

# 01 Intro and Meta Loops

Saturday, November 23, 2019 1:38 PM

## Introduction

### Welcome

Prepare to Teach Workshop

Please grab some food and complete the pre-workshop survey, if you haven't already:



*Link to survey*

### Contact Info

#### Jean Hertzberg

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Mechanical Engineering

Faculty Teaching Excellence Program (FTEP) Faculty Associate

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NSF funded consortium of 45 universities, aimed at preparing future faculty. Join at [cirtl.org](http://cirtl.org)

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### Icebreaker, at your table, meet two new people

Take turns

2 minutes:

Who are you?

Name, institution

Research area in one or two sentences

Teaching experience or hopes

Favorite hot beverage

18 Fluids

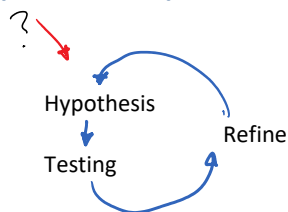
4 Biology

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## Meta Loops

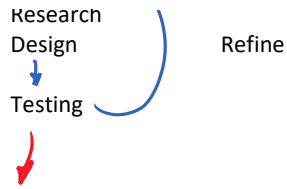
### Basic loops in our disciplines

Science:



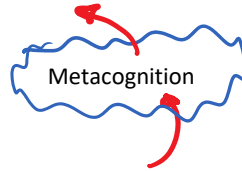
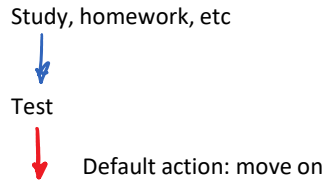
Engineering:





## Teaching and Learning

### Students



#### Activity example: Think Pair Share

Think about the question  
 Pair: turn to a neighbor  
 Share: tell your answer, listen to theirs

What is metacognition?

#### Metacognition:

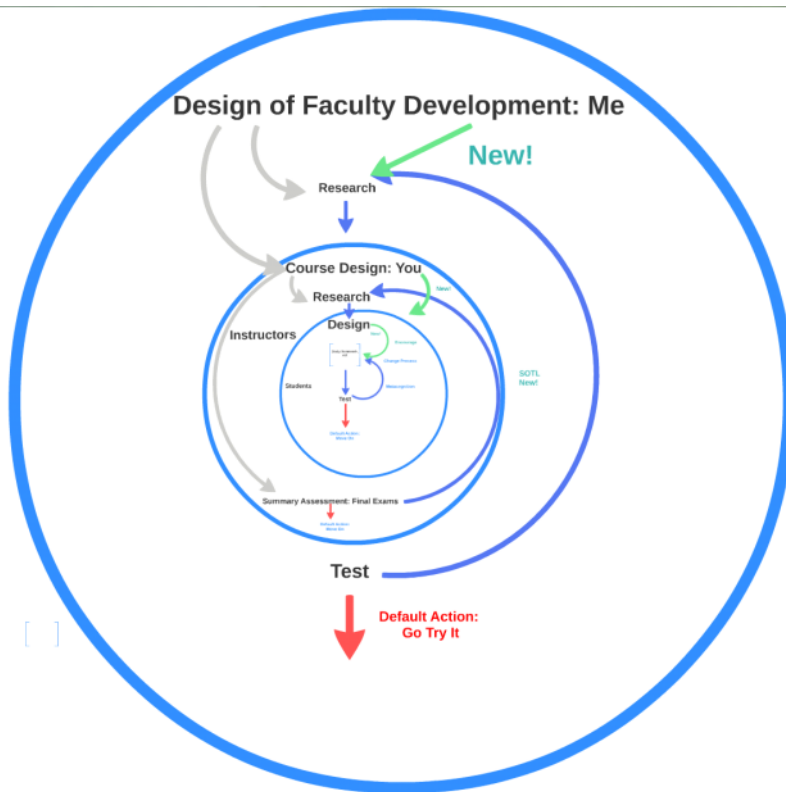
Thinking about thinking,  
 "Individual knowledge of one's own learning processes for the purpose of improving them"  
 Google level ref: Livingston, (1997)<http://gse.buffalo.edu/fas/shuell/cep564/metacog.htm>

Education research ref: Bjork, Robert A. "Memory and Metamemory Considerations in the Training of Human Beings." In *Metacognition: Knowing About Knowing*, 185–205. Cambridge, Mass.: MIT Press, 1994.

How We Learn versus How We Think We Learn: Desirable Difficulties in Theory and Practice.

"Massed repetitions lead to greater short-term performance, but impair long-term performance (e.g., Simon & Bjork, 2001); this dissociation could explain why people think massed repetitions are more effective."

<https://bjorklab.psych.ucla.edu/research/>



**Applying the fundamental techniques of science and engineering to our practice as teachers**

Taking a professional approach to teaching.

Currently of strong interest to NSF, AAU, NAE, NAS

Scholarship of Teaching and Learning: SOTL

Teaching As Research (TAR) [CIRTL]

Done rigorously, becomes Education Research (ER)

By us, is Disciplinary Based Education Research (DBER)

PER = Physics Education Research

EER = Engineering Education Research

etc.

Carnegie foundation

Boyer's report: Scholarship Reconsidered

Argued that teaching suffers; academics don't care

Research is evaluated by impact on the field. Moderately objective.

Teaching doesn't get that treatment.

Needs reconsideration as a scholarly activity



[http://laborpains.org/wp-content/uploads/2009/08/2318062662\\_736cb636ca.jpg](http://laborpains.org/wp-content/uploads/2009/08/2318062662_736cb636ca.jpg)

Matryoshka

Russian nesting dolls



<http://justlol.us/wp-content/uploads/2013/04/russian-dolls.jpg>

## Summary:

### Learning Objectives for PTT

- 1) Participants will be able to apply new teaching techniques, including active learning approaches.
- 2) Participants will recognize the applicability of their disciplinary techniques (of research) to teaching and learning. (Pre-course survey, 30% disagreed)

### Other goals

Walk the talk. Experience, as a student, the methods that we propose you use on your students

## Agenda

- Intro
- Metaloops
- Learning Objectives
- Active Learning
- Practice/ microteach

Break

Target time 12:30 pm