interchangeably with distributed learning include:

- Open/flexible learning
- Knowledge networks
- Asynchronous learning networks (ALN)
- Blended learning
- Learning communities
Other Applicable Pedagogical Models

- Anchored Instruction
- Communities of Practice
- Cognitive Apprenticeships
- Cognitive Flexibility Hypertexts
- Microworlds/Simulations
- Problem Based Learning
- Case-Based Learning
- Goal-Based Scenarios
Beliefs

Knowledge is situated, distributed, socially constructed

Learning Theories

Social constructivism, situated cognition

Pedagogical Models

Distributed learning, ALN, Flexible learning, KN, LC

Instructional Strategies

Learning Activities
Characteristics of Pedagogical Models that are Grounded in Situated Cognition

- Learning activities should be authentic and should center around the “problematic” or “puzzlement” as perceived by the learner.
- Focus is on the process not the product.
- Role of teacher is a mentor not a “teller”.
- Encourage reflective thinking, higher-order learning or critical thinking skills:
  - exploration, articulation, problem solving, collaboration
- Encourage testing viability of ideas and seeking alternative views.
- Promote self-directed learning.
Instructional Strategies

- **Exploratory-type strategies:**
  - Problem solving
  - Hypotheses generation
  - Exploration
  - Role playing

- **Dialogical-type strategies:**
  - Articulation
  - Reflection
  - Collaboration
  - Multiple perspectives

- **Supportive-type strategies:**
  - Scaffolding
  - Modeling & explaining
  - Coaching
Beliefs

Knowledge is situated, distributed, socially constructed

Learning Theories

Social constructivism, situated cognition

Pedagogical Models

Distributed learning, + other models

Instructional Strategies

Exploratory, Dialogical, Supportive

Learning Activities

Grounded Design Framework

Knowledge is situated, distributed, socially constructed
Three Component E-Learning Model

**Instructional Strategies**
- collaboration
- social negotiation
- exploration
- articulation
- reflection
- role-playing
- problem solving

**Learning Technologies**
- Asynchronous/synchronous communication tools
- hypermedia, multimedia
- Web development tools
- Groupware
- Video conferencing
- CMS/LMS

**Pedagogical Models**
- cognitive apprenticeships
- problem-based learning
- anchored instruction
- communities of practice
- knowledge building communities
- asynchronous learning networks
E-Learning:

- Open and distributed learning environment that uses pedagogical tools, enabled by Internet and Web-based technologies, to facilitate learning and knowledge building through meaningful action and interaction (Dabbagh & Bannan-Ritland, 2005).
Examples

- The Greenville Collision (GBS)
  - WebCT 4.1
- Project Skills (SL)
  - WebCT 3.8
- Identity Theft (CFH) (or Watchers on the Web)
  - Book Website
- Learn To Teach–Teach To Learn (CA)
  - WebCT 3.8
- Community of Practice (Kramer) (3.8)
Contact Info

Email: ndabbagh@gmu.edu
Phone: (703) 993-4439
Homepage: http://mason.gmu.edu/~ndabbagh

Book:
• Online Learning: Concepts, Strategies, and Application (Merrill Prentice Hall)