

Self-regulation and mathematics learning in the college classroom

Jenny Lee

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Harvey Mudd College

Advisor: Dagan Karp

- Motivation
- Self-regulation in the context of college mathematics
- Self-paced assessment in the setting of Math 40

“Individual differences” in learners is a fact that can be demonstrated in many ways. That our students vary in many ways can never be forgotten ... Our basic task in education is to find strategies which will take individual differences into consideration but which will do so in such a way as to promote the fullest development of the individual.

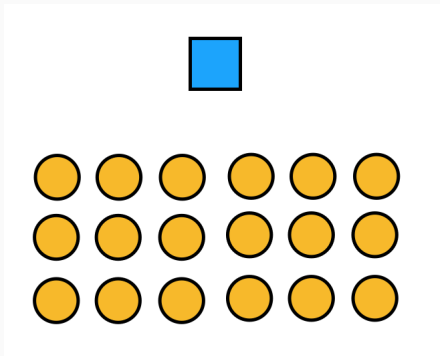
- Benjamin Bloom

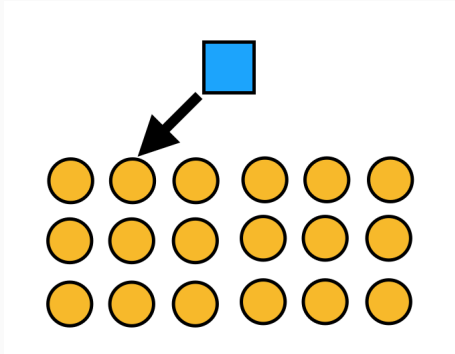
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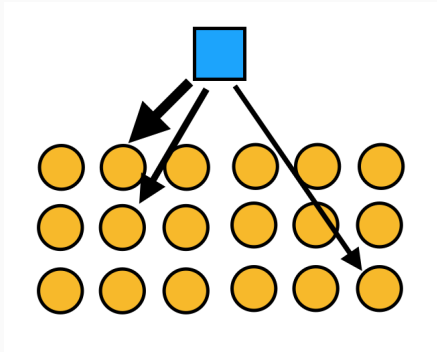
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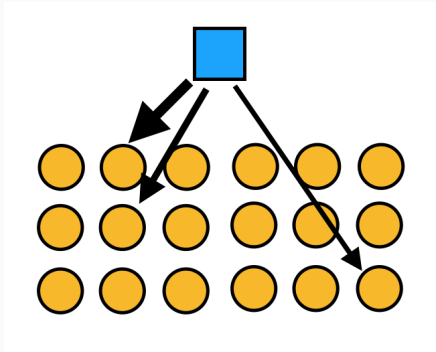
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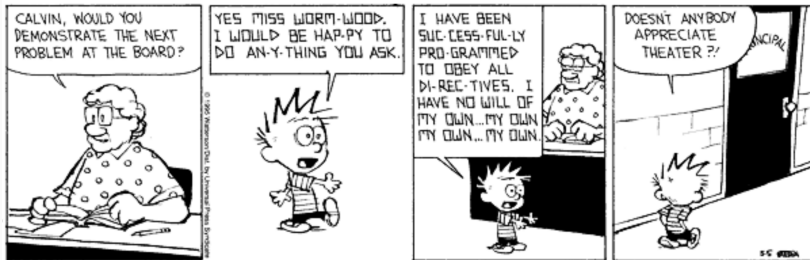






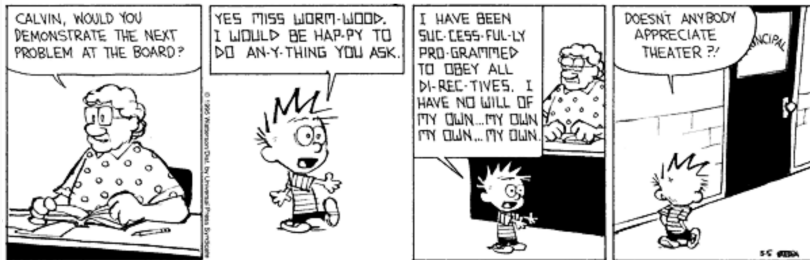
No arrow backwards.

Mathematics is not fair.



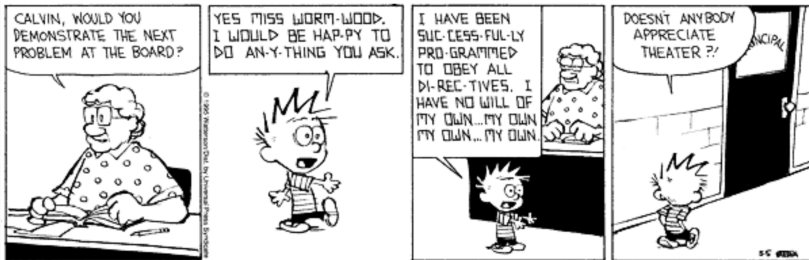
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- Generalized instruction, individualized assessment

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- Centralized locus of power
- Generalized instruction, individualized assessment
- A system built to benefit a specific subset of the population.
 - Biases (instructional, structural)
 - Cultural obstructions

How do we fix it?

- Hard to answer.

- Changing the perception of mathematics (imposed by self, not society)
- Effecting self-perception as a mathematician (self-efficacy)

Definition:

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PART I. GENERAL THEORIES AND MODELS OF SELF-REGULATION

self-managing environmental contingencies, but also the knowledge and the sense of personal agency to enact this skill in relevant contexts. Self-regulation refers to self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals. This definition, in terms of actions and covert processes whose presence

Zeidner, M., Pintrich, P. R., & Boekaerts, M. (2005). Handbook of Self-Regulation. Burlington, MA: Academic Press.

Self-regulation in the wild

- Self-instruction
 - Moore method
 - ex. Flipped classrooms, inquiry-based learning
- Self-monitoring
 - Immediate and private feedback via checklists
 - Concrete and continuous understanding of own performance

One form of self-regulation: self-assessment

- Qualitative or quantitative evaluation, independently completed
- Practicing metacognition

One form of self-regulation: self-assessment

- Qualitative or quantitative evaluation, independently completed
- Practicing metacognition
- Goal: build independent thought, shift locus of power, move away from standardization

- What is it?

Self-paced assessment

- What is it?
- Considerations:
 - subject, type of class, size of class
 - existence of an honor code, AE, other resources
 - amount of instructor effort needed

Case study: Math 40



- Relatively ideal (school, size, subject)
- Implementation
 - Students in section A - regular midterm/exam
 - Students in section B - multiple take-home quizzes with multiple retries without penalty

Results from the case study

- “No negatives” = equally effective academic achievement
- Positive student experience (lower stress)
- Signs of self-regulation in action
 - Using first quiz as learning tool
 - Scheduling and/or asking for deadlines

What this means

- Speculative remarks
- A question to consider