

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



**Van Weigel**  
**vweigel@eastern.edu**

THE CHRONICLE OF HIGHER EDUCATION  
*Information Technology*

chronicle.com/infotech  
From the issue dated December 17, 1999

**For-Profit Venture to Market Distance-Education Courses Stirs Concern at Temple**

By SARAH CARR

THE CHRONICLE OF HIGHER EDUCATION

chronicle.com/infotech

*Information Technology*

From the issue dated March 24, 2000

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

THE CHRONICLE OF HIGHER EDUCATION

chronicle.com/distance

*Distance Education*

Thursday, March 16, 2000

**Software Billionaire Plans to Create a Free Online University**

THE CHRONICLE OF HIGHER EDUCATION

*Money & Management*

From the issue dated March 12, 1999

**Sylvan Learning Systems Moves Into the Higher-Education Market**



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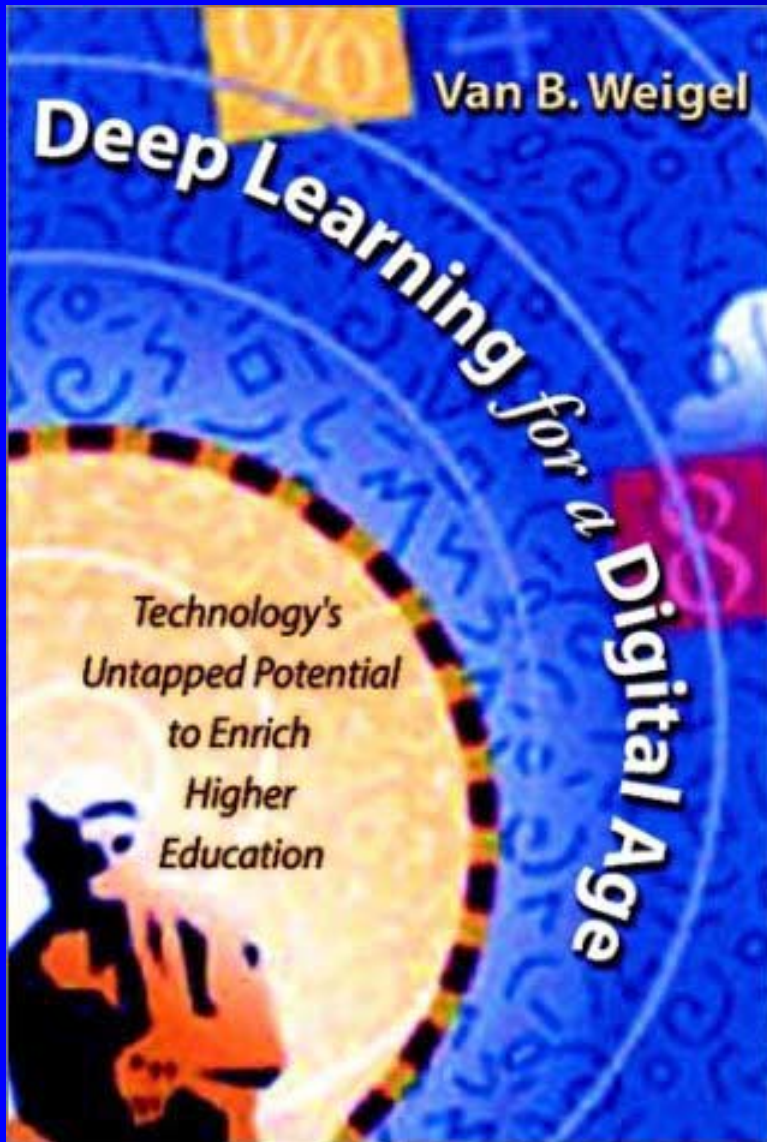
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# Four Building Blocks

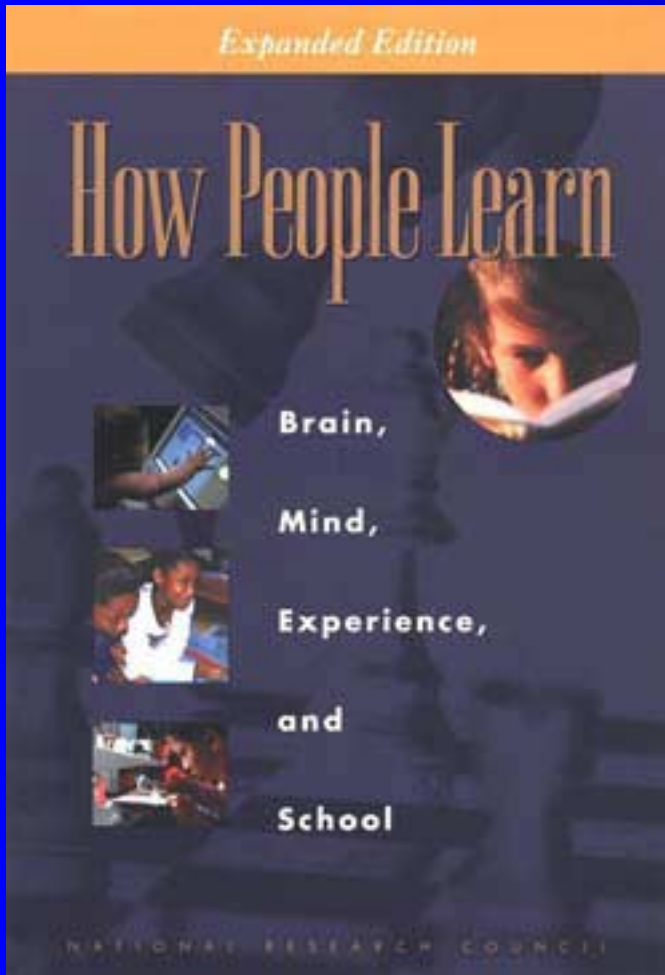
Knowledge Management

Cognitive Apprenticeship

The Knowledge Room

Work Group Paradigm

# Defining Deep Learning



Deep learning is learning that promotes the development of *conditionalized knowledge* and *metacognition* through *communities of inquiry*\*

\*Jean Lave and Etienne Wenger, *Situated Learning: Legitimate Peripheral Participation* (New York: Cambridge University Press, 1993); Etienne C. Wenger, *Communities of Practice: Learning, Meaning and Identity* (Cambridge: Cambridge University Press, 1998); Etienne C. Wenger and William M. Synder, "Communities of Practice: The Organizational Frontier," *Harvard Business Review* (January-February 2000): 139-145.

# 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

<b>Modeling</b>	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.
<b>Coaching</b>	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.
<b>Scaffolding</b>	Students are assisted by the teacher, their peers, or both in completing a task that they are unable to perform alone.
<b>Articulating</b>	Students practice the skill of converting tacit knowledge to explicit knowledge by describing the internal reasoning involved in problem solving or critical thinking exercises.
<b>Reflecting</b>	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.
<b>Exploring</b>	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).



# 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](http://www.knowledgeroom.com)

[www.ibm.com/university](http://www.ibm.com/university)



**The Research  
Center**



**The Debate  
Hall**

**The Conference  
Center**



**The Skill  
Workplace**

**The Portfolio  
Gallery**



Slide 10

# Knowledge Rooms and Cognitive Apprenticeship

Cognitive Apprenticeship Method	Research Center	Skill Workplace	Conference Center	Debate Hall	Portfolio Gallery
Modeling		✓	✓		
Coaching		✓		✓	✓
Scaffolding	✓	✓	✓		
Articulation	✓	✓	✓	✓	✓
Reflection	✓	✓	✓	✓	✓
Exploration	✓		✓		✓

# 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>)**

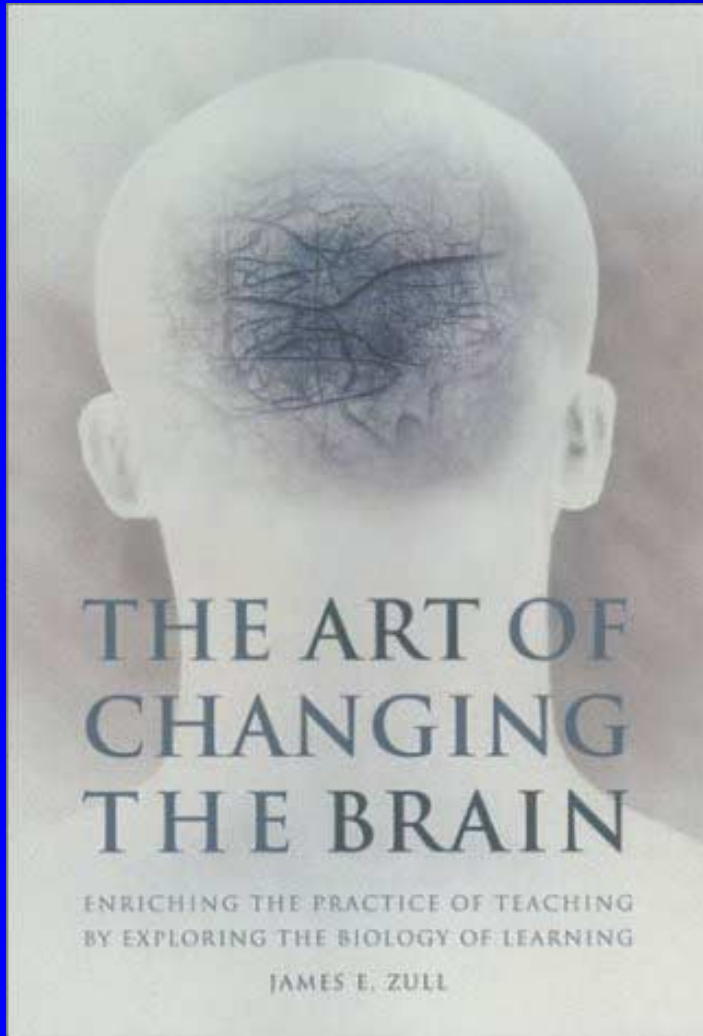
# The Loading Dock Approach

- **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—  
inhibiting 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.

# The Biology of Memory



- 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”

# The e-Learning Time Barrier



- 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

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"Clark Aldrich takes us to learning in the 21st century." —Gery Lang, Microsoft

Clark ALDRICH



# simulations and the future of learning



An Innovative (and Perhaps  
Revolutionary)  
Approach to e-Learning

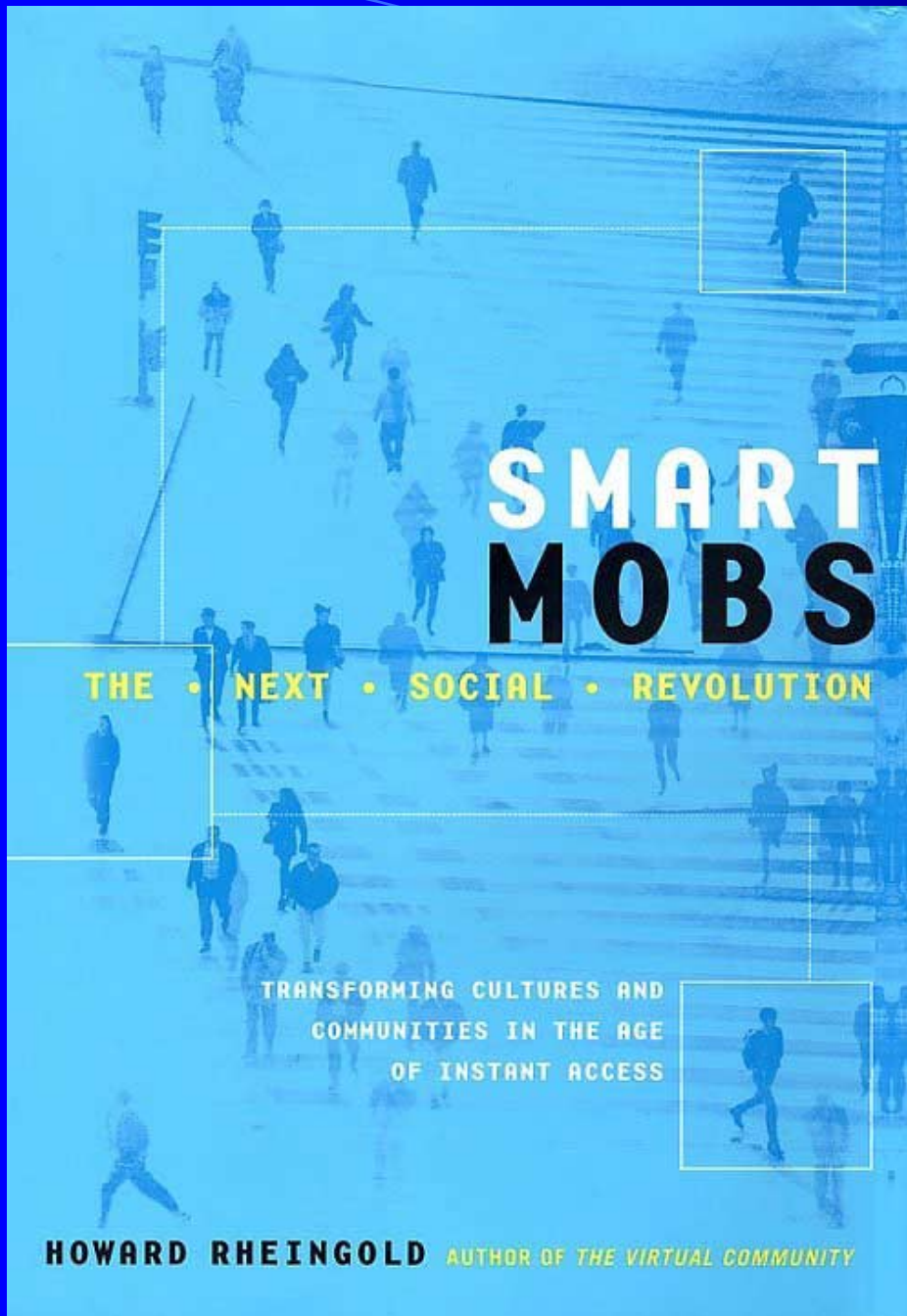


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## Using Simulations To Teach Leadership Skills

# A Solution?

- Information technology as a tool for interactivity and connection (v. trading documents)
- Information technology as a vehicle for profound decentralization (p2p v. client-server)



# The Shibuya Epiphany





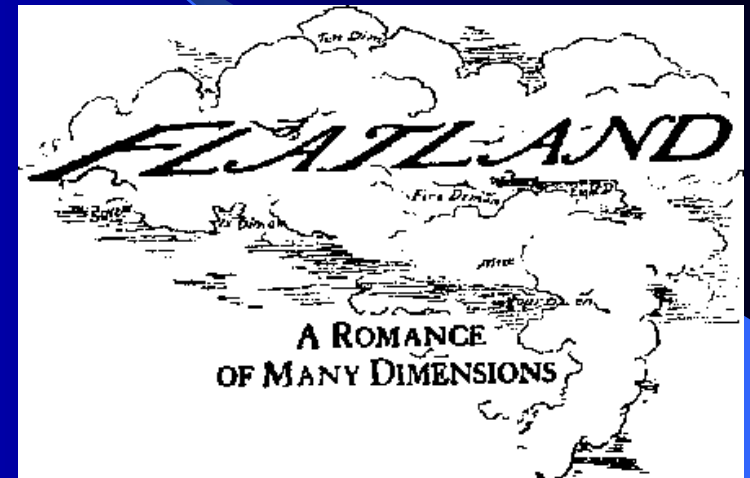


**“Go 2EDSA,  
Wear black”**



The Pew Internet and American Life Project report, “The Internet Goes to College” (October 15, 2002), notes that 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.”

## IM and College Students



The experience of  
connection v. media  
richness

# Building Communities of Practice Through a Teach-to-Learn Model

## Knowledge Management Continuum

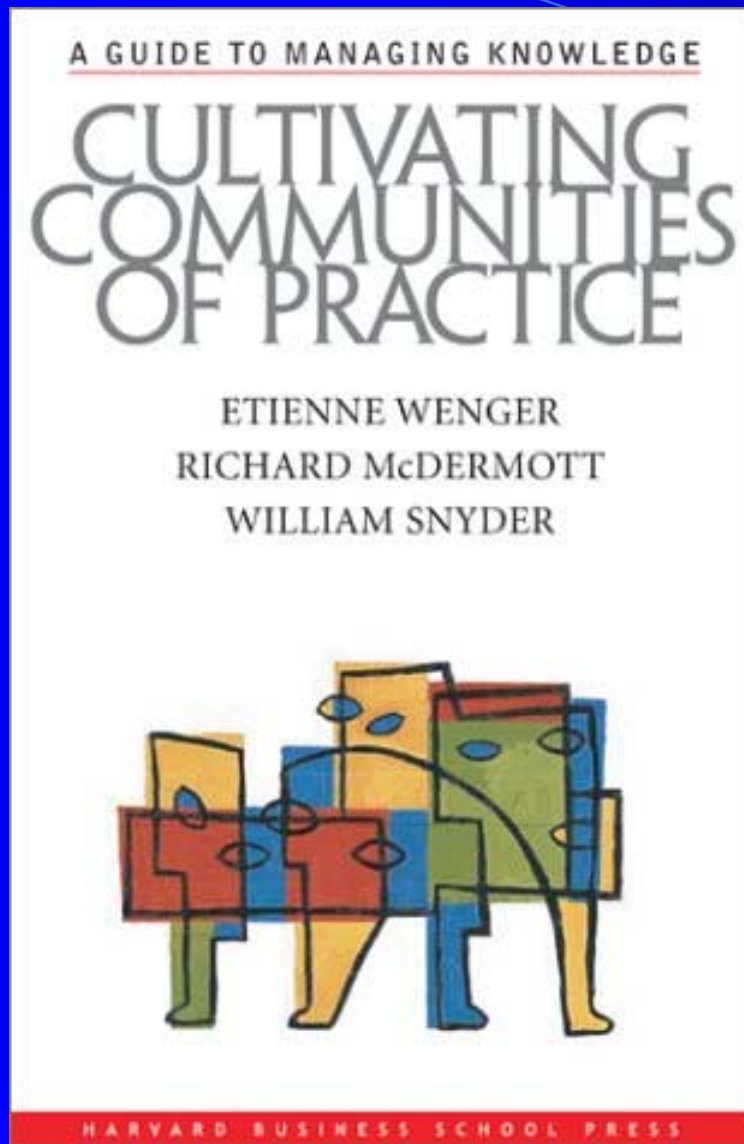
Capture

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 21<sup>st</sup> 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**

# Teach to Learn

## 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](http://www.groove.net)

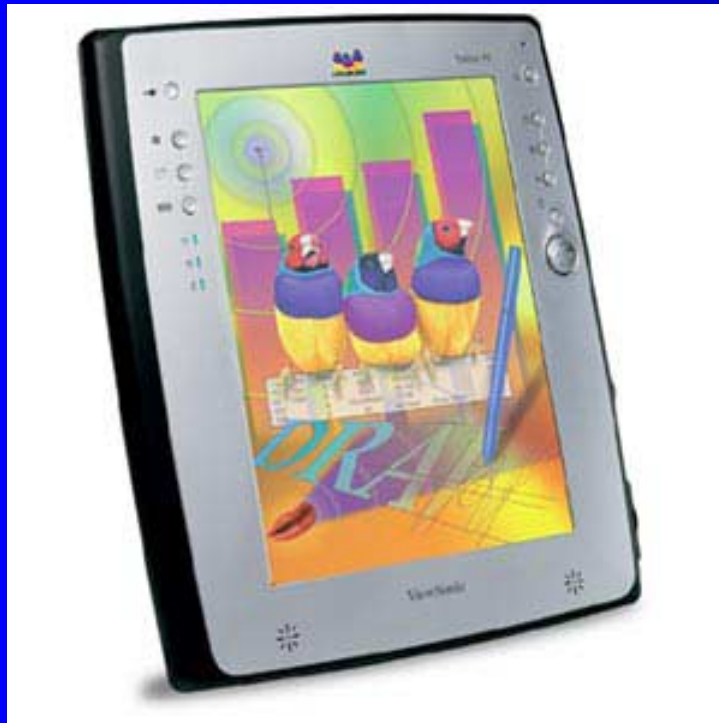


**Ray Ozzie**

# 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?**



# Expedition Hall



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](http://www.teach2learn.com)  
(December 15<sup>th</sup>)

Expedition Hall (1)

Everest Base Camp

K2 Base Camp

Rainier Base Camp

Calendar

Add Tool

Hide Chat (1)

Navigate Together

- Click here and type to chat with other members of the space -

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# Everest Base Camp

## Everest Base Camp



The assignment for the Mt. Everest Summit Expedition should be placed here.



- Everest Base Camp (1) Laptop Expedition Journal Dining Tent Whiteboard Add Tool
- Expedition Hall Everest Base Camp (1) K2 Base Camp Rainier Base Camp Calendar Add Tool

Go To  
Expedition Hall

Invite

- Active
- Online Van Weigel
- Not Online
- Suspended

Hold For Talk

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## What's News—

\* \* \*

**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.

\* \* \*

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\* \* \*

### Inside Today

Eyes on the Road



States wake up to the dangers of sleepy motorists, Joe White says.

#### The Daily Scan

Arm twisting and incentives got the Medicare bill through the House.

#### Taking Stock

See who stands to gain on Wall Street as cellphone portability kicks in.

#### Question of the Day

What would it take to get you to switch cellphone carriers?

### Markets

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SIEMENS

*at close	10:05 am EST	
DJIA	9707.27	78.74
Nasdaq	1921.24	27.36
S&P 500	1045.58	10.30
Japan *	9852.83	-12.87
DJ Stoxx 50	2573.53	48.46

Source: Dow Jones, Reuters

### Personal Journal

#### Terri's To-Do List

Let the Web comparison shop for you this holiday season.

\*\*\*

#### Low-Carb Is the Rage ...

But what exactly does "low carb" mean, anyway?

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Opening page http://view.atdmt.com/NYC/iview/wlisesby01500238nyc/direct;wi.300;hi.250/01?click=http://ad.doubleclick.net/click;h=v2|305f|3|0|\*|e;6565674;0-0;0;685350 100%

Everest Base Camp

Laptop (1)

Expedition Journal

Dining Tent

Whiteboard

Add Tool

Expedition Hall

Everest Base Camp (1)

K2 Base Camp

Rainier Base Camp

Calendar

Add Tool

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# Expedition Journal

## Expedition Journal



Large empty white rectangular area for writing or drawing in the journal.



Go To ▾

Expedition Hall

Invite

- Active**
- Van Weigel
- Online**
- Not Online**
- Suspended**



Hide Chat (1)

Navigate Together



Everest Base Camp	Laptop	Expedition Journal (1)	Dining Tent	Whiteboard	Add Tool
Expedition Hall	Everest Base Camp (1)	K2 Base Camp	Rainier Base Camp	Calendar	Add Tool

Large empty white rectangular area for chat messages.

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# Coffee Shop



# Coffee Shop



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 these principles and insights with others. The Coffee Shop features:

Coffee Shop (1)

Laptop

Learning Log

Help Desk

Chess Game

Calendar

Add Tool



Hold-to-Talk

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Groove

http://www.nytimes.com/



# The New York Times

ON THE WEB



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## Medicare Debate Turns to Pricing of Drug Benefits

By ROBERT PEAR

A provision in the Medicare bill that prohibits the government from negotiating lower drug prices for beneficiaries is the source of fierce debate in the Senate.

- [Frist Scrambles to Get Bills Passed](#)

## Rush Hour Returns in Force at Trade Center Rail Station

By CHRISTINE HAUSER 9:17 AM ET

Commuters restored rush-hour chaos to the site of the former World Trade Center today for the first time since Sept. 11, 2001.

[Enlarge This Image](#)



Carlo Montali/ ReflexNews, for The New York Times

### The Other Conflict

## MARKETS

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**Dow Jones Industrial Average**

11	1	3
9,675		9,650

DJIA	9,680.39	+51.86	+0.54%
NASDAQ	1,910.84	+16.96	+0.90%
S&P 500	1,042.09	+6.81	+0.66%
10-YR TRES.	4.20%	+0.05	

© BigCharts.com 9:37 AM ET

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http://www.nytimes.com/pages/sports/index.html

- Coffee Shop
- Laptop (1)
- Learning Log
- Help Desk
- Chess Game
- Calendar
- Add Tool



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Go To

Coffee Shop

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Active

- Van Weigel

Online

Not Online

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Hold-to-Talk

Hide Chat (1)

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Broove

### Coffee Shop Learni...



## Coffee Shop Learning Log

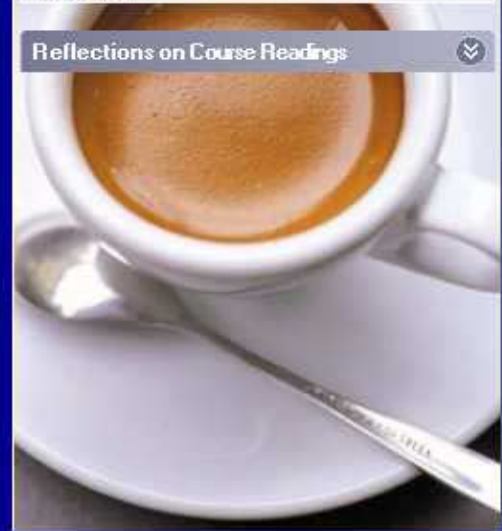


The coffee shop learning log provides students with the opportunity to reflect on specific questions relating to course lectures and assignments, focusing particularly on how individual learning styles impact the experience of learning.

#### Reflections on Course Lectures

- Lecture 1
- Lecture 2

#### Reflections on Course Readings



Coffee Shop

Laptop

Learning Log (1)

Help Desk

Chess Game

Calendar

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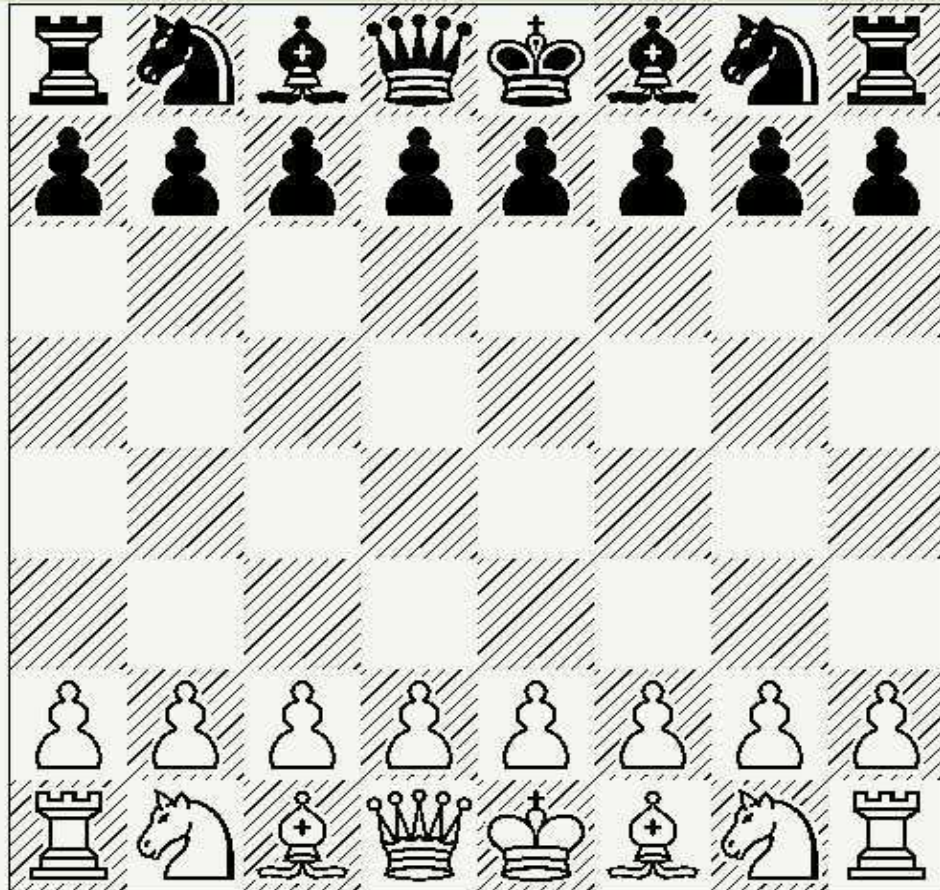
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- Not Online
- Suspended



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- Coffee Shop
- Laptop
- Learning Log
- Help Desk
- Chess Game (1)
- Calendar
- Add Tool

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# The Situation Room

Go To ▾

Situation Room

Invite

### Active

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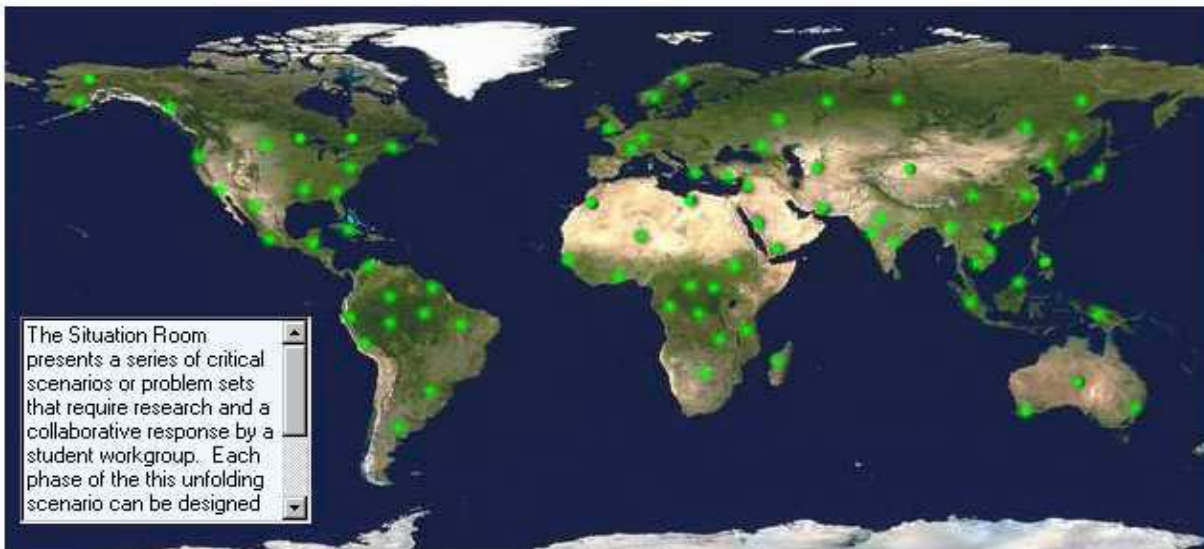
### Online

### Not Online

### Suspended



# Situation Room



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 the this unfolding scenario can be designed

The Situation Room (1)

Phase One

Phase Two

Phase Three

Calendar

Add Tool

Hold-to-Talk

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### Inside Today

#### Eyes on the Road



Feeling drowsy? Pull over. States wake up to the dangers of sleepy motorists.

#### The Daily Scan

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Phase One Scenario

Hotline (1)

Situation Room Auditorium

Whiteboard

PowerPoint Presentation

Add Tool

Situation Room

Phase One (1)

Phase Two

Phase Three

Calendar

Add Tool

Go To Situation Room

Invite

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Hold-to-Talk

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# Phase One Scenario

## Phase One



A full description of the scenario for phase one should be placed here.



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Situation Room

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Hide Chat (1)

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Phase One Scenario (1)	Hotline	Situation Room Auditorium	Whiteboard	PowerPoint Presentation	Add Tool
Situation Room	Phase One (1)	Phase Two	Phase Three	Calendar	Add Tool

Chat area with a red vertical line on the left side.

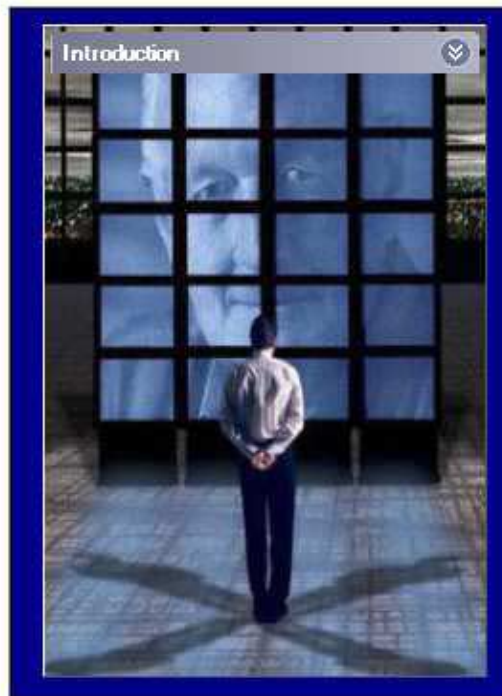
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# Situation Room Auditorium



The proposed "solution" for phase one should be placed here.



Phase One Scenario

Hotline

Situation Room Auditorium (1)

Whiteboard

PowerPoint Presentation

Add Tool

Situation Room

Phase One (1)

Phase Two

Phase Three

Calendar

Add Tool

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Navigate Together

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Options



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Broove



# 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**