Breaking the E-Learning Time Barrier: Communities of Practice and the Teach-to-Learn Concept

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Cornell Creates a For-Profit Subsidiary to Market Distance-Education Programs

Software Billionaire Plans to Create a Free Online University

Sylvan Learning Systems Moves Into the Higher-Education Market
Four Building Blocks

Knowledge Management
Cognitive Apprenticeship
The Knowledge Room
Work Group Paradigm
Deep learning is learning that promotes the development of 
*conditionalized knowledge* and *metacognition* through 
*communities of inquiry*. 

Knowledge Management (KM)

- Core problem of the Information Age: Too much information—not too little
- Evolved within the corporate world in the late 1990s
- Focus on developing intellectual capital
- Shift from collecting and organizing information in databases to cultivating cultures of information sharing
- Key skill areas: curiosity, discernment, and ability to mine the knowledge assets of peers
Cognitive Apprenticeship

- Thinking is an Art
- Focus on Helping Students to be Knowledge Creators and Integrators
- Practice in the Presence of More Skilled Persons
- The Importance of Learning from Peers (or Communities of Practice)
## Methods of Cognitive Apprenticeship

<table>
<thead>
<tr>
<th>Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling</td>
<td>The teacher (or student) puts his or her mind on display, walking through the internal steps and strategies in problem solving, critical analysis, or creative development of alternatives.</td>
</tr>
<tr>
<td>Coaching</td>
<td>The teacher observes students in the performance of a task or skill (usually in the context of problem solving) and asks questions or offers feedback on their performance.</td>
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<tr>
<td>Scaffolding</td>
<td>Students are assisted by the teacher, their peers, or both in completing a task that they are unable to perform alone.</td>
</tr>
<tr>
<td>Articulating</td>
<td>Students practice the skill of converting tacit knowledge to explicit knowledge by describing the internal reasoning involved in problem solving or critical thinking exercises.</td>
</tr>
<tr>
<td>Reflecting</td>
<td>Students debrief and critique their own performance by comparing their approaches to problem solving and critical analysis with those of other students or the teacher.</td>
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<tr>
<td>Exploring</td>
<td>Students are encouraged to tackle new knowledge domains and problems on their own; the teacher stimulates intellectual curiosity and facilitates the discovery process (e.g., guiding students in forming and testing hypotheses).</td>
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</tbody>
</table>
The Knowledge Room Concept

- A “bricks and clicks” hybrid approach that integrates virtual spaces within the context of face-to-face interaction.
- A flexible and decentralized structure that encourages contextualization and trial-and-error experimentation without substantial upfront investment.
- Leverages the value of collaborative Internet technologies (teamware)
Five Knowledge Rooms

www.knowledgeroom.com
www.ibm.com/university

The Research Center

The Conference Center

The Skill Workplace

The Debate Hall

The Portfolio Gallery
### Knowledge Rooms and Cognitive Apprenticeship

<table>
<thead>
<tr>
<th>Cognitive Apprenticeship Method</th>
<th>Research Center</th>
<th>Skill Workplace</th>
<th>Conference Center</th>
<th>Debate Hall</th>
<th>Portfolio Gallery</th>
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<tr>
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<tr>
<td>Reflection</td>
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<tr>
<td>Exploration</td>
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<td>✓</td>
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<td>✓</td>
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</tbody>
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_Slide 11_
A Work Group Paradigm

- Classroom not a loading dock for dispensing information parcels but serves as a boardroom
  - Project-focused curriculum
  - Problem-based learning
  - Heightened performance expectations
  - Embedded evaluation
- The professor serves as a consultant to virtual teams—removing herself from the center of classroom interactions
- webCafé and the experience of the Wharton School (http://webcafe.wharton.upenn.edu)
The Loading Dock Model

- Information is divided up into parcels and arranged neatly on pallets.
- The focus is on loading the cargo in the most efficient way possible (i.e., lectures).
- Preoccupation with the logistics of weight distribution and pallet sequencing—not on how the cargo will be ultimately used.
- The loaded cargo is certified through quizzes and exams and students are presented with an official bill of lading (i.e., grade transcript).
Consequences of the Loading Dock Approach

- Little opportunity to develop problem-solving skills beyond trivial “textbook” problems
- Focus on getting the answer right instead of how one arrived at the answer
- Skills and knowledge acquired in one domain are rarely applied to other knowledge domains—inhaling the development of metacognitive skills
- Students become passive (and often bored) observers of “education” instead of active participants in the learning experience
- Learning is construed as a process of acquiring and certifying knowledge, instead of a process involving discovery and discernment.
Working and long-term memory involve separate pathways in the brain.

Working memory is very limited in capacity (e.g. remembering names).

New ideas come about by manipulating information stored in working memory to create new relationships that are stored in long-term memory (i.e., thinking).

Learning involves the selection of synaptic pathways that are useful to us.
The CMS and the Loading Dock Model: A Pedagogical Straitjacket?

- The problem of lock-in
- The predisposition to understanding learning as following a road map v. discovery-based learning (i.e., behaviorism v. constructivism)
- The bias in favor of superficial assessment techniques (e.g., multiple choice v. solution narratives)
- The inability of current CMS models to facilitate robust student-to-student collaboration on “ill-defined” questions.
Three Generations in the Evolution of Course Management Systems

- First Generation: Focus on Managing Content
- Second Generation: Focus on Transactions Processing
- Third Generation: Focus on Performance Support

Tom Carey (University of Waterloo)
Vicki Suter (National Learning Infrastructure Initiative)
E-Learning Technologies Should Provide Students With An “Out of the Course” Experience

- Learning as an interdisciplinary endeavor that spans several courses (v. segmented knowledge)
- E-Portfolios as a necessary pedagogical tool
- The assessment services of “community educators”
Why should educators adopt a method of teaching that requires considerably higher time expenditures (estimates range from 20% to 250% more time required)?

- Two Key Variables
  - Class Size
  - Support Structures
The Downside of Class Participation

- A Class of 30 Students
  - A 50-minute lecture
  - 2 ½ minute commentary/response by each student
  - 1/3 of the students ask a question
  - The professor has 2 ½ minutes to respond
- The Result? 50 minutes to 2 ½ hours
Computer Simulations: A Fix?

- The New Edition Problem
- The XBox or PlayStation Problem
- Teaching the Flight Characteristics of a 767 v. Higher Order Thinking Skills
Using Simulations To Teach Leadership Skills
Information technology as a tool for interactivity and connection (v. trading documents)

Information technology as a vehicle for profound decentralization (p2p v. client-server)

A Solution?
The Shibuya Epiphany
“Go 2EDSA, Wear blck”
The Pew Internet and American Life Project report, “The Internet Goes to College” (October 15, 2002), notes that “College Internet users are twice as likely to use instant messaging on any given day compared to the average Internet user. On a typical day, 26% of college students use IM.” By contrast, only “12% of other Internet users are using IM on an average day.”
Building Communities of Practice Through a Teach-to-Learn Model

Knowledge Management Continuum

Capture

Connectivity
The Importance of Tacit Knowledge

- Michael Polanyi and the distinction between Tacit v. Explicit Knowledge
- The Learning Community Experiment among Cardiac Surgeons in New England
- Toyota, GM and Suppliers
- British Petroleum’s Virtual Teamwork Program
Communities of Practice as a Key Concept

Preparing students for the 21st century workplace through building knowledge objects and gaining experience in “peer assists”
Defining Communities of Practice

- **Domain:** A domain of knowledge which defines a set of issues
- **Community:** A community of people who care about this domain
- **Practice:** The shared practice that they are developing to be effective in their domain

See *Cultivating Communities of Practice*, p. 27
Implications of Communities of Practice for Higher Education

- Preparing Students to Work in Cross-Disciplinary Environments
- Preparing Students to Competently Assess Their Own Work in the Presence of Others
- Encouraging Students to Develop the Habit of Requesting and Responding to Peer Assists
- Encouraging Students to Build “Knowledge Assets” That Will Be Useful to Others
Empowering Students to be Educators

- Organization
- Articulation
- Reflection
- Re-organization

Although this claim has not been substantiated by research, it has been said that we retain 10% of what we read, 50% of what we see and hear, and 95% of what we teach.
Four Key Propositions of the Teach-To-Learn Model

- Discovery and discernment are critical learning activities.
- Collaborative learning flourishes on problem-based pedagogies that focus on studied ambiguity and degrees of difficulty—not divisions of labor.
- Every presentation/lecture should have at least one informed respondent.
- The ability to distinguish among levels of competency (through rubric-based assessment) is a principal learning outcome.
What the Groove Workspace has delivered . . . defines what Microsoft and Apple will be lucky to achieve by 2006.

*InfoWorld*, February 14, 2003

www.groove.net

Ray Ozzie
Groove’s Core Characteristics

- Profound decentralization with easy setup of collaborative workspaces (modified p2p application)
- A robust security structure (192-bit security with always on encryption)
- Ability to co-edit documents, do web tours, instant messaging, and share PowerPoint presentations with no instructor bias
- Online awareness
- Cost: $59 per student for the professional edition; relay server is free (with much lower institutional rates available)
A Groove Liability: the computer center . . . or a strength?

The Wireless Tablet PC with Next Generation Voice Recognition?
The Expedition Hall is designed to give students the opportunity to discover and share key insights that emerge from an in-depth analysis of lecture content, particular course themes, or problematic issues. Each

www.teach2learn.com
(December 15<sup>th</sup>)
The assignment for the Mt. Everest Summit Expedition should be placed here.
Boeing fired its finance chief, saying he improperly hired a former Air Force official, who was also terminated. The defense contractor said the pair covered up their actions during an internal investigation.

Delta's Leo F. Mullin plans to retire as chairman and chief executive and the airline named two former chief executives to succeed him.

An EU hearing into antitrust allegations against Microsoft left the company eager for a settlement and regulators eager to wrap up their case. A resolution of the feud would likely go beyond the terms of a 2001 U.S. settlement.
The Coffee Shop is a place for students to gather to reflect upon some of the deeper principles of their learning experiences and to share those principles and insights with others. The Coffee Shop features...
The coffee shop learning log provides students with the opportunity to reflect on specific questions relating to course lectures and assignments, focusing particularly on how individual learning styles impact the experience of learning.
The Situation Room presents a series of critical scenarios or problem sets that require research and a collaborative response by a student workgroup. Each phase of this unfolding scenario can be designed.
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A full description of the scenario for phase one should be placed here.
The proposed "solution" for phase one should be placed here.
Some Questions

- In your experience, how much of an obstacle is the e-learning time barrier? How have you tried to deal with this? What solutions seem promising?
- It is likely that the teach-to-learn model has already been incorporated in some “traditional” e-learning contexts. Are you aware of instances where this has been used? Has this been successful?
- What are some of the upsides and downsides of this approach? Is our technology to a point where synchronous communication among small groups can be satisfying?
End