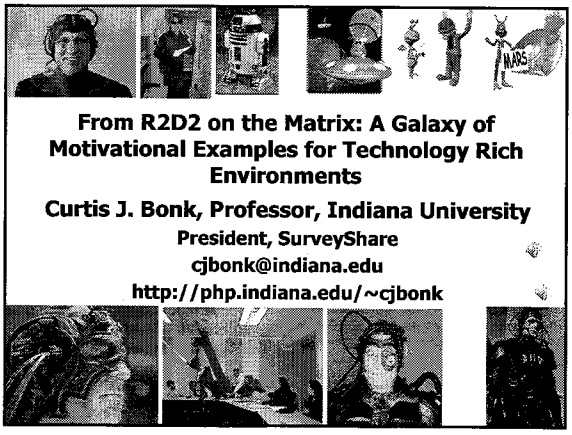
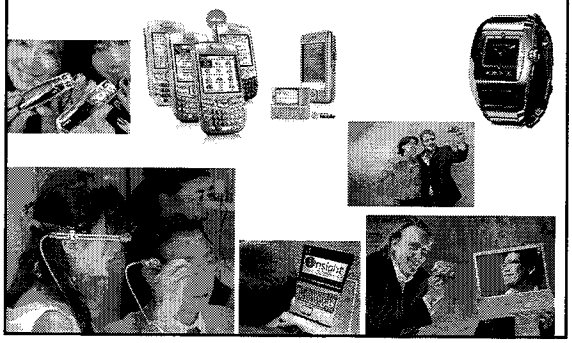


From R2D2 on the Matrix: A Galaxy of Motivational Examples for Technology Rich Environments

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

So many emerging technologies to use and research!



Learners' Perspectives on What is Missing from Online Learning

Emma J. Stodel, Terrie Lynn Thompson, & Colla J. MacDonald (Dec 2006)
The International Review of Research in Open and Distance

- **Emerging technologies are offering alternative ways to conceptualise and deliver education and in the process are revolutionising how learners work, think, and build knowledge. Technology is becoming integral to the teaching-learning process as ongoing advancements offer new avenues for learning. However, the adoption of this medium in the teaching-learning process has quickly outpaced our knowledge regarding how it might best be used.**

Learners' Perspectives on What is Missing from Online Learning

Emma J. Stodel, Terrie Lynn Thompson, & Colla J. MacDonald (Dec 2006)
The International Review of Research in Open and Distance

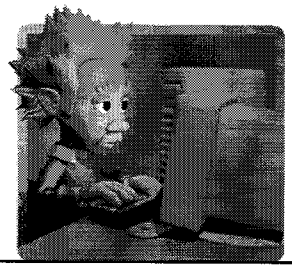
- **Over a decade ago, Berge and Collins (1995) pointed to the fact that educators often do not take advantage of the latest technologies available to enhance learning. They argued, "there is no shortage of technology, only a shortage of the educational vision necessary to use the technology to create new educational environments" (p. 5).**

A Synthesis of Research on K-12 Online Learning: Student Academic Performance
(Robert Blomeyer, Learning Point Associates, 2006).

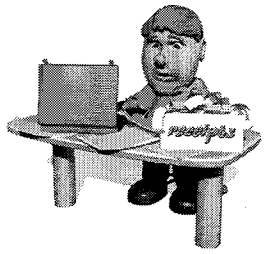
- **Lowes (2005) concludes that the recent advances in online courseware incorporate effective pedagogical approaches the "emphasize student-centered teaching, collaboration, problem-based learning, small-group work, and authentic performance-based assessments" (p. 3) all contribute to student academic performance.**

But this morning, we will discuss innovative pedagogy or teaching techniques and ideas with technology!

But first, a few theoretical perspectives and principles



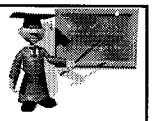
Thinking Back 20 Years Ago



Charles I. Gragg
(1940: Because Wisdom Can't be Told)

"A student of business with tact
Absorbed many answers he lacked.
But acquiring a job,
He said with a sob,
How does one fit answer to fact?"

Traditional Teachers



- Supposed sage, manager, conveyer
- Sets the agenda
- Learner is a sponge
- Passive learning & discrete knowledge
- Objectively assess, competitive
- Text- or teacher-centered
- Transmission model
- Lack interconnections & inert
- Squash student ideas

The Tao of Teaching

- A wise teacher lets other have the floor.
- Trying to appear brilliant does not work.
- The gift of a great teacher is creating an awareness of greatness in others.
- Facilitate what is happening, rather than what you think ought to be happening. Silence says more than words, pay attention to it.

The Tao of Teaching

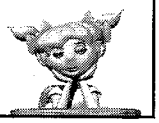
- Allow time for genuine insight.
- Instead of trying hard, be easy; teach by example, and more will happen.
- If you measure success in terms of praise and criticism, your anxiety will be endless.
- Any over-determined behavior produces its opposite.

Consultative Teachers

- Co-learner, mentor, tour guide, facilitator
- Student and problem-centered
- Learner is a growing tree and on a journey
- Knowledge is constructed and intertwined
- Many resources (including texts & teachers)
- Authentic, collaborative, real-world tasks
- Subjective, continual, less formal assess
- Display student ideas--proud and motivated
- Build CT, CR, CL skills

Students are too often...

- Emotionally moody and sleepy
- Preoccupied with previous class or hour
- Expecting entertainment
- Unable to concentrate for too long
- Isolated or alienated

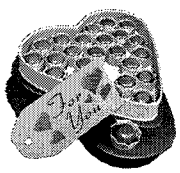


Ah, the Excitement of Instructional Design!

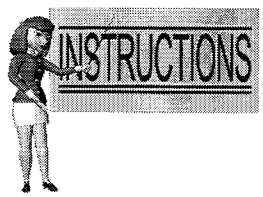
Ok, who is falling asleep at the mere mention of the phrase "instructional design?"

Did he say chocolate?

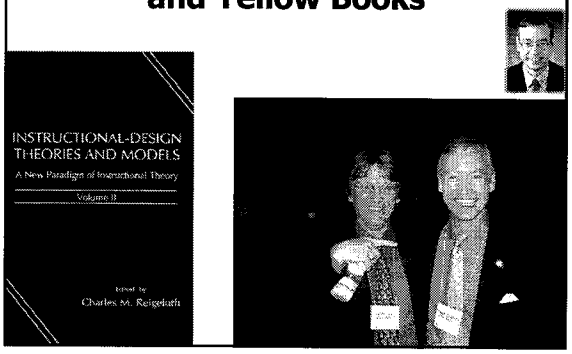
Who wants some chocolate???



Most ID Models in the 1980s Prescriptive



Instructional Design: Green and Yellow Books



1. Instructional Philosophy and Approaches

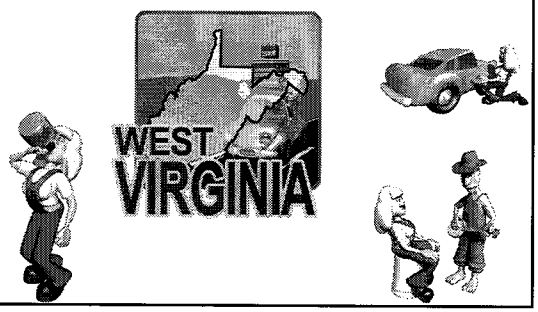
- Decisions about approach (behavioral, constructivistic, inquiry)
- Battle between constructivism and behaviorism
- Battle between student centered or instructor-centered

Robert Gagne's 9 instructional events

gaining attention	show variety of computer generated triangles
informing learners of the objective	"What is an equilateral triangle?"
stimulating recall of prior learning	review definitions of triangles
presenting the stimulus	give definition of equilateral triangle
providing learning guidance	show example of how to create equilateral
eliciting performance	ask students to create 5 different examples
providing feedback	~~check all examples as correct/incorrect~~
assessing performance	provide scores and remediation
enhancing retention and transfer	show pictures of objects and ask students to identify equilaterals

From http://tip.psychology.org/gagne.html

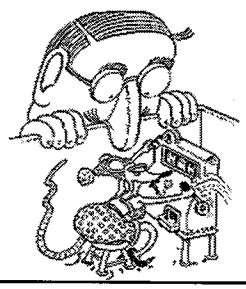
I headed out to West Virginny

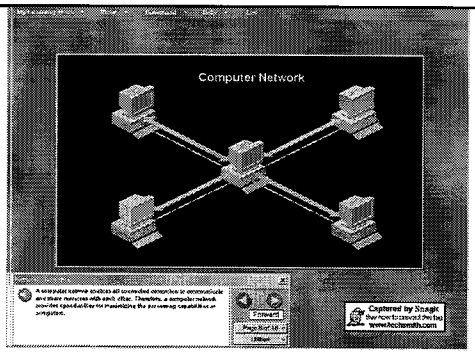


Skinner (1904-1990) Quote.

- I did not direct my life. I didn't design it. I never made decisions. Things always came up and made them for me. That's what life is.

Behaviorist Interactivity





Online PowerPoint?

2. 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

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

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

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.

3. Active Learning Principles

1. Authentic/Raw Data
2. Student Autonomy/Inquiry
3. Relevant/Meaningful/Interests
4. Link to Prior Knowledge
5. Choice and Challenge
6. Teacher as Facilitator and Co-Learner
7. Social Interaction and Dialogue
8. Problem-Based & Student Gen Learning
9. Multiple Viewpoints/Perspectives
10. Collab, Negotiation, & Reflection

Connections New Theories

- **Constructivism--concerned with learner's actual act of creating meaning (Brooks, 1990). The constructivist argues that the child's mind actively constructs relationships and ideas; hence, meaning is derived from negotiating, generating, and linking concepts within a community of peers (Harel & Papert, 1991).**

4. 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

Connections New Theories

- **Situated Learning--asserts that learning is most effective in authentic, or real world, contexts with problems that allow students to generate their own solution paths (Brown, Collins, & Duguid, 1989).**

PBL

(Blumenfeld et al., 1991; Savery & Duffy, 1996)

1. Anchor in larger task or problem
2. Develop learner ownership over the problem
3. Design authentic tasks
4. Tasks should reflect real world complexity
5. Learners must own the solution path/processes
6. Support and challenge learners
7. Encourage testing against alternative views
8. Encourage reflection on learning content and process
9. Novelty, Variety, Valued problems, Choice

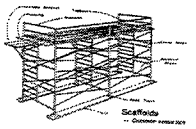
5. Sociocultural Ideas

(Bonk & Cunningham, 1998)

1. Shared Space and Build Intersubjectivity
2. Social Dialogue on Authentic Problems (mind is in social interactions and extends beyond skin)
3. Mentoring and Teleapprenticeships
4. Scaffolding and Electronic Assistance in ZPD
5. Group Processing and Reflection
6. Collaboration and Negotiation in ZPD
7. Choice and Challenge
8. Community of Learning with Experts & Peers
9. Portfolio Assessment and Feedback
10. Assisted Learning (e.g., task structuring)
11. Reciprocal Teaching & Peer Collaboration

6. Types of Scaffolding

(Bonk et al., 2001)



- Social Acknowledgement
- Questioning
- Direct Instruction
- Modeling/Examples
- Feedback/Praise
- Cognitive Task Structuring
- Cognitive Elaborations/Explanations
- Push to Explore
- Fostering Reflections/Self Awareness
- Encouraging Articulation/Dialogue Prompting
- General Advise/Scaffolding/Suggestions
- Management

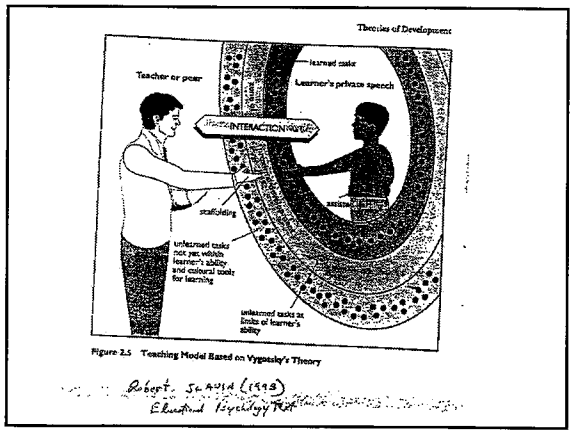


Figure 2.5 Teaching Model Based on Vygotsky's Theory

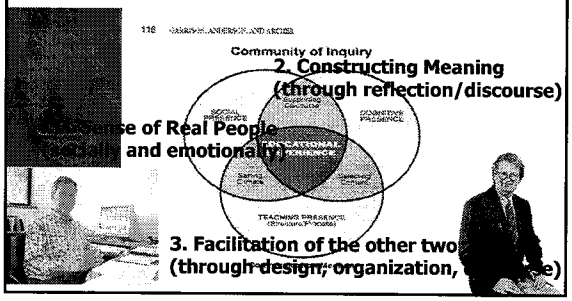
Robert Slavin (1994) Educational Psychology

7. Resources in a Learning Environment

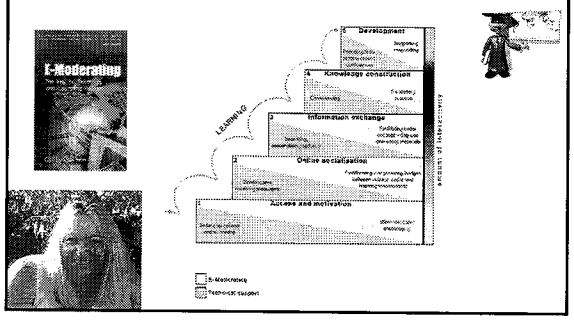
- Teachers
- Peers
- Curriculum/Textbooks
- Technology/Tools
- Experts/Community
- Assessment/Testing
- Self Reflection
- Parents

8. A Theory of Critical Inquiry in Online Distance Educ

Randy Garrison, Terry Anderson, & Walter Archer
2003, Handbook of Distance Education, Moore & Anderson (Eds.)
garrison@ucalgary.ca; terrya@athabascau.ca



9. Model of Teaching and Learning Through CMC (Gilly Salmon, 2000)



10. Instructor Roles Online

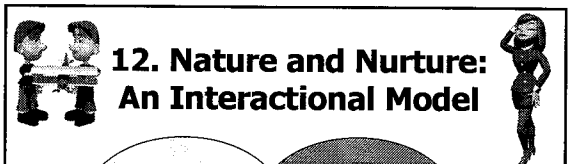
(Berge, 1995; Bonk, Kirkley, Hara, & Dennen, 2001; Ashton & Teles, 2001)

- **Technical:** Train, early tasks, be flexible, orientation task (passwords & equipment work?)
- **Managerial:** Initial meeting, FAQs, detailed syllabus, calendar, assign e-mail pals, gradebooks, email updates (understand structure?)
- **Pedagogical:** Peer feedback, debates, PBL, cases, field reflections, portfolios, teams, portfolios (interacting, summarizing)
- **Social:** Café, humor, interactivity, profiles, foreign guests, digital pics, conversations (tone)

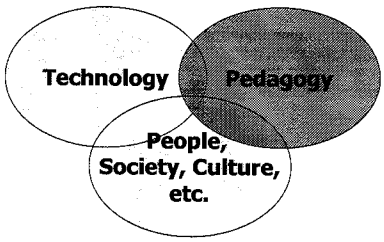
11. Matrix of Web Interactions

(Cummings, Bonk, & Jacobs, 2002, Internet in Higher Ed)

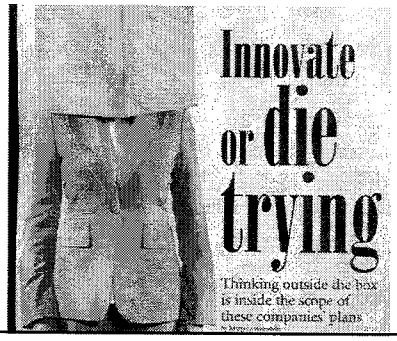
Instructor to Student: Syllabus, notes, feedback.
to Instructor: Course resources, syllabi, notes.
to Practitioner: Tutorials, articles, news.
Student to Student: Comments, sample work, links.
to Instructor: Votes, tests, papers, evals.
to Practitioner: Web links, resumes, reflections
Practitioner to Student: Internships, jobs, e-fieldtrips
to Instructor: Opinion surveys, fdbk, listservs
to Practitioner: Forums, listservs, prof devel.



12. Nature and Nurture: An Interactional Model



Let's Think Outside the Box!

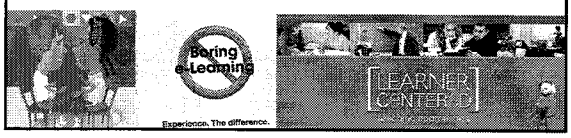


Task

- 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)

	Low Risk	High Risk
1. Risk	←	→
	Easy to Embed	Extensive Planning
2. Time	←	→
	Free or Inexpensive	Enterprise Licenses
3. Cost	←	→
	Instructor-Focus	Student-Focus
4. Student-Centered	←	→
	Low	High

Part I: 20 Learning Centered Technology Ideas



News Content Videos (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.

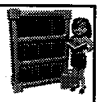
Cool Stuff

3. 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.

4. 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.

5. Think-Pair-Share-Online Partner

- Assign a topic for reflection or writing.
- Have share their responses with someone they are partnered with online.
- Share joint or individual answers with another team or with the class a online discussion forum.

6. 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

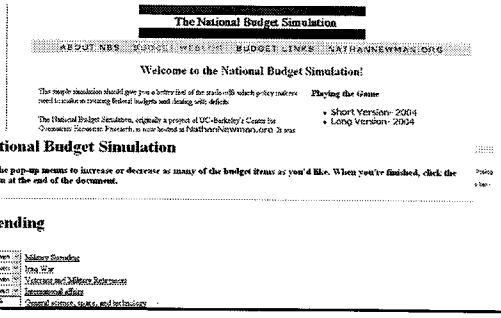
7. Six Hats (Role Play):

(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!

8. Hands-on: Online Simulations (e.g., National Budget)



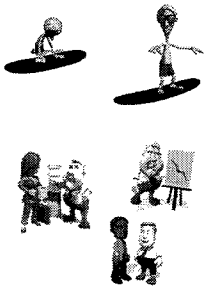
9. Best 3 Activity

(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.

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

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

11. 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.


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

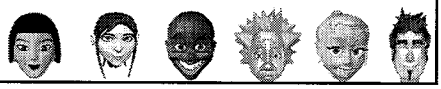
At the end of a unit, student presentation, videotape, expert presentation, etc., have student write down in an email or forum:

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

- H = How will we learn it?

13. 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.



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. Stand and Share (video conferencing)

1. Present a question to a class with remote sites.
2. When know the answer, stand up to indicate to the instructor that you have an answer.
3. Wait until all are standing.
4. Call on one at a time; start with a remote site.
5. When you give an answer or hear you answer given, you can sit down (unless you have an additional answer).


16. Just-In-Time Syllabus

(Raman, Shackelford, & Sosin)
http://ecedweb.unomaha.edu/jits.htm

Syllabus is created as a "shell" which is thematically organized and contains print, video, and web references as well as assignments. (Goals = critical thinking, collab, develop interests)

e.g., To teach or expand the discussion of supply or elasticity, an instructor might add new links in the Just-in-Time Syllabus to breaking news about rising gasoline prices.

17. Reuse Online Discussion Transcripts

- Have students bring in their online discussions or to class.
- Look for key concepts embedded in the transcripts.
- Share or have competitions

18. Reuse Blog Transcripts

- Have students bring in their blogs on the readings for the week for a reflection or sharing.
- Summarize key points by group.
- Present in 2-3 minute summaries.

19. Movie assignments (Bonk 2004)

III. Final Project Movie Review (60 Points)

Movie Review Directions (Select 2 movies including at least 1 from Group A) Your final activity i
from the standpoint of one or more learning theories or theorists. In your review, you should discu
are they exhibited in different actors, scenes, or plots? I prefer personal descriptions of each cours
may be needed at times. Also, what theory or theories of learning and cognition do these movies r
discuss how teachers are portrayed and the overall learning environment. Is there any learning thec
your personal theory of learning? You must include links to at least 4 chapters in your review. You
review must come from Group A below.

Group A: Some standard learning and cognition classics include the following:

- Conrack (John Voight, Paul Winfield, Hume Cronyn)
- Dead Poets Society (Robin Williams, Ethan Hawke)
- Dangerous Minds (Michelle Pfeiffer, George Dzundza, Courtney B. Vance)
- Forrest Gump (Tom Hanks, Sally Field, Dick Clark, John Lennon, Bob Hope)
- The Lord of the Rings (pick any 1 of the 3 movie) (Sean Astin, Viggo Mortensen, Ian McK
  Bloom, Billy Boyd, Brad Dourif, Ian Holm, Christopher Lee, Ian McKellen, Dominic Mon
- Man Without a Face (Mel Gibson, George Martin, Michael DeLuise)
- Mirror Has Two Faces (Barbara Streisand, Jeff Bridges, Pierce Brosnan)
- Mr. Holland's Opus (Richard Dreyfuss, Glenne Headly)
- Renaissance Man (Danny Devito, Gregory Hines, Mark Wahlberg, Cliff Robertson)

20. Class Voting and Polling
(perhaps electronic)

1. Ask students to vote on issue before class (anonymously or send directly to the instructor)
2. Instructor pulls our minority pt of view
3. Discuss with majority pt of view
4. Repoll students after class

(Note: Delphi or Timed Disclosure Technique:
anomymous input till a due date
and then post results and
reconsider until consensus
Rick Kulp, IBM, 1999)

99 seconds: What have you learned so far?

- Solid and Fuzzy in groups of two to four