

Physics 4810 / 7810 Week 4 - Rockin!

Day 8: Fa2008:
Applying Accommodation and constructivism

Theory without practice is empty;
practice without theory is blind
- adapted from Kant



Fieldsite Ops

- E/M Tutorials are still looking for folks (Fridays I think).. 3310...

Posner: Theory of Accommodation

- Key: first instance of theoretical basis for learning COUPLE with mechanism
- What are conditions for accommodation?
- What is a conceptual ecology?
- What is Einstein's epistemology and why does this matter?

Utility of elicit-confront-resolve

Tutorials based on this approach (partly)

Example?

Consider "Heavier Object Fall Faster than Light Objects"

What is a way to confront?

Come up with examples of utility (Tutorials)?

Share from HW

Put into practice - Lecture

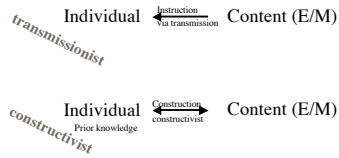
ILDs - Traditional

Comparative Approach

ILDs - Traditional

Elby ILDs

PER Theoretic Background



What's missing so far?

- Is there more than content & are these elements separable from content?
- What is the impact of elicit-confront-resolve epistemologically (belief about knowing)?
- Are concepts unitary?
- Does context matter and what is context?

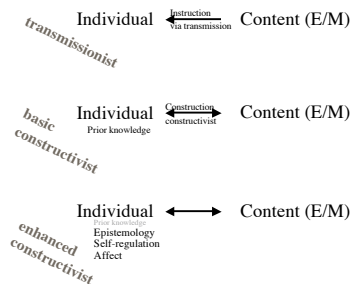
Stroop test

RED	GREEN	BLUE	YELLOW	PINK
ORANGE	BLUE	GREEN	BLUE	WHITE
GREEN	YELLOW	ORANGE	BLUE	WHITE
BROWN	RED	BLUE	YELLOW	GREEN
PINK	YELLOW	GREEN	BLUE	RED

Stroop Test II

RED	GREEN	BLUE	YELLOW	PINK
ORANGE	BLUE	GREEN	BLUE	WHITE
GREEN	YELLOW	ORANGE	BLUE	WHITE
BROWN	RED	BLUE	YELLOW	GREEN
PINK	YELLOW	GREEN	BLUE	RED

PER Theoretic Background



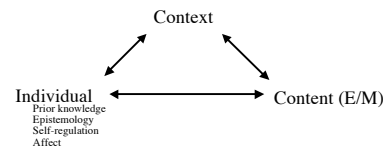
Adding to Constructivism

“How could you get past the context problem, where students can answer the vague, idealized question but not the real world application?”

Homework Example from 121



Cultural/ Contextual Constructivism



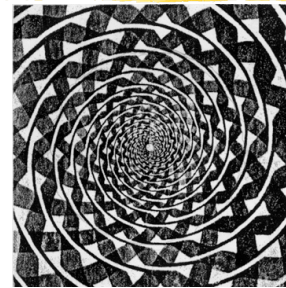
Content cannot be known outside of / independently from context.

Drop in a level

People are 'wired' a particular way?
Try to memorize the following number (in order):

3 7 3 2 3 7 1 9 4 5 5 3 0 0 1 7

Foreground / Background



From: McDermott



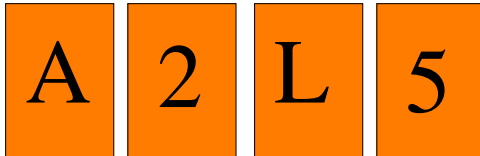
a cultural perspective

- people's knowing / cognition is situated within social, cultural and historical contexts
- what does this mean?

The card game

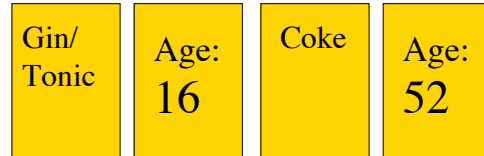
Rule: *If there is a vowel on one side, there is an even number on the other*

Verify the rule for:



The bartender game

- You are a bartender and need to verify that the following drink orders/ ages don't break the law: *if you drink alcohol you must be 21 or older*



Robolab Challenge

How can we use these tools to change how we have students engage in science?



Can you teach about x, v, a ?
What about rotational motion?
Relativity?

