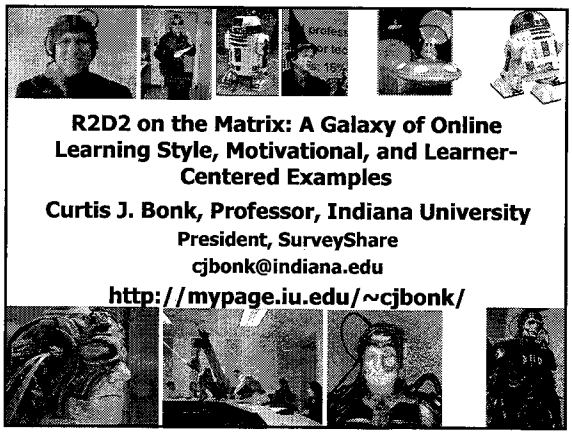
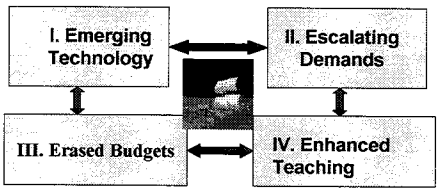


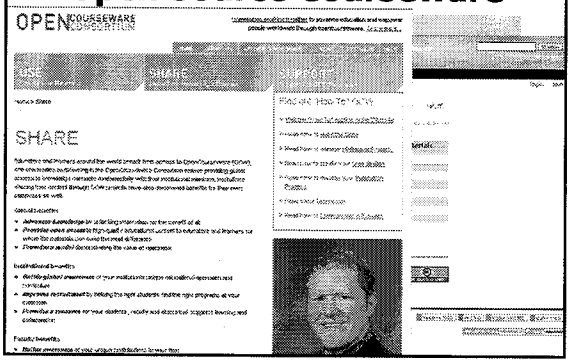
R2D2 on the Matrix: A Galaxy of Online Learning Style, Motivational, and Learner-Centered Examples

Curtis J. Bonk, Professor, Indiana University
President, SurveyShare
cjbonk@indiana.edu
http://mypage.iu.edu/~cjbonk/

Four Storms are Approa

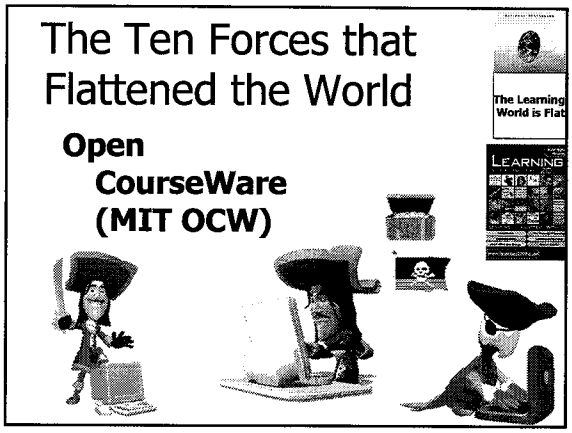


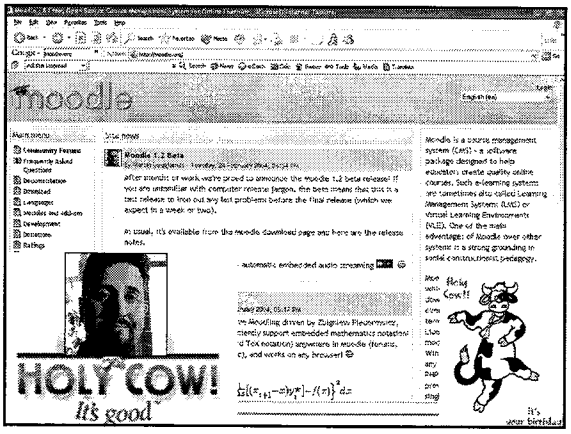
Open Source Courseware



The Ten Forces that Flattened the World

Open CourseWare (MIT OCW)





Accessible Technology

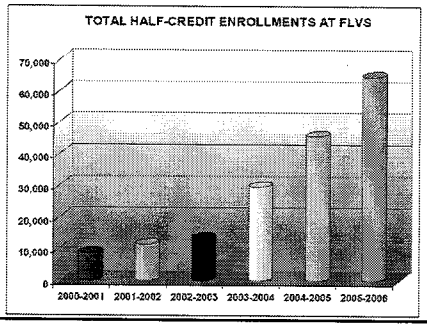
The project aims to build peer-to-peer communications

Negroponte says the new laptop is designed to be kid-friendly

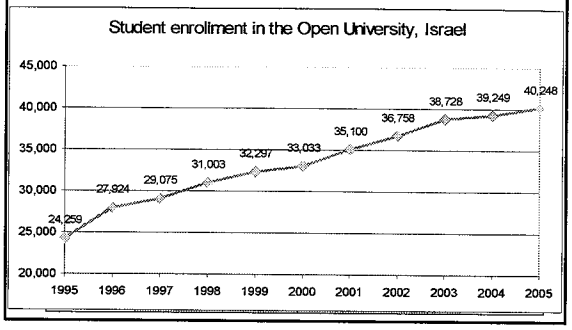
The CM1: Taking technology to the developing world
A revolution in a laptop
By Greg Norman
Sunday 13 August 2006, 18:49 Makka Time, 15:49 GMT

OLPC aims to turn the tide of urban poverty

Growth of Online Learning in Secondary Schools

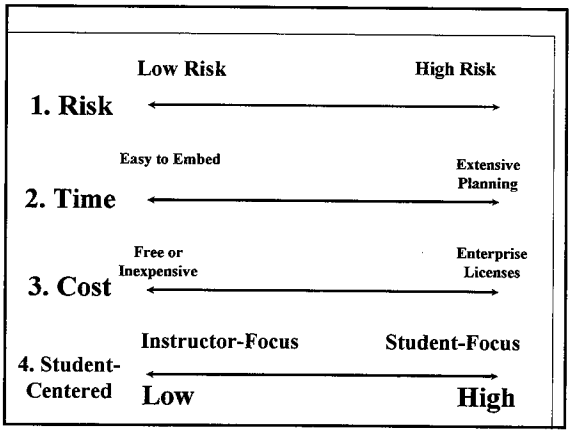


Open University of Israel (overall enrollment growth)



Task

- Ideas definitely Can Use (Circle or write down)
- Ideas you might use (check off or write down in a separate column)
- Ideas you cannot use (cross off or put at the bottom)



Part I: 15 Learning Centered Synchronous and Asynchronous Ideas

Experience. The difference.

1. Learner-Centered Learning Principles

(American Psychological Association, 1993)

Cognitive and Metacognitive Factors

1. Nature of the learning process
2. Goals of the learning process
3. Construction of knowledge
4. Strategic thinking
5. Thinking about thinking
6. Context of learning

Motivational and Affective Factors

7. Motivational and emotional influences
8. Intrinsic motivation to learn
9. Effects of motivation on effort

Developmental and Social Factors

10. Developmental influences on learning
11. Social influences on learning

Individual Differences

12. Individual differences in learning
13. Learning and diversity
14. Standards and assessment

Learner-Centered on the Web
(Bonk & Cummings, 1998)

1. Safe Lrng Community:	6, 11
2. Foster Engagement:	1- 6, 11.
3. Give Choice:	8, 9, 12
4. Facilitate Learning:	2, 9, 11.
5. Offer Feedback:	3, 6, 8, 11, 13.
6. Apprentice Learning:	3, 6, 7-9, 11, 13.
7. Use Recursive Tasks:	1, 3, 8-9, 10, 13.
8. Use Writing & Reflection:	3, 8, 12-13.
9. Build On Web Links:	2-4, 8-9, 12-14.
10. Be Clear & Prompt Help:	2, 9, 11, 14.
11. Evaluate Dimensionally:	1-5, 14.
12. Personalize in Future:	6, 8, 10-13.

2. Constructivistic Teaching Principles (Brooks, 1990)

1. Build on student prior knowledge.
2. Make learning relevant.
3. Give students choice in learning activity.
4. Student autonomy & active lrng encouraged
5. Use of raw data sources & interactive materials
6. Encourage student dialogue
7. Seek elaboration on responses and justification
8. Pose contradictions to original hypothesis
9. Ask open-ended questions & allow wait time
10. Encourage reflection on experiences

1. Anchored Instruction (find anchoring event (CTGV, 1990?)
(L/M = Cost, M = Risk, M = Time)

- In a synchronous lecture interrupt it with a summary video (could be a movie clip) explaining a key principle or concept.
- Refer back to that video during lecture.
- Debrief on effectiveness of it.

2. One minute papers or muddiest point papers
(L = Cost, M = Risk, M = Time)

- Have students write for 3-5 minutes what was the most difficult concept from a class, presentation, or chapter. What could the instructor clarify better.
- Send to the instructor via email or online forum.
- Optional: Share with a peer before sharing with instructor or a class.

3. PMI (Plus, Minus, Interesting)
(L = Cost, L = Risk, M = Time)

- After completing a lecture, unit, video, expert presentation, etc. ask students what where the pluses, minuses, and interesting aspects of that activity.
- Write in an online forum.
- Respond to comments.

4. K-W-L or K-W-H-L
(L = Cost, L/M = Risk, M = Time)

At the end of a unit, student presentation, videotape, expert presentation, etc., have student write down in an email or forum:

1. What did you know?
2. What do you want to know?
3. What did you learn?

- H = How will we learn it?

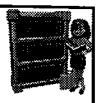
5. Cool Resource Provider

(Bonk, 2004) (L = Cost, M = Risk, M = Time)

- Have students sign up to be a cool resource provider once during the semester.
- Have them find additional paper, people, electronic resources, etc.
- Share and explain what found with class via synchronous meeting or asynchronous discussion post.

6. Library Day

(L = Cost, M = Risk, M/H = Time)
(Bonk, 1999)



- Have students spend a day in the library or online finding and summarizing a set number of articles.
- Have them bring to class or post abstracts to an online forum.
- Share in small groups interested in similar topics.
- Perhaps give each student 1-2 minutes to describe what found in a chat.

7. Jigsaw

(L = Cost, M = Risk, H = Time)

- Form home or base groups of 4-6 students.
- Student move to expert groups—discussion ideas in a chat.
- Share knowledge in expert groups and help each other master the material in an online forum.
- Come back to base group to share or teach teammates.
- Students present in group what learned.

8. Pruning the Tree (i.e., 20 questions)

(L = Cost, M = Risk, L = Time)

- During a synchronous chat or videoconference, have a recently learned concept or answer in your head.
- Students can only ask yes/no types of questions.
- If guess and wrong they are out and can no longer guess.
- The winner guesses correctly.

9. 99 Second Quotes

(L = Cost, M = Risk, M = Time)

- Everyone brings in a quote that they like from the readings
- You get 99 seconds to share it and explain why you choose it in a sync chat or videoconference
- Options
  - Discussion wrapped around each quote
  - Small group linkages—force small groups to link quotes and present them
  - Debate value of each quote in an online forum

10. Six Hats (Role Play):

(from De Bono, 1985; adopted for online learning by Karen Belfer, 2001, Ed Media) (L = Cost, M = Risk, M = Time)

- White Hat: Data, facts, figures, info (neutral)
- Red Hat: Feelings, emotions, intuition, rage...
- Yellow Hat: Positive, sunshine, optimistic
- Black Hat: Logical, negative, judgmental, gloomy
- Green Hat: New ideas, creativity, growth
- Blue Hat: Controls thinking process & organization

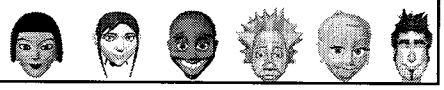
Note: technique was used in a business info systems class where discussion got too predictable!

11. Structured Controversy and Instructor (or student) Generated Virtual Debates
(L = Cost, M = Risk, M = Time)

1. Select controversial topic (with input from class)
2. Divide class into subtopic pairs: one critic and one defender.
3. Assign each pair a perspective or subtopic
4. Critics and defenders post initial position statements in an online thread
5. Rebut person in one's pair
6. Reply to 2+ positions with comments or q's
7. Formulate and post personal positions.

12. Numbered Heads Together
(L = Cost, M = Risk, M = Time)

a. Assign a task and divide into groups (perhaps 4-6/group).
b. Perhaps assign group names across class or perhaps some competition between them.
c. Count off from 1 to 4.
d. Discuss problem or issue assigned.
e. Instructor calls on groups & numbers.
   a. e.g., in a research methods class, one person reads intro, another the method, another the findings, discussion, implications, etc.



13. Best 3 Activity
(Thiagi, personal conversation, 2003)
(L = Cost, L = Risk, L/M = Time)

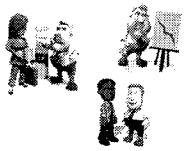
- After a lecture, have students decide on the best 3 ideas that they heard (perhaps comparing to a handout or dense sheet of paper).
- Work with another who has 3 as well and decide on best 3 (or 4).
- Those pairs work with another dyad and decide on best 3 (or 4).
- Report back to class.

14. Human Graphs
(L = Cost, L = Risk, L = Time)

- In a videoconference or synchronous session, have students line up on a scale (e.g., 1 is low and 5 is high) on camera according to how they feel about something (e.g., topic, the book, class).
- Debrief

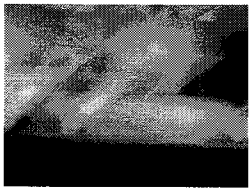
15. Scavenger Hunt
(L = Cost, L = Risk, M = Time)

1. Create a 20-30 item scavenger hunt
2. Post scores

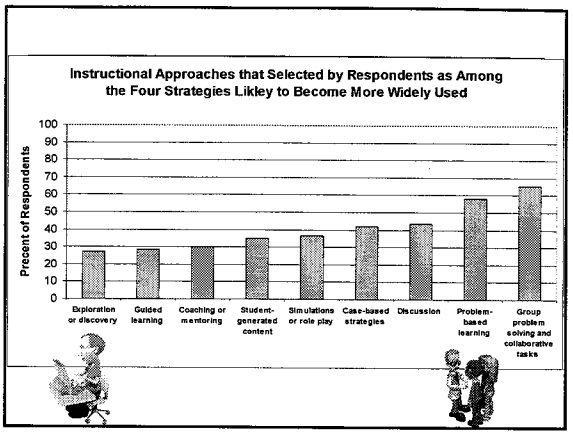


99 seconds: What have you learned so far?

- Solid and Fuzzy in groups of two to four



Part II.
Mucho Motivation

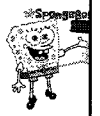


Intrinsic Motivational Terms

1. Tone/Climate: Psych Safety, Comfort, Belonging
2. Feedback: Responsive, Supports, Encouragement
3. Engagement: Effort, Involvement, Excitement
4. Meaningfulness: Interesting, Relevant, Authentic
5. Choice: Flexibility, Opportunities, Autonomy
6. Variety: Novelty, Intrigue, Unknowns
7. Curiosity: Fun, Fantasy, Control
8. Tension: Challenge, Dissonance, Controversy
9. Interactive: Collaborative, Team-Based, Community
10. Goal Driven: Product-Based, Success, Ownership

1. Social Ice Breakers

A. Peer (or Team) Interviews: Have learners interview each other via e-mail and then post introductions for each other.



B. Public Commitments: Have students share how they will fit the coursework into their busy schedules

1. Tone/Climate: Ice Breakers

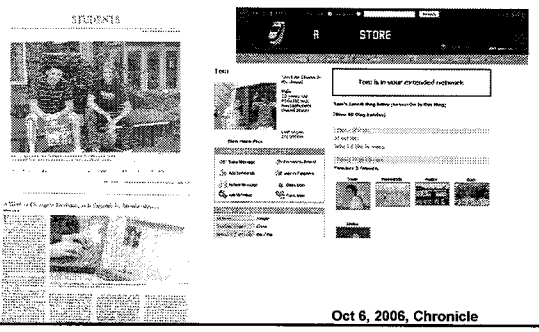
C. Eight Nouns Activity:

1. Introduce self using 8 nouns
2. Explain why choose each noun
3. Comment on 1-2 peer postings

D. Coffee House Expectations

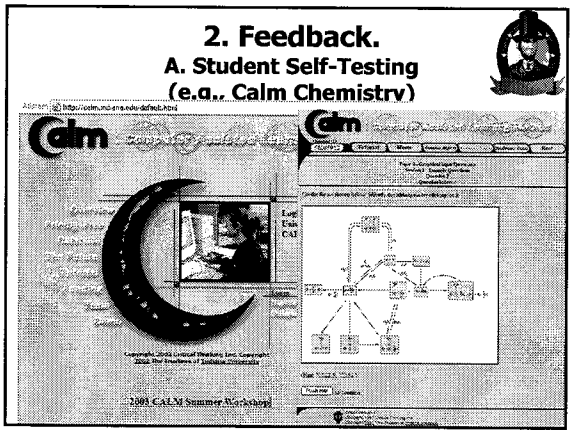
1. Have everyone post 2-3 course expectations
2. Instructor summarizes and comments on how they might be met

1e. Scavenger Hunt: Find Fellow Students Social Networking Software

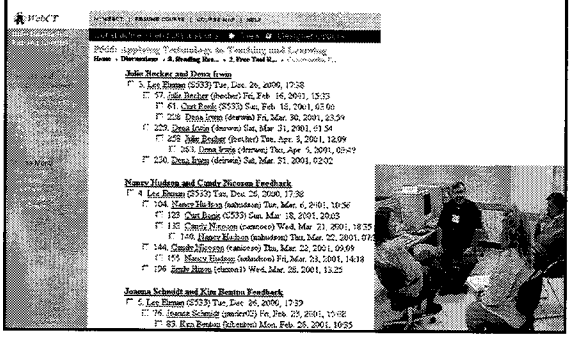


Oct 6, 2006, Chronicle

2. Feedback.
A. Student Self-Testing (e.g., Calm Chemistry)



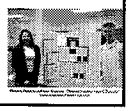
2. Feedback:
B. Critical/Constructive Friends, Email Pals...



2. Feedback:
C. Web-Supported Group Reading Reactions

1. Give a set of articles.
2. Post reactions to 3-4 articles that intrigued them.
3. What is most impt in readings?
4. React to postings of 3-4 peers.
5. Summarize posts made to their reaction.

(Note: this could also be done in teams)

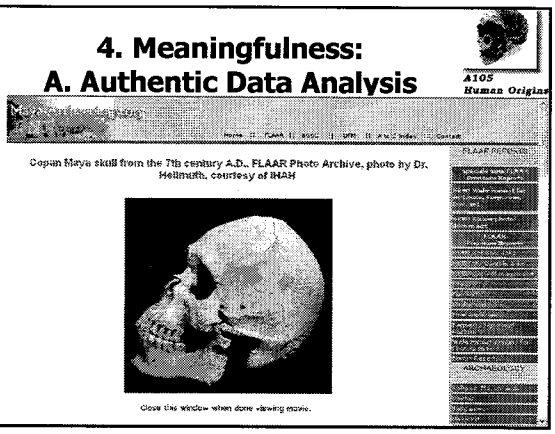


2. Feedback: D. Clickers; Innovation is but one click away...

3. Engagement
A. Brainstorming Chat

- Come up with interesting or topic or problem to solve
- Anonymously brainstorm ideas in a chat discussion
- Encourage spin off ideas
- Post list of ideas generated
- Rank or rate ideas and submit to instructor
- Calculate average ratings and distribute to group

4. Meaningfulness:
A. Authentic Data Analysis



5. Choice: A. Multiple Topics

- Generate multiple discussion prompts and ask students to participate in 2 out of 3
- Provide different discussion "tracks" (much like conference tracks) for students with different interests to choose among
- List possible topics and have students vote (students sign up for lead diff weeks)
- Have students list and vote.

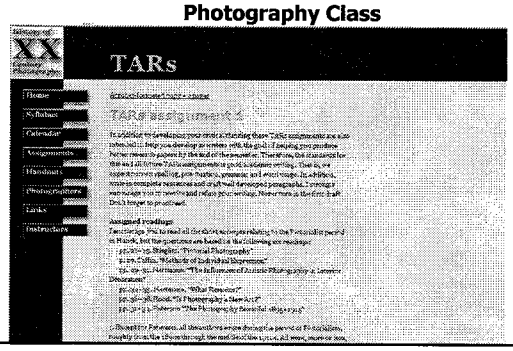
5. Choice: B. Discussion: Starter-Wrapper (Hara, Bonk, & Angeli, 2000)

1. Starter reads ahead and starts discussion and others participate and wrapper summarizes what was discussed.
2. Start-wrapper with roles--same as #1 but include roles for debate (optimist, pessimist, devil's advocate).

B. Alternative: Facilitator-Starter-Wrapper (Alexander, 2001)

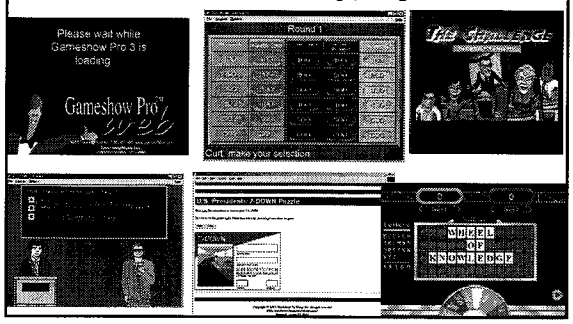
Instead of starting discussion, student acts as moderator or questioner to push student thinking and give feedback

6. Variety: A. Thinking About the Readings (TARS) JIiT; Claude Cookman, IU, Photography Class



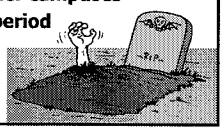
7. Curiosity: A. Games Online Jeopardy Game

www.km-solutions.biz/caa/quiz.zip;
Games2Train: The Challenge; Thiagi.com



7. Curiosity: B. Electronic Seance

- Students read books from famous dead people
- Convene when dark (sync or asynchronous).
- Present present day problem for them to solve
- Participate from within those characters (e.g., read direct quotes from books or articles)
- Invite expert guests from other campuses
- Keep chat open for set time period
- Debrief



8. Tension: A. Online Role Play of Scholars, Personalities, or Famous People

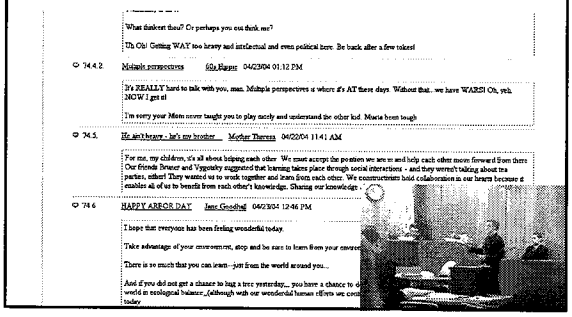
- Enroll famous people in your course
- Students assume voice of that person for one

24.3 I am so wise...so listen. Aristotle 11/25/03 05:49 PM

- Training Magazine might have a a little bit of a bias too. Also, I h
boring instructional animations and videos. Classroom or e-learnin
a good audiotape - they can all be good for learning. Cost-effectiv
to go away as an issue, so we might as well face it instead of sayin
learning is better than another - because it costs more! How did y
of the Huns? Didn't you compare prices on spears and horses bef
global conquests?

24.3.1. Again my opinion - e-learning is NOT cost-effective and is NOT value for money, and does NOT equate good quality — Attila the Hun

8. Tension: B. Online Role Plays, Debates, Mock Trials



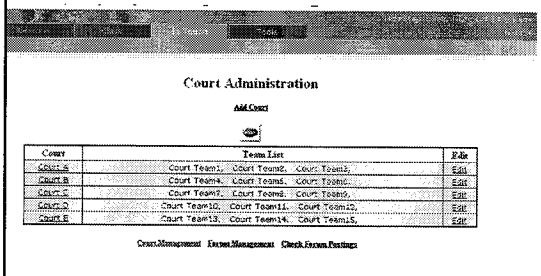
9. Interactive

A. Panels of Experts: Be an Expert/Ask an Expert: Have each learner choose an area in which to become expert and moderate a forum for the class. Require participation in a certain number of forums (choice)

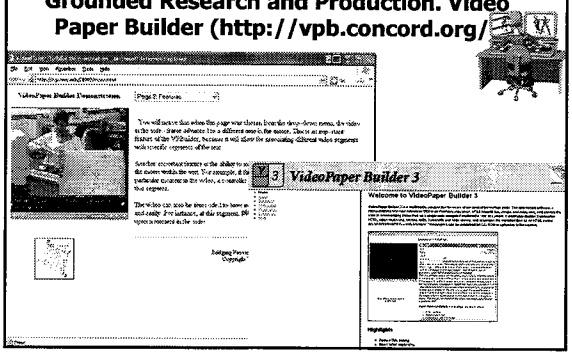
B. Press Conference: Have a series of press conferences at the end of small group projects; one for each group)

C. Symposia of Experts

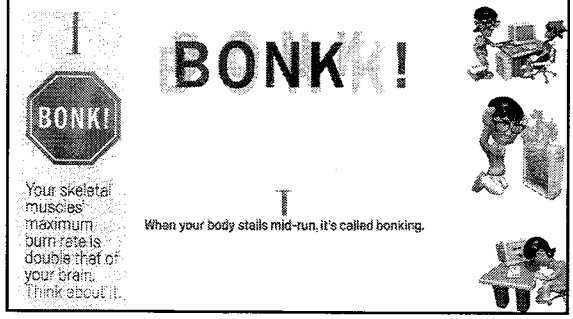
9. Team Collaboration: D. Court Room Forum (Bus Law)

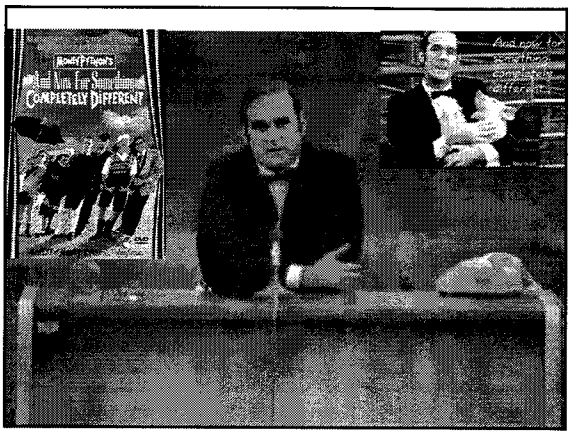


10. Product-Based: A. Video Papers. Grounded Research and Production. Video Paper Builder (http://vpb.concord.org/)



How many have ever felt that they hit the wall as far as teaching online?





Addressing Learning Styles

Why Address Learning Styles?

- Promotes reflection on teaching
- Move from just one mode of delivery
- View from different viewpoints
- Offer variety in the class
- Might lower drop-out rates
- Fosters experimentation

VARK learning styles (Fleming & Mills (1992a, 1992b): Four types of learners and learning styles:

(1) visual;
(2) auditory;
(3) reading/writing;
(4) kinesthetic, tactile, or exploratory,

Poll 1: Which learning style do you prefer?

a. Read (Auditory and Verbal Learners)
b. Reflect (Reflective Learners)
c. Display (Visual Learners)
d. Do (Tactile, Kinesthetic, Exploratory Learners)

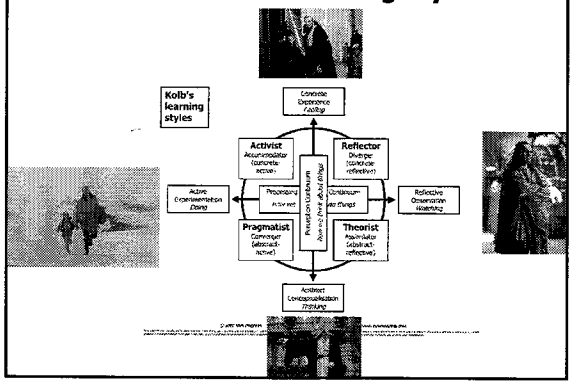
VARK learning styles (Fleming & Mills (1992a, 1992b). Four types of learners and learning styles

1. Visual learners prefer diagrams, flowcharts, graphics (they do not mention video, film, Webcasts, or PowerPoint presentations).
2. Auditory learners prefer to hearing directions, lectures, or verbal information.
3. Reading and writing learners prefer text passages, words, and written explanations.
4. Tactile or kinesthetic learners learn best by connecting to reality through examples, practices, or simulations.

Kolb (1984)

- According to Kolb, effective learning involves four phases:
  - from getting involved (Concrete Experience) to
  - listening/observing (Reflective Observation) to
  - creating an idea (Abstract Conceptualization) to
  - making decisions (Active Experimentation).
- A person may become better at some of these learning skills than others; as a result, a learning style develops.

One View of Learning Styles



Abstract Conceptualization vs. Concrete Experiences

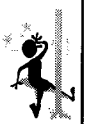
- (**AC**) - I am rational and logical.
- (**CE**) - I am practical and down to earth.

- (**AC**) - I plan events to the last detail.
- (**CE**) - I like realistic, but flexible plans.

- (**AC**) - I am difficult to get to know.
- (**CE**) - I am easy to get to know.

Active Experimentation vs. Reflective Observation

- (**AE**) - I often produce off-the-cuff ideas.
- (**RO**) - I am thorough and methodical.

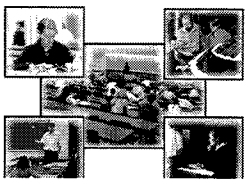


- (**AE**) - I am flexible and open minded.
- (**RO**) - I am careful and cautious.

- (**AE**) - I am loud and outgoing.
- (**RO**) - I am quite and somewhat shy.

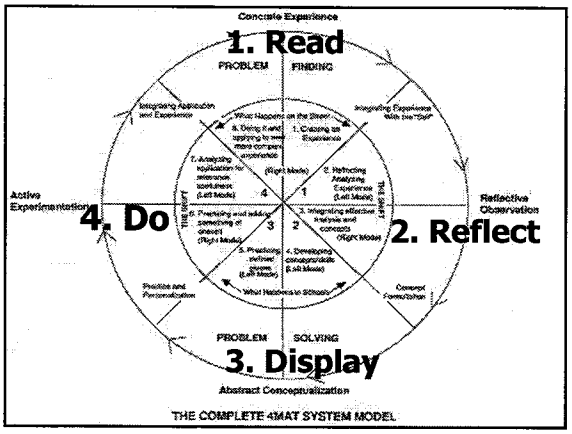
Index of Learning Styles Questionnaire

Barbara A. Soloman, North Carolina State Univ
http://www.engr.ncsu.edu/learningstyles/ilsweb.html



6. If I were a teacher, I would rather teach a course
   - (a) that deals with facts and real life situations.
   - (b) that deals with ideas and theories.

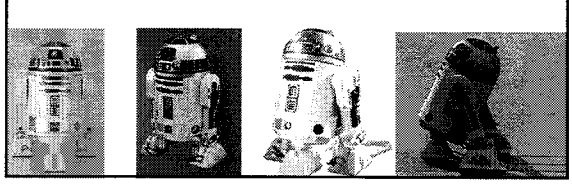
7. I prefer to get new information in
   - (a) pictures, diagrams, graphs, or maps.
   - (b) written directions or verbal information.



THE COMPLETE 4MAT SYSTEM MODEL

The R2D2 Method

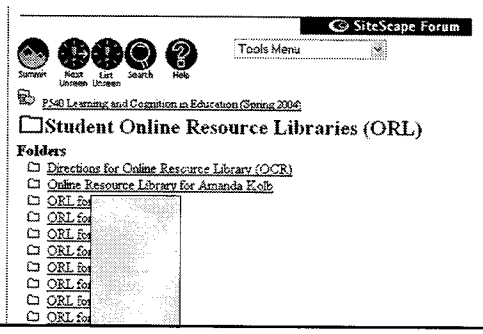
1. **Read (Auditory and Verbal Learners)**
2. **Reflect (Reflective Learners)**
3. **Display (Visual Learners)**
4. **Do (Tactile, Kinesthetic, Exploratory Learners)**



1. Auditory or Verbal Learners

- **Auditory and verbal learners prefer words, spoken or written explanations.**

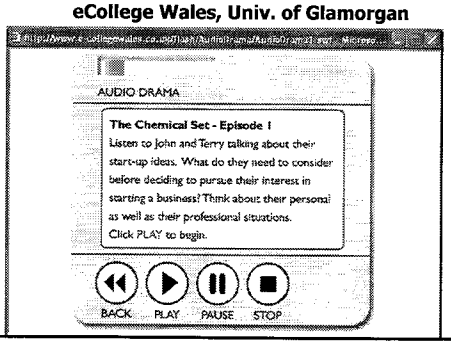
1a. Online Resource Libraries



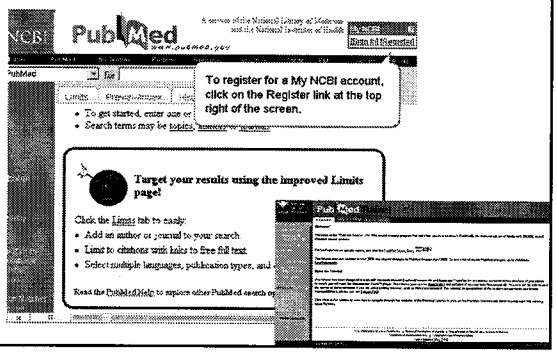
1b. Online Audio Cases

Audio Dramas

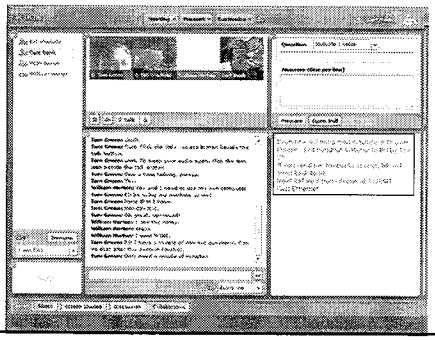
eCollege Wales, Univ. of Glamorgan



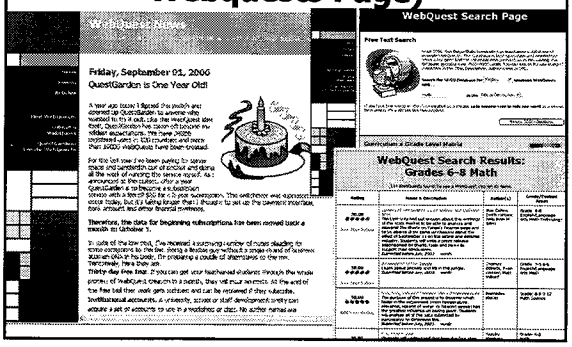
1c. Online Tutorials and Help



1d. Synchronous Conferencing



1e. Webquests (see the Webquests Page)



2. Reflective and Observational Learners

- Reflective and observational learners prefer to reflect, observe, view, and watch learning; they make careful judgments and view things from different perspectives




2a. Post Model Answers

Employment Law and Ethics Project

Question 1

Would it be illegal for Laura to recommend Billings instead of Lewis? Explain, being specific about the legal doctrines that would apply?

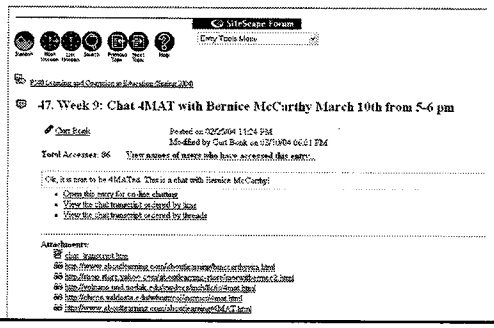
Answer 1

Under both Title VII of the 1964 Civil Rights Act and Section 1981 it is illegal to discriminate on the basis of race or color, and Lewis would likely win a lawsuit using the claim of disparate treatment if he were not recommended for the promotion. If Laura does not recommend Lewis, she is guilty of violating the law. None of the three primary defenses—seniority, merit, or bona fide occupational qualification—apply to this situation since Lewis has higher seniority, equal skills, and more direct experience with power tools, then does the other candidate Frank Billings.

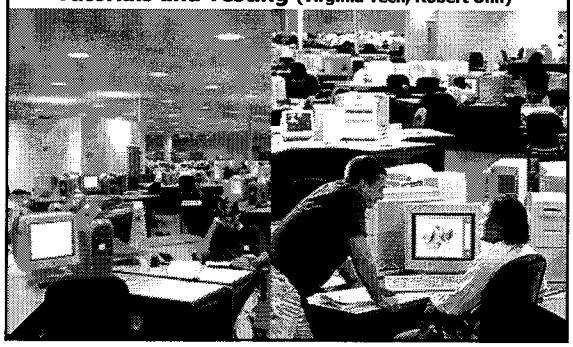
Title VII "prohibits discrimination based on race, color, religion, sex, and national origin in hiring, firing, job assignments, pay, access to training and apprenticeship programs, and most other employment decisions." ARPCO is a covered entity under Title VII because they are "employing 15 or more employees and engaging in an industry affecting interstate commerce" and as the case footnotes point out "as of November 21, 1991, the Civil Rights Act of 1991 extended protection from discrimination in employment to U.S. citizens working in foreign countries while employed by U.S. firms."

In this case, Title VII's disparate impact is not applicable since ARPCO's policy clearly states to "promote the most

2b. Reuse Chat Transcripts



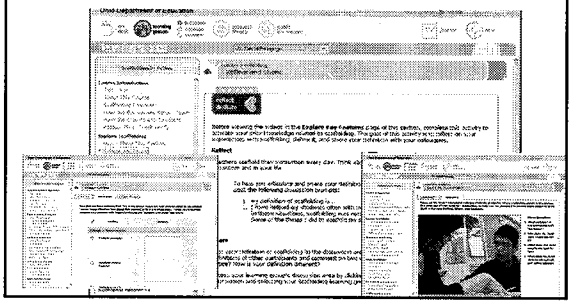
2c. Video Streaming: Math Emporium of Online Tutorials and Testing (Virginia Tech, Robert Olin)



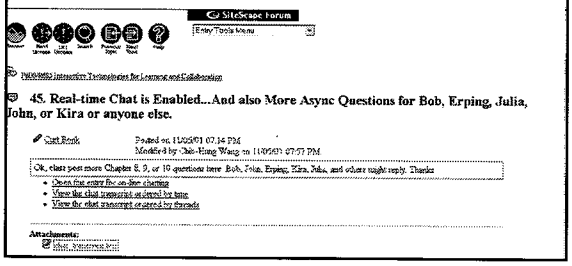
2d. Reflection and Observation: E-Portfolios

- Multimedia presentations (video, animation, voice-over testimonials)
- Examples of work
- Personal statement
- Self-reflections on that work
- Connections between experiences
- Standard biographical info
- i.e., progress, achievements, efforts...
- Large, complex, time to grade

2e. Reflection Sheets and Scaffolds online (E-Reading First Ohio) (reflect, share, and compare)

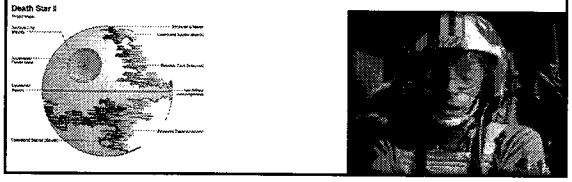


2f. Practitioner Feedback: Asynchronous Threaded Discussion plus Sync Expert Chat (e.g., Starter-Wrapper + Sync Guest Chat) (L/M = Cost, M = Risk, M = Time)

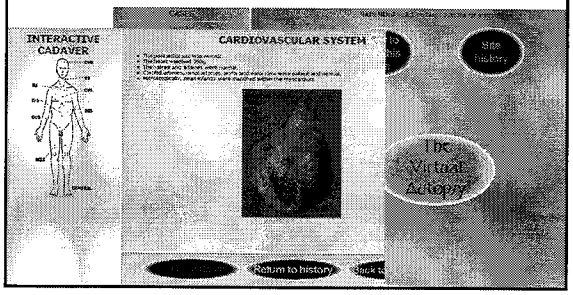


3. Visual Learners

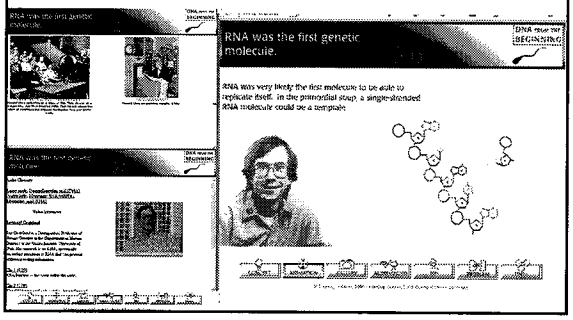
- **Visual learners prefer diagrams, flowcharts, timelines, pictures, films, and demonstrations.**



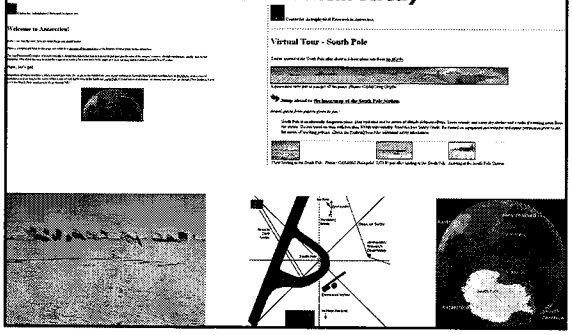
3a. Online Anatomy and Physiology



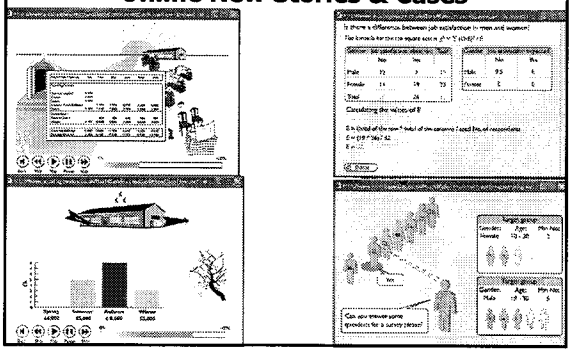
3b. Animations, Video Clips, Audio, Pictures, Web Resources, etc.



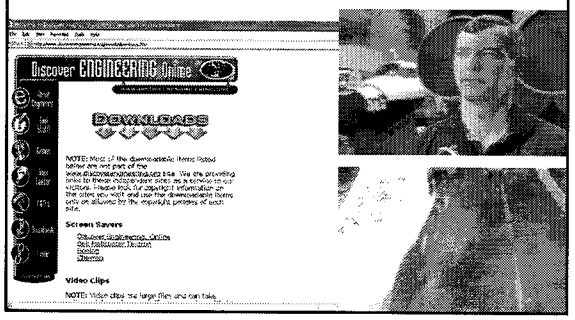
3c. Virtual Tour (Center for Astophysical Research in Antarctica)



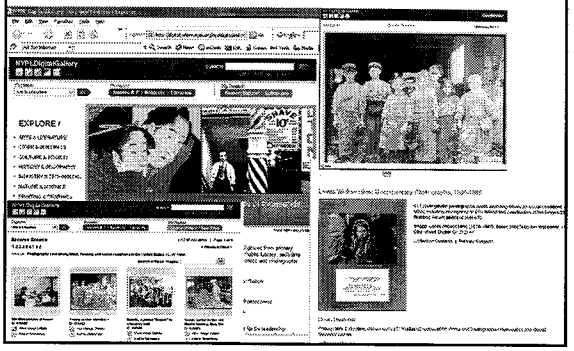
3d. Current Events: Interactive Online New Stories & Cases



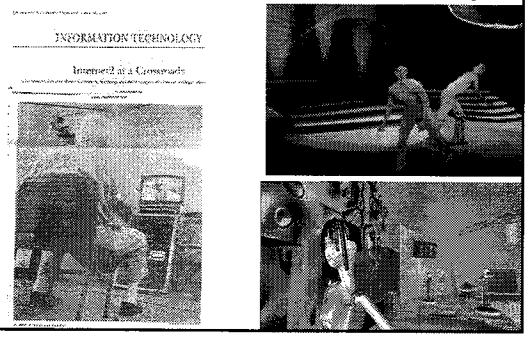
3e. Video Library of Concepts, Cases, or Experts



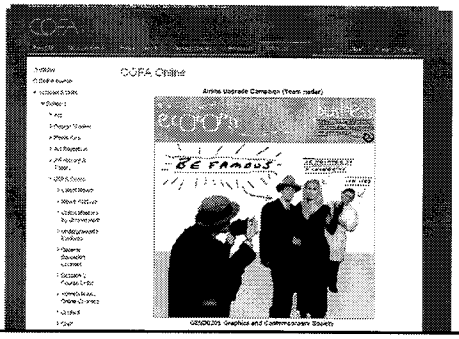
3f. Digital Libraries (LibraryShare)



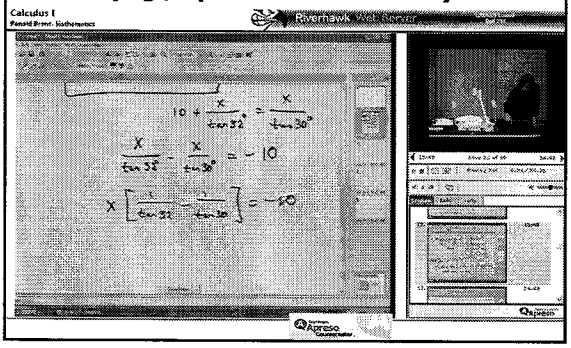
3g. Online Modeling: Watch Expert Performances (Music, Cyber Fashion Shows, etc.)



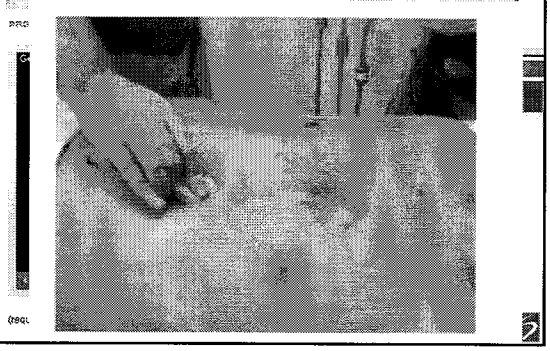
3h. Expert Mentoring Online in Art and Design (COFA Online, Omnium Project, Creative Waves—onine graphics and photomedia project)



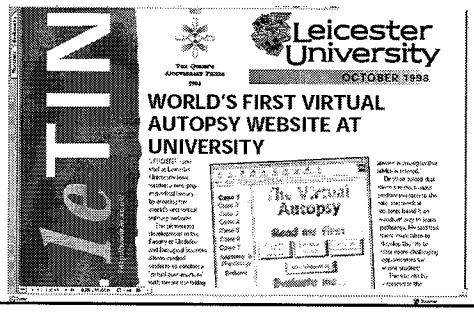
3i. Capture and Videostream Lectures (e.g., Apreso CourseCaster)



3j. Vodcast for Medical Training (e.g., "SonoSite on the small screen: The Bothell-based



3k. Virtual Surgery: multisource, real-time, interactive lesson in anatomy and surgery (Corn project)



3L. Internet2 Video Conferencing Applications

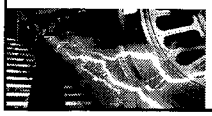
Zukerman Interactive: Distance Learning in the Arts

Manhattan School of Music, in collaboration with Columbia University, National Arts Centre of Canada and National Research Council of Canada, presented *Distance Learning in the Arts: An International Broadband Videoconference Chamber Music Master Class, Demonstration and Discussion* with Maestro Pinchas Zukerman on June 13, 2002. The interactive videoconference was part of the Critical Issues in Arts and Technology for Arts Managers conference held at Columbia University, June 6-7 and 12-13.

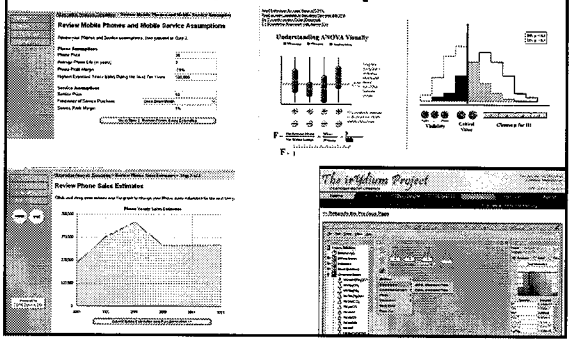
Using Internet2 networks and peer networks, CANARIE and NYSERNet, Maestro Zukerman – renowned conductor, violinist, violist and Manhattan School of Music faculty member – offered a chamber music master class from Ottawa, Ontario to a talented young string trio in New York. Audience members at Columbia University as well as those watching on the Internet were able to observe Maestro Zukerman working with these students in real-time. A question and answer session followed the master class, during which audience members at the conference and on the Internet asked questions on a variety of musical, technical and educational topics. Columbia University Academic Computing Information Systems hosted the live webcast in multiple formats: MPEG-1 and MPEG-2 Multicast, Real IPTV, and QuickTime. Star Valley Solutions, Inc., an Internet2 Corporate Member, provided the MPEG-2 codecs to facilitate this event. According to David Foll, Vice President of Sales and Operations at Star Valley Solutions, "MPEG-2 codecs provide both low latency and a high-quality interactive environment. We're pleased that the Manhattan School of Music is using them for this performance collaboration."

4. Tactile/Kinesthetic Learners

- **Tactile/kinesthetic senses can be engaged in the learning process are role play, dramatization, cooperative games, simulations, creative movement and dance, multi-sensory activities, manipulatives and hands-on projects.**



4a. Educational Simulations, Scenarios, and Manipulations

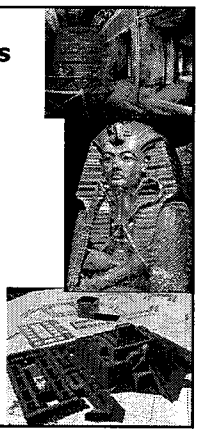


4c. Videoconferencing with Hearing Impaired Students Online

- **College students tutoring high schools on their homework**
- **Instructors observing how teacher education students are doing in field placements (practice presentation and communication skills**
- **Interpret speaker via We**

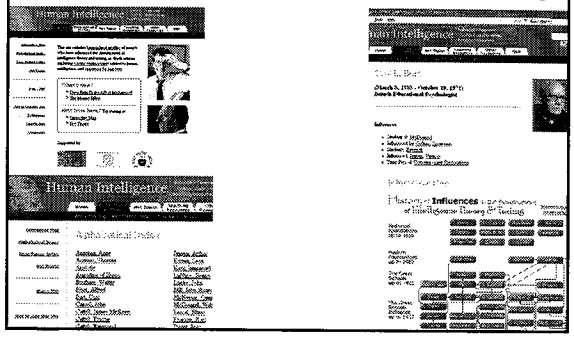
4d. Historical Documents discoverbabylon.org

- **In its final form, the multi-player game will let you march through three-dimensional recreations of the first city-states, around 3000 B.C., the first empires, around 2300 B.C., and finally the famous Iron Age empire of Assyria...offers three-dimensional walk-throughs of sites in the Valley of the Kings.**

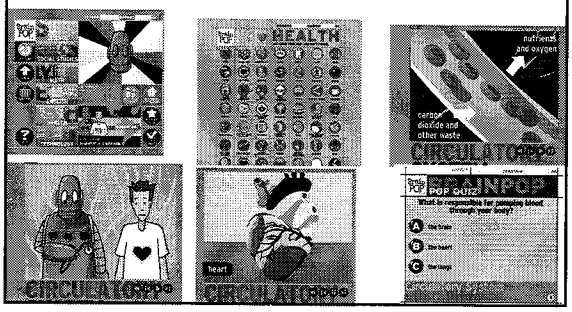


4e. Digital Storytelling

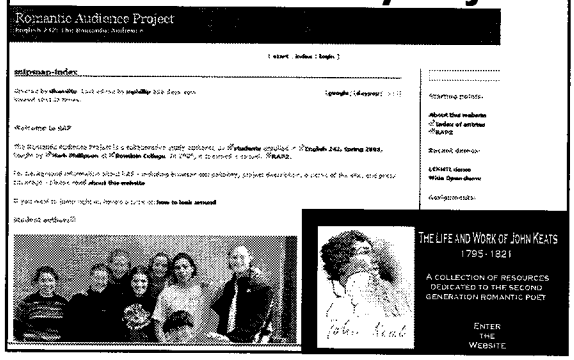
4f: Internally Built Web Links
(Human Intelligence Homepage, Jonathan Plucker, IU)



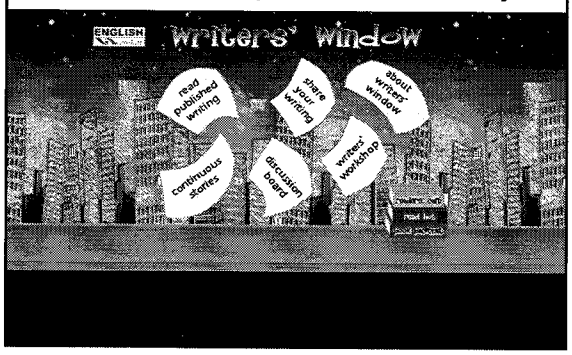
4g: BrainPop (movies, experiments, timelines, activity pages)
(Gina Koch Hidalgo, FETC Connections, Fall 2005)



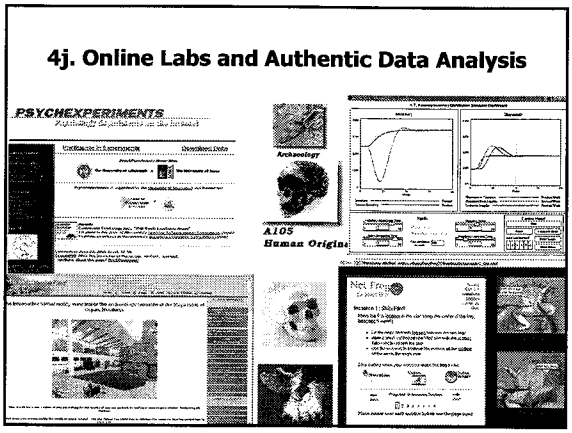
4h. Romantic Poetry Project



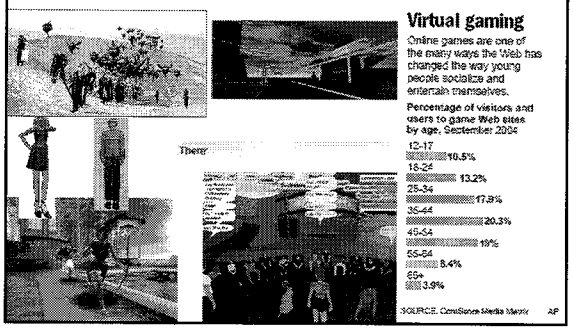
4i. Continuous Writing Tools and Resources (e.g., Writer's Window)



4j. Online Labs and Authentic Data Analysis



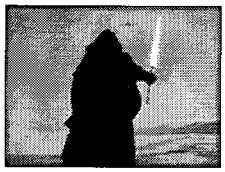
4k: Virtual Worlds/Virtual Reality/MMOG

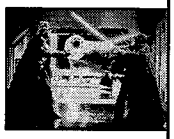


Next up: The MATRIX!!!!!!!!!!

- **M**obile
- **A**uditory
- **T**hought-stimulating
- **R**eflective/**R**eal-World
- v**I**sually **I**nteractive
- e**X**tremely Hands-on

Try the R2D2 Method!!!





Stand and Share

- **Will Work:** _____
- **Might Work:** _____
- **No Way:** _____