

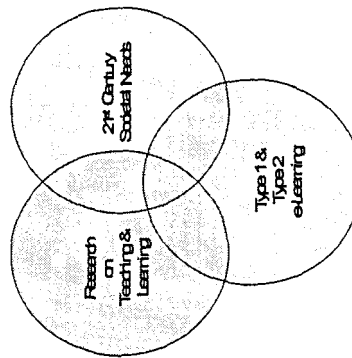
Seductive Sirens: Dangers and Opportunities for E-learning in the 21st Century

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Talk Overview

- Advanced learning: Failures and successes
- 21st century societal needs for education
- Type 1 and Type 2 e-Learning paradigms
- Seductive sirens and clash of paradigms
- Type II e-Learning in Korea: Policy report prepared for Korean IT Industry Promotion Agency (KIPA)
- E-Learning challenges and opportunities

Talk Themes



The meaning of knowing has shifted from being able to remember and repeat information to being able to find and use it.

Nobel Laureate,
 Herbert Simon

A Study of Learning Failure and Success

- Study at Northwestern University's Kellogg Graduate School of Management
- 88 Masters of Management students in 10 week course on negotiation techniques
- One week preparation for 1 ½ hour negotiating session (one on one role playing)
- Role playing scenario: Negotiations between a theater manager and a producer

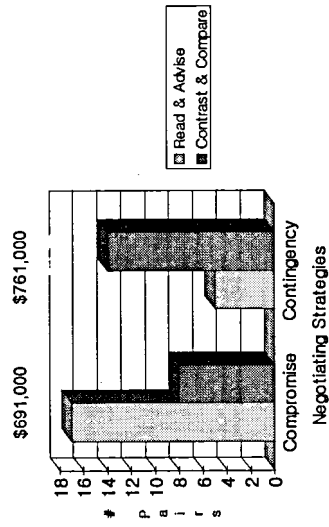
Negotiation Strategies

- **Compromise strategy**
 - "Regular" (novice) view
 - Both sides "give up" something
 - Sub-optimal if different beliefs about end outcomes
 - Both sides "unhappy"
- **Contingency strategy**
 - Each side essentially makes a bet
 - Each side is "happy" after negotiation (although the events will make one side or the other "win")

Study of Learning and Applying Negotiation Strategies

- Given 2 short cases to study for one week (retail and business sales)
- **Advice Condition:**
 - Give advice about negotiation issues
- **Comparison Condition:**
 - Contrast and compare 2 cases
 - Identify important principle
- Then engaged in 1 ½ hour role playing negotiating session

Results



Lessons and Implications

- **Read & Advise cases group:**
 - Inert knowledge
 - Developed *non-useable, compartmentalized* knowledge
- **Contrast & Compare cases group:**
 - Successful knowledge transfer
 - Developed useable "conditionalized" knowledge from multiple case contexts

Inert knowledge a serious problem at all levels education, even with bright-and-motivated-students

Korean Ministry of Education 2003 White Paper: Societal Needs for Education

- Need to prepare students for 21st century global knowledge economy
- Need to shift from "teacher-centered" to "learner-centered" paradigm for education
- Need for students to have creative thinking, problem solving, and communication skills
- Role for information and communication technologies (e-Learning) to help implement Korean educational reforms

What is e-Learning?

"the next killer application on the Internet"



John Chambers
CEO, Cisco Systems

What is e-Learning really?

- e-Learning core technologies:
 - Use of *hyperlinks* to flexibly interconnect nodes
 - Nodes:
 - Digitally encoded text, images, multimedia, simulations, computer models, and even immersive "virtual reality"
 - May be local or globally distributed
 - Communication & collaboration tools
- Suite of technologies to support and enhance *learning*
- Focus of extensive research & development for past 15 years
 - Hardware & software issues: Computer science and engineering
 - Design features & learning: Learning sciences & instructional technologies



e-Learning Potential

- *Globally transform the infrastructures and enterprise of education*
 - *Globally transform the infrastructures and enterprise of education*
- Anywhere, anytime access to globally distributed information resources
- Online web courses offering accredited degrees or subjects for personal interest and enrichment
- Viewed as flexible, efficient, and cost-effective
- Pervasive & increasing use of e-Learning technologies in:
 - Education and life long learning
 - Organizational and government training and professional development

Broad Framework for E-Learning Levels and Characteristics

Type	Pedagogical Paradigm	Examples	Learning Outcomes
1	Delivery-centered	Tutorials, Drills	Factual information, basic literacy
2	Learner-centered	Problem-based Learning, CSCL, Adaptive Learning Technologies, VR	Conceptual understanding, problem solving, knowledge transfer

E-Learning Paradigm: Type 1

- Most common in Korea and in other parts of the world
- "Show and tell" or "delivery paradigm"
- Typically linear tutorials that present and assess factual information (e.g., SCORM)
- Often high quality with multimedia and animations
- Critique of Type 1 e-Learning:
 - Teacher- or delivery-centered approach
 - Achieve the older goal of "remember and repeat"

Research Perspectives on e-Learning in Organizations

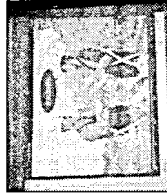
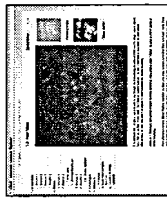
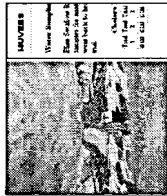
- Primarily Type 1 e-Learning approaches
- Forrester report (2000) on online training in 40 Global 2,500 companies
 - Companies focus on efficiency and travel savings
 - Text heavy with little interactivity or collaboration
 - High dropout rates
 - Little assessment of learning outcomes
- My own e-Learning evaluation & consulting experience:
 - e-Learning systems focus on declarative or factual knowledge
 - Assessment is based on reproductive memory and factual recall, not problem solving or transfer
- Focus on technology, not on deep learning

E-Learning Paradigm: Type 2

- Learner-centered
- Approaches typically interactive, non-linear, and collaborative:
 - Computer supported collaborative learning
 - Adaptive and intelligent learning technologies
 - Virtual reality and immersive systems
 - Computer modeling tools
- Support learning-by-doing:
 - Problem-based
 - Project-based learning
- Research documenting higher order cognitive learning outcomes
- Achieve new 21st century learning goal of "find and use information"

Examples of Type 2 e-Learning Systems

- MUVE (Multi-User Virtual Environment, Harvard)
- Knowledge Mediator Problem Based e-Learning
- Crédu Goal Based Scenario for training engineers at Samsung Construction



Seductive Sirens: Type 1 e-Learning and the Delivery Paradigm

- Easy to "deliver" e-Learning content
 - Linear tutorials
 - Flash animations
- Easy to create e-Learning factual tests (e.g., multiple choice)
- Easy to develop technical standards



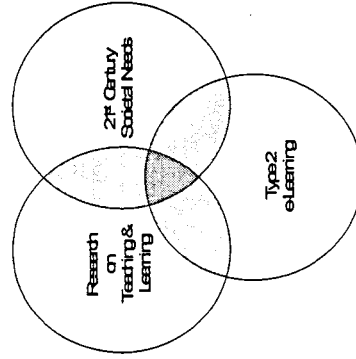
Danger: These approaches will not achieve 21st century educational learning goals

Clash of Paradigms and Danger

- "Delivery centered" commercial and standards based Type 1 e-Learning paradigm
 - "Learner centered" Type 2 e-Learning systems and pedagogies
- Versus*
- Danger. Momentum for Type 1 commercial and standards-based e-Learning systems will seriously limit widespread development and implementation of Type 2 e-Learning tools and pedagogies*

The Potential of Type 2 e-Learning:

Synergies



From Human-computer Interactions to Science of Learning Based Designs: E-learning Principles for 21st Century Learning

- Policy Report prepared for Korea IT Industry Promotion Agency
- Method
 - Literature review of research on Type 2 e-Learning systems
 - Case studies of Korean and U.S. Type 2 e-Learning projects
- Korean e-Learning industry is:
 - Capable of developing sophisticated Type II e-Learning systems
 - But Type 1 "delivery paradigm" systems the norm in Korea

Lessons Learned

- Base Type II e-Learning design features on science of learning principles:
 - Provide *contextualized* learning based on real world problems & cases
 - Support *learning-by-doing*, rather than teaching by telling and showing
 - Provide formative and summative assessment of learning using measures of *reasoning, understanding, complex problem solving, and knowledge transfer*, not just in the recall of factual information.
- Identified ways to minimize development costs
- Status of commercial e-Learning standards such as SCORM
 - Type II e-Learning developers generally not supporting
 - Possible to implement some Type II e-Learning approaches in SCORM (Knowledge Mediator PBeL)

Main Challenge for E-Learning in Korea:
Lack of Alignment in Educational System

- College entrance examination: "delivery paradigm" test:
 - Mainly tests low level cognitive skills related to memorization of factual information
- "Learner centered paradigm" approaches & technologies:
 - Develop higher order cognitive skills such as complex problem solving, communication, and creativity
- Great need to align:
 - New societal learning goals
 - Learning science based teaching & e-Learning technologies
 - Assessments of learning such as the national college entrance examination
- Lack of alignment in educational systems is a global problem

Opportunities

- Needs in industry for advanced knowledge workers may initially push the educational system to reform in Korea
- View development of Type 2 e-Learning technologies in Korea as essential:
 - To better prepare Korean students and citizens for the emerging knowledge economy and 21st century challenges
 - To help reform education at the university & pre-college levels
 - To support ongoing training of professionals and knowledge workers to remain current with new knowledge