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Unit 7 Overview & Announcements

Extra credit – April 10th
Format
Study sessions
Topics

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PERSONALIZED SYSTEM OF INSTRUCTION (PSI)

Parts 1 and 2

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Keller

Keller was the strongest advocate of PSI, aka the Keller Plan or the Keller Method

“Goodbye, Teacher...” (1968)

1973: only 10 years after prototype / 5 years first heard of: 300 papers, articles, and research reports

1979: 3000 publications

Influence on this course

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Teaching Machine & Programmed
Textbook Influence

Reward rather than penalize

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Implementation in Brazil

PSI is better established in educational system in Brazil than here in the states
1962: University of Brasilia founded (in Brazilian capital)
No-one knew who Keller or Skinner were
1963: Brazilian student at Columbia / visit Brazil? / formal invitation
Arrival / dean replaced / improvisation
Early 60s / Cuban revolution / "Yankee go home!"
Invited to implement PSI while founding department of psychology /
No money, no facilities / intro course / learned to speak Portuguese

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Escape From Brazil

1964: Coup d'état
Suspension of civil rights
Widespread disappearance, torture,
and exile of many politicians, university
students, writers, etc
University of Brasilia: Resignation or
dismissal of more than 200 teachers
1965: Arizona State University

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Return to Brazil

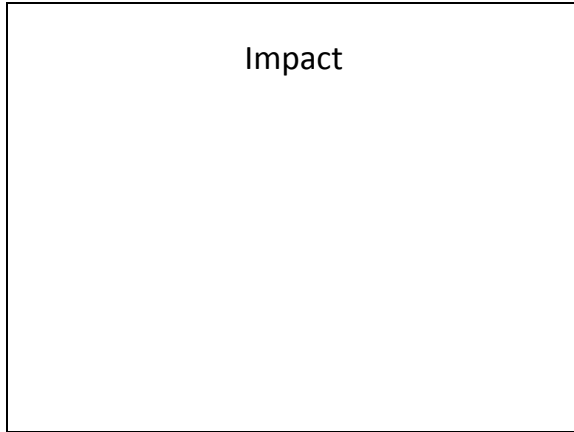
1972: Intellectual grandchildren
Popularity of Skinnerian behaviorism
traceable almost entirely to Keller's
visits
1965 political crisis weakened PSI and
behavior analysis at University of
Brasilia, but influence grew elsewhere
University of Sao Paulo
Physics Department

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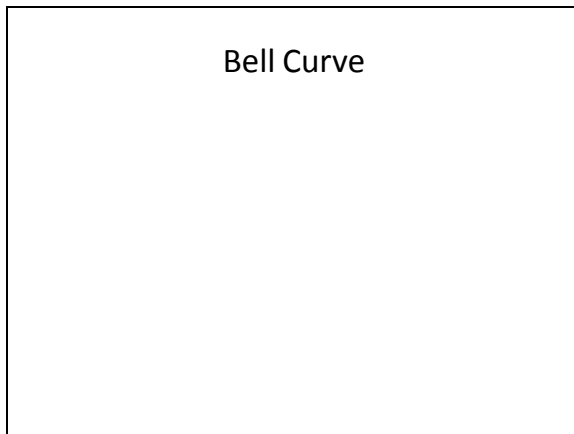
Impact

OBM Network statistics as an example

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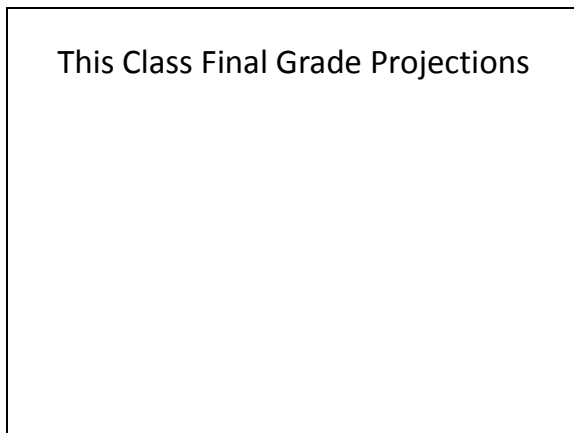


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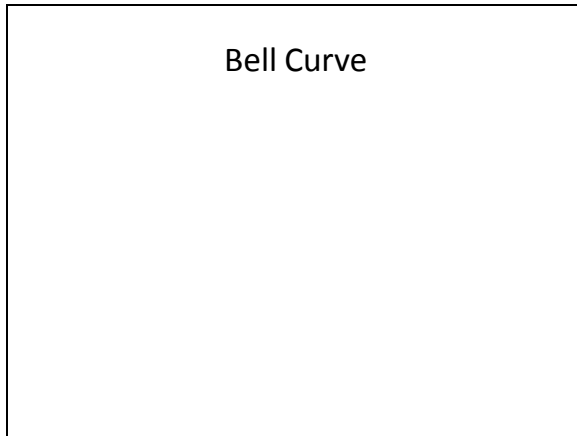


Underlying assumption / few students will (or can) meet objectives
Final scores: bell curve
For class of 18: A (2), B (4), C (6), D (4), E (2)

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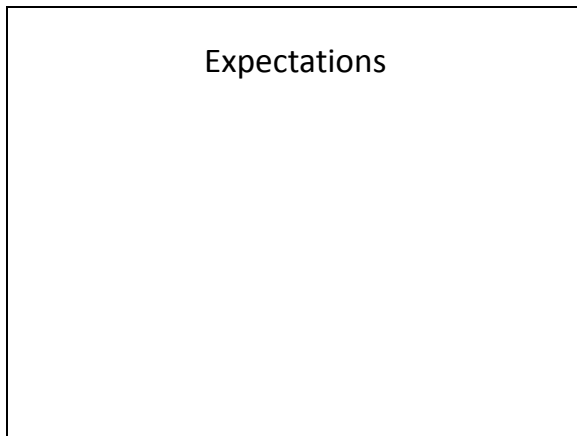


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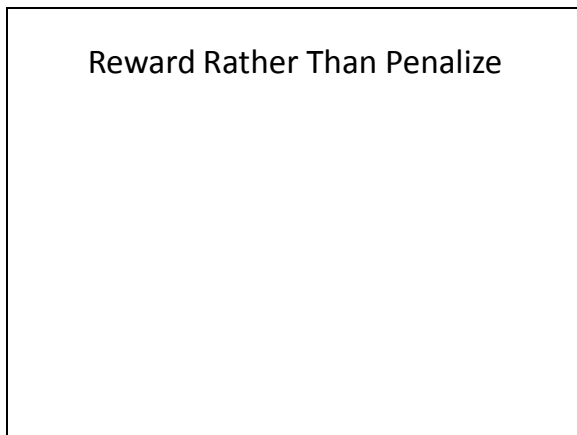


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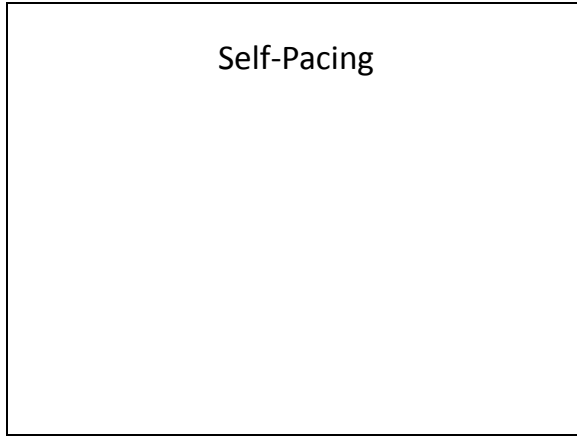


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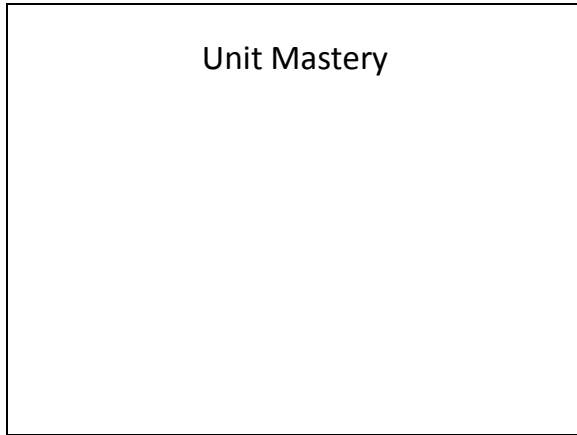
Originally designed college classroom
Elementary / middle / high / business
1979: 5000 PSI courses

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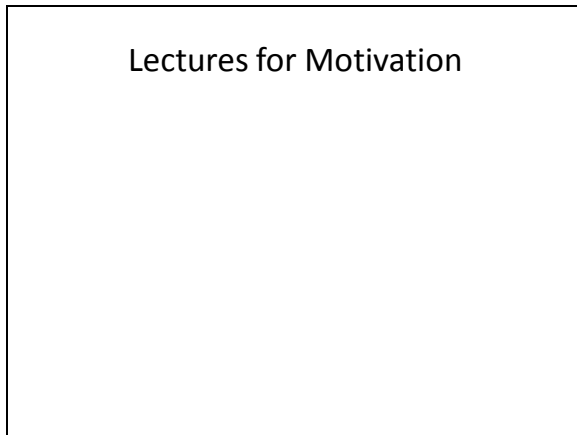
Small-step sequenced materials

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Repeated testing of specified instructional objectives

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Not delivery of course content

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Emphasis on Textual Materials

Delivery of course content

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Use of Proctors

Course assistants who tutor and assess
Personalizes instruction

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Promoting Mastery

Full understanding later / usually dependent
Self-pacing required / student learn different rates / master units at different rates
Lecturing prevents self-pacing, which then hinders mastery
Thus reliance textual
Mastery also entails clearly stated instructional objectives & criterion-referenced assessments

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Every Student Should Get an A

Under optimal conditions /
compromise
8: A, 7: BA, 6: B, 5: CB, 4: C, 3: DC, 2: D,
1: E

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Semester Limitations

With total self-pacing, many will not
finish
Advanced courses require some
understanding
More important concepts early /
organize into repeat spiral
Totally finished before (student
motivation increases)
Allow only two attempts on any one
day

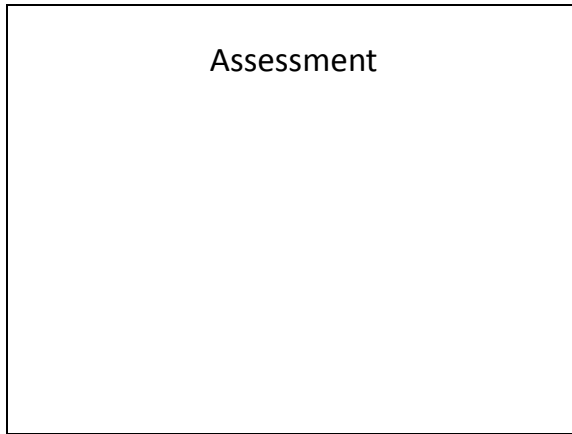
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Procrastination

Competing obligations
PSI course completion rates

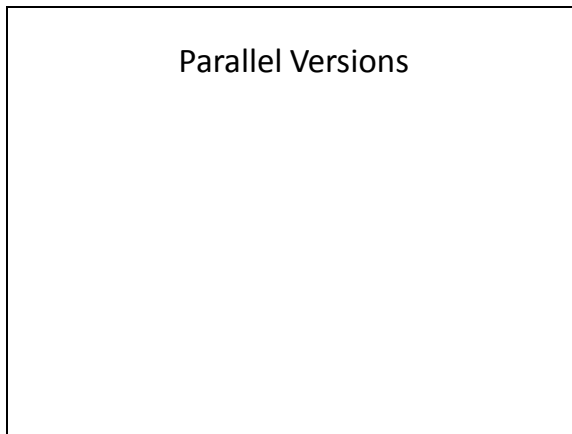
- Incentive systems
- Teaching students time-
management skills
- Contingency contracting
- Students establish self-imposed
deadlines

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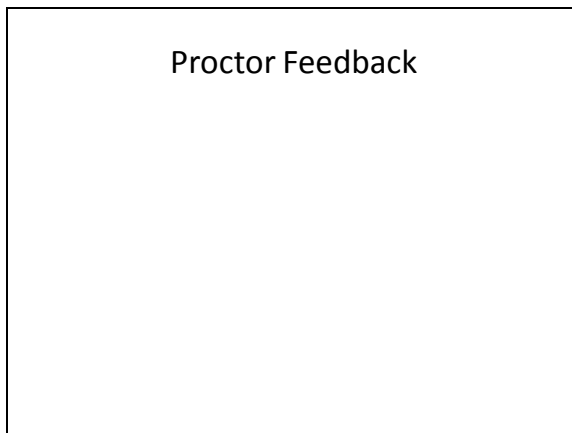
Individually work through small units of material
When ready, complete test on unit
Usually multiple choice, but any format works

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To provide mastery requirement, alternative but equivalent versions of test must be developed
Also recommend systematic review (review tests or items)
If unsuccessful after three attempts, then...

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After assessment, meet proctor (grading, feedback, discussion, tutoring)
If meet
If not
Retake as many times as necessary without penalty (note: not replicating this aspect for this unit)
Cycle repeats with student moves at their own pace
Kulik review: "Evidence tends to show that small units and frequent quizzes are more effective in stimulating student achievement than large units and less frequent quizzes"

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PSI and Final Exams

Some feel inconsistent with PSI philosophy (if mastered, why exam needed?)
Keller himself said probably wise to give final
Rocking the boat
Answer inevitable challenge of whether or not all those As represent real quality

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Number of units

Fifteen week (18 typical: range of 15-20)
Unit covers about a week's work
Normally require 15-20 minutes answer / 5 minutes grade
Longer tests mean waiting lines
PSI teachers cover little less (hence five class periods for unit 7, instead of usual three)
Traditional teacher and pride at full syllabus
Unreasonable if truly expect learn everything
Covers about 4/5 of normal

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Proctors

External / internal

External: no longer taking course

Internal: instructor evaluate unit 1 / if pass, become proctor for colleagues / constantly changing group of proctors / must be rewarded, class every test day / points, grades, mastery

Grading proctors: principle job is decrease gap of understanding between student and teacher / check on test responses that clearly hit or miss target / restate questions / clarify points on which well informed or direct students to certain readings / should not give lectures / 1:10 ratio

Testing proctors: doesn't actually further instruction / administrative and record-keeping

Study-hall proctors: important enough that role might be filled by instructor / principle job is decrease gap of understanding between student and textbook / clarifies obscure passages, helps with difficult operations, explain unintelligible references / serves a small percentage of class, often weakest repertoires / need for help should decrease as semester progresses

Personal-social aspect of educational process when utilizing proctors: immediate feedback that personalizing student's learning experience
Proctor is seen as the agent of reward: generalized reinforcers such as attention, approval, and As
Reinforcement for proctor: signs of progress in others / money / points

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Lectures for Motivational Purposes

Ephemeral events / can't access / instructor pacing
Lectures were to be motivational, rather than source of course content / students not permitted to attend lectures unless mastered previous
Opportunity to learn exciting things not included in course units

But, effect on student achievement or motivation...

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Effectiveness

About 2000 PSI studies conducted.
Students in PSI courses learn better, remember longer, and like it more
Percentage improvement on final exam scores: immediate of 8%, retention of 14%

Taveggia (1976): Early studies examined data from over 350 reports comparing methods and media of instruction 1924-1965. "The unequivocal conclusion to emerge from this reanalysis of research was that there is no demonstrable difference between the measured college teaching methods (e.g., lecture, group discussion, tutorial, etc.) or media (e.g., face-to-face instruction, educational television)."

Critic of educational research, unassociated with PSI, who liked demonstrating the nothing one does makes a difference

Kulik (1976): 400 PSI articles, only 2 favored traditional

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Social Validation

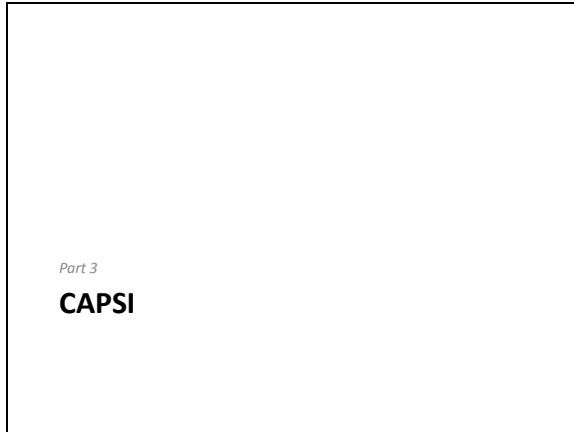
Student satisfactions also favors PSI (75% to 90%)
Estimates of student workload were found to be similar in PSI and traditional classes (note about 4/5 rule)

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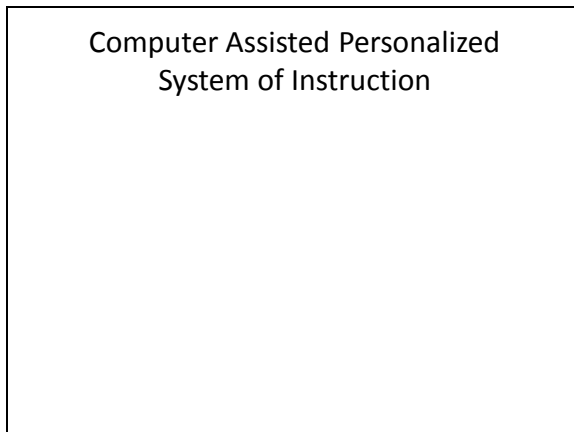
Demise of PSI

Initial development time / planning & organization (“the role of the teacher is not lessened under PSI; it has only been given a different form”)
Academic progress and advancement governed by student performance rather than calendar
Difficult to adapt self-pacing and mastery-based model to traditional academic calendar
Teacher-centered approach vs. learner-centered approach
Privacy of teacher is not protected, methods are out in open, excuse of “covered in lecture” can’t work for errors
Inertia of lecture-based teaching
External proctors & campus unions: unpaid labor
Need strong upper level support
Already a strong change in teaching
When the percentage of As in the course is multiplied by five or more; and when incompletes appear in unprecedented number

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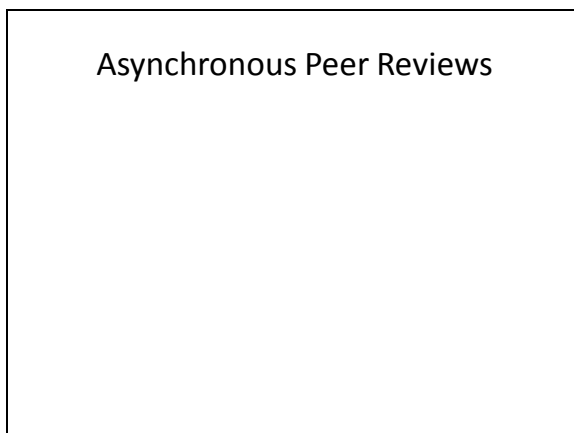


Keller: "The use of a programmed text, a teaching machine, or some sort of computer aid within such a course is entirely possible and may be quite desirable."

Relatively minor roles are given in Keller plan to lectures, which could be eliminated entirely without serious damage

CBI may be less threatening and more acceptable than PSI

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CAPSI at University of Manitoba

Uses students from same class who had passed a given unit as peer reviewers

Required students to demonstrate mastery on every single question on test, otherwise "restudy"

Restudy: Retake unit after period of time has passed

Computers allow access 24 hours a day, 7 days a week

Do not have to go to central location for testing

By end of course 90% of tests are being peer reviewed

87% of peer feedback was free of error

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CBI and Answer Complexity

Linguistic abilities of computers /
assessment / feedback
Thus, human proctors are necessary

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Scalable with Class Size

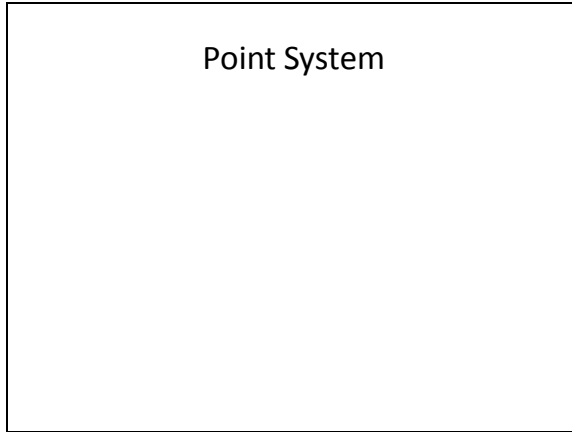
Single instructor alone limited in
personalized feedback that can be
given

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Scalable with Class Size

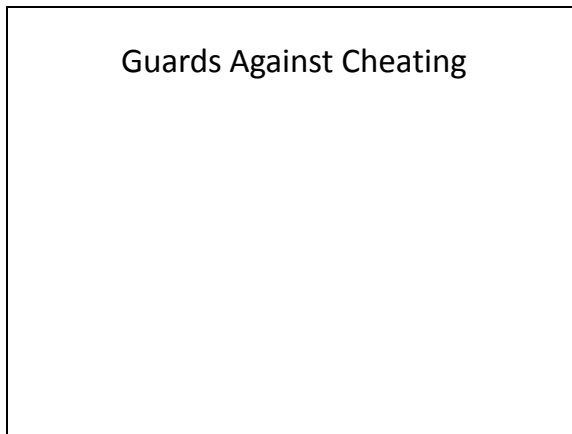
In large CAPSI classes, students
continue to receive rapid and frequent
feedback

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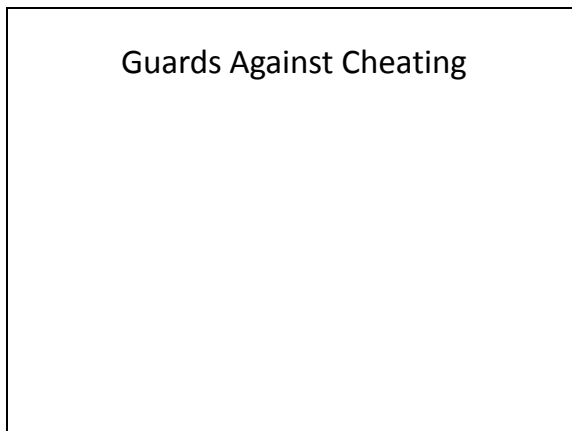
Incentives for students to prepare answers, write tests, and review other students' answer
Point system translatable into grades
Point penalty if assigned and fail to review by deadline
Reassigned to another reviewer, instructor, or teaching assistant

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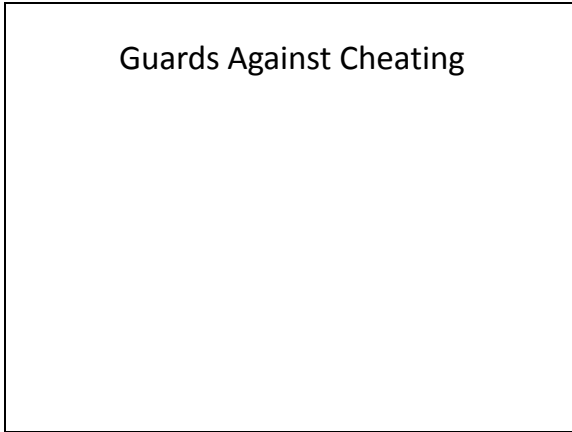
Scanning program

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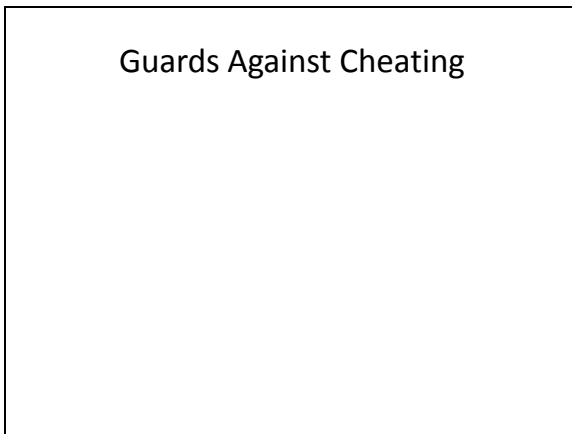
Time limit

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Heavily weighted supervised exams, separate from PSI portion

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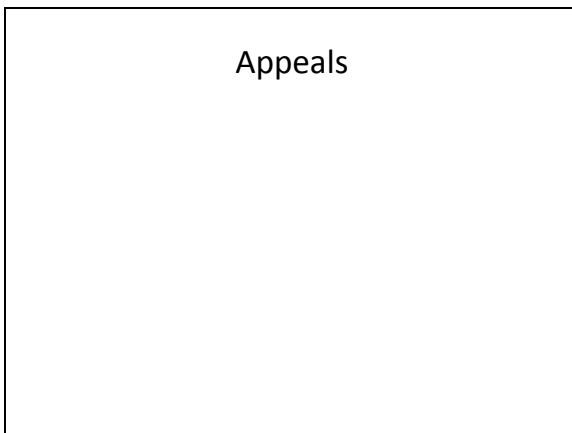


Test questions designed at the higher thinking levels (concept testing and applications)

Possibility of requesting tests until contains only questions that student can answer:

- Minimum time requirement in-between
- Most important concepts recur

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Appeal process as a check against assignment of "restudy" results when "pass" is warranted

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*Part 3 continued***WHOLE LANGUAGE /
DISCOVERY LEARNING**

Holism: not possible to understand learning by analyzing small chunks / response to behaviorism

Chomsky's language approach (humans have natural language capacity; response to Skinner approach to language) / Goodmans (professor at University of Arizona) extended this to linguistic approach to literacy (speaking to reading) / said they observed kids who read words individually and in connected text / did better with connected text / failures to replicate

Whole Language: reading is a "psycholinguistic guessing game" / childhood reading is a natural act / teaching individual components represses this natural ability / skip words, absorb ideas! / frequent "reading" and love of books / learning by experience and exposure rather than instruction

Discovery learning: learn by doing

Both: Learners actively construct and build new ideas; this is a natural process

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New Zealand

One of the most serious problems with education: Who do you believe?
Advocates often operate from same base of information and data sets, yet offer dramatically different solutions
New Zealand a popular reference point:
New Zealand uses whole language &
New Zealand has one of the highest literacy rates in the world

Based on performance of 18 year olds.
Only about 15% percent of population is in school at age 18 (data based on top performers only)
Also, NZ had a high literacy rates 30 years before whole language advocates took over country, now their papers and magazines have same complaints about literacy as our country

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Immersion Theory

Learning to read will happen if you just immerse kids in language / go over text ad nauseam
Learning is too artificial if organized (hierarchy of skills should not be used)
Better and more natural to immerse

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“Whole Swimming”

Teaching kids to swim by pushing them off diving board. Some will make it and some will drown.

Even those who make it to shore will not be as good swimmers as if they had been taught proven strokes

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Language Acquisition

Babies acquire language through actually using it, not practicing separate parts and then assembling (what language is babbling)

- Written language is language
- Babies acquire language through actually using, not practice of parts
- Oral language is learned incidentally
- Therefore, reading is best learned incidentally

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If acquisition comes from incidental usage, then..

Little use of material to direct teach reading or writing

Whole language relies heavily on literature or print used for appropriate purposes

Cake-mix direction used to really making cake

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Meaningful Context

First grade class with four different reading selections (illustration and text)
Kids could “read” selections perfectly
Switched illustrations and tested
Half kids pointed at words and perfectly recited different story (the one that matched the picture)
Shown story A with picture B, kids pointed at story A and recited story B

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Holism

Goodmans: “Early in our miscue research, we concluded that a story is easier to read than a page, a page easier than a paragraph, a paragraph easier than a sentence, a sentence easier than a word, and a word easier than a letter. Our research continues to support this conclusion and we believe it to be true.”

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Natural Hierarchies

Whole-language avoids hierarchical approaches / contradicts common sense to start with easier and build to harder

Whole-language points out that there are no natural hierarchies (i.e. hierarchies are unnatural and therefore bad) / no natural way to build cars, so let's throw parts together and hope for the best

Even if the human brain is pre-wired for speech, doesn't follow that reading is pre-wired. Reading is unnatural, so of course there are no natural hierarchies. Alphabet is a manmade convention whose principles must be taught systematically. Programs should be hierarchical

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At least they love the books...

"My kids just love books. Of course, they can't read, but they love them."

Teacher meets requirements for "natural language development". Within such a framework, failure must be assumed to result from child faulty natural development

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Final Comments

Literature often gets a free pass from evaluation committees

General rule in education is that approaches are adopted based on philosophy, not facts

Try to find one valid experimental study to support effectiveness of whole language

Whole language theorists have been successful at promoting beliefs with controlled studies or methodologically accepted research

American Federation of Teachers (1995): no meaningful research has ever verified whole language claims

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The End

Questions?