

# 01 Intro and Meta Loops

Wednesday, August 07, 2013 2:38 PM

## Introduction

### Welcome

4th Summer Teaching Institute for Post-Docs in Engineering (STRIPE)  
(and don't worry if you're not an engineer)

Please grab some food and complete the Pre Workshop Survey.  
Check your email for the link

### Contact Info

#### Jean Hertzberg

Associate Professor  
Mechanical Engineering  
Faculty Teaching Excellence Program (FTEP) Faculty Associate  
Center for Integrated Research, Teaching and Learning (CIRTL) Institutional Leader  
NSF funded consortium of 25 universities, aimed at preparing future faculty  
University of Colorado, Boulder  
hertzberg@colorado.edu  
Jeanbizhertzberg.com  
303 492 5092 phone  
303 817 0967 cell, texts OK  
Office: ECME 220

and

#### Clayton Lewis

Professor  
Computer Science  
President's Teaching Scholar  
Clayton.Lewis@Colorado.edu

and

#### Trevor DiMartino

Instructor, Graduate Teacher Program, CU Boulder  
Trevor.DiMartino@colorado.edu

Course Websites:

Logistics: <http://cirtl.colorado.edu/stripe/>

Lecture notes and references will be posted here:

Zotero group library:

<https://www.zotero.org/groups/stripe/items>

Zotero ~ Mendeley, Endnote, but better for sharing content with colleagues and students.

Citation and bookmark manager

Add-on for Firefox.

Standalone available for Macs, etc.

### Icebreaker

2 minutes:

Who are you?

Name, institution

Research area

Teaching experience or hopes

Anything personal, unique to share?

At least an alliteration with your name

Liz Burkowski  
NCAR now visitor from UNH, going back

Wouter Hoogkamer  
IPHY post doc

Liz Burkowski  
NCAR now visitor from UNH, going back  
Rsch faculty  
Climate sci  
TA , cit sci paleoclimate  
2 dimples twin has one.

Wouter Hoogkamer  
IPHY post doc  
Running, skiing sci  
TA in Belgium and Netherlands  
Teaching terminology is different here  
Ran marathon, was in Brazil

Rosita Williames  
CIRES  
Land use/cover changes satellite data  
TA, remote sensing  
Human/enviro interaction  
Orig from Malaysia

Rebecca Buchholz  
Post doc at NCAR  
Atm Chem CO wildland fire  
Tutored ugrads  
From Australia, much peer learning  
Went on 6 month world trip

Britta Nelson  
U Georgia post doc  
Neurosci, stress addiction  
Lab courses a while ago  
Halloween. No-Face, from Spirited away

Alison Nugent  
NSF post doc at NCAR  
Orographic precip, tropical island  
Much TA,  
Starting U Hawaii in fall  
Competitive figure skater  
Loves dk chocolate peanut butter cups

Racquel Douglas PhD candidat  
Enviro engin. Lifecycle  
TA. EPA in Dallas  
From Louisiana

Kristen Rasmussen  
Post doc at NCAR 1.5 yrs  
Severe weather; floods worldwide. Sat data  
Taught big classes. No training.  
Starting CSU late fall faculty  
Jazz trumpet player

Ann Demmel  
CSM, NREL  
Materials, computational  
TA for physics studio  
Intro to Mat'ls  
Central Wisconsin

Mark Raleigh  
CIRES, Geol, ice data  
Taught geol course

Alexander Pautsina  
Social network analysis  
Here since Feb  
Czech republic since feb  
Biomonitoring  
Not much teaching

TA too  
Snow hydrology  
Will be dad next month

Wayne Seltzer  
Works at Oracle, product mgr  
ECE CS, networks  
Taught at ATLAS, adjunct in fall  
Loves to sail

Clayton will try dark ch. Peanut butter cups  
Reads a lot  
Natasha's dance, cultural history of Russia

Rosalia Garcia  
U Georgia  
Food sci processing  
Taught once, took CIRTL MOOC  
From Mexico  
Loves improv theater

Cheryl Pinzone  
U Georgia alum  
Genetics of fruit flies  
EBIO here  
Taught 3 semesters Ebio. Doing active learning, course design, flipped course  
Yogi

Mariela Perignon  
Postdoc here  
Geologist, modeling; floods  
Taught many intro labs etc. programming  
From Venezuela  
6 yr olds can write iPhone apps but can't spell

Trevor  
Muse is 7 months old; potential guide dog  
Works for GTP. Does workshops

Paolo Taboga  
Italy  
Appl Mech; prosthetics  
Taught biomech

Anna Malanushenko  
Russia  
Post doc at UCAR  
Solar physics  
No teaching experience  
Is a do-it-yourselfer

Moving to Sacramento in fall  
Likes to run and play piano and pipe organ, classical

Breno Fragomeni  
From Brazil  
Veterinarian, genetics  
Lots of TAing  
U Georgia post doc  
Took teaching course by accident.

Jean Hertzberg  
Mechanical Engineering here at CU Boulder since 1991  
Fluid Mechanics and Engineering Education Research  
Volunteer firefighter, gardening, hiking, folk dance.

Clayton: Wrap up

### Minute paper *- Explain Later*

Briefly write  
What is your wish or hope for this workshop?  
What are your expectations for this workshop?  
(What do you think is really going to happen?)  
Name is optional.

### Synthesized responses

Metalevel: why did we do that? Why that way?  
Anonymity, to get honest response  
Also allows honest evaluation of response, no judgement  
No facts requested. These were interpretive questions  
Gary Selemi Arizona state does work on this. Elicits discussion, reflection  
Wordle, does text word analysis, makes graphic  
Use to guide topics for next lecture  
Make sure to tell students what results were  
If you ask for input, you have to use it.

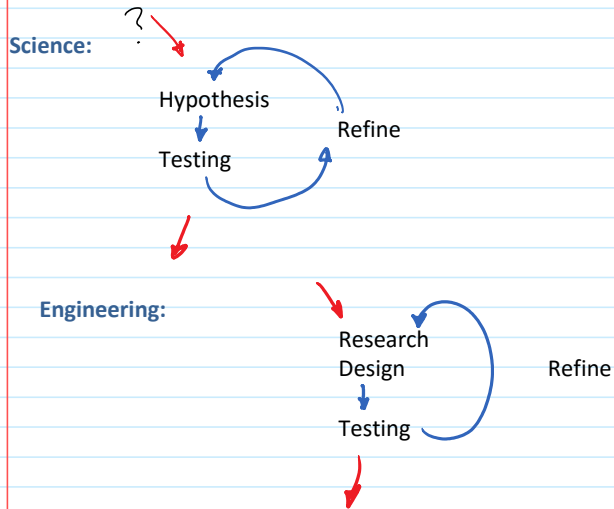
Active learning, learning through diversity, yes we will model it  
What happens when things go wrong?  
Engaging learning environments  
Evidence based practices  
Teaching philosophy vs teaching statement  
Describe approach vs include experiences and potential courses  
How to make more interesting

Expectations: Lots of interaction, assessment examples, conflict management  
2016  
Hopes: for hands-on experiences. Career hope; to start prepared.

Expects that workshop won't have practical techniques  
Emphasis on assessment, how much time is really worth it?  
Wants answers to certain questions  
Undergrad brain; a confusing thing  
Discussions on impactful and purposeful teaching careers  
One step in a constant career of improvements

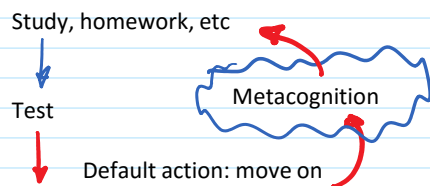
## Meta Loops

### Basic loops in our disciplines



### Teaching and Learning

#### Students



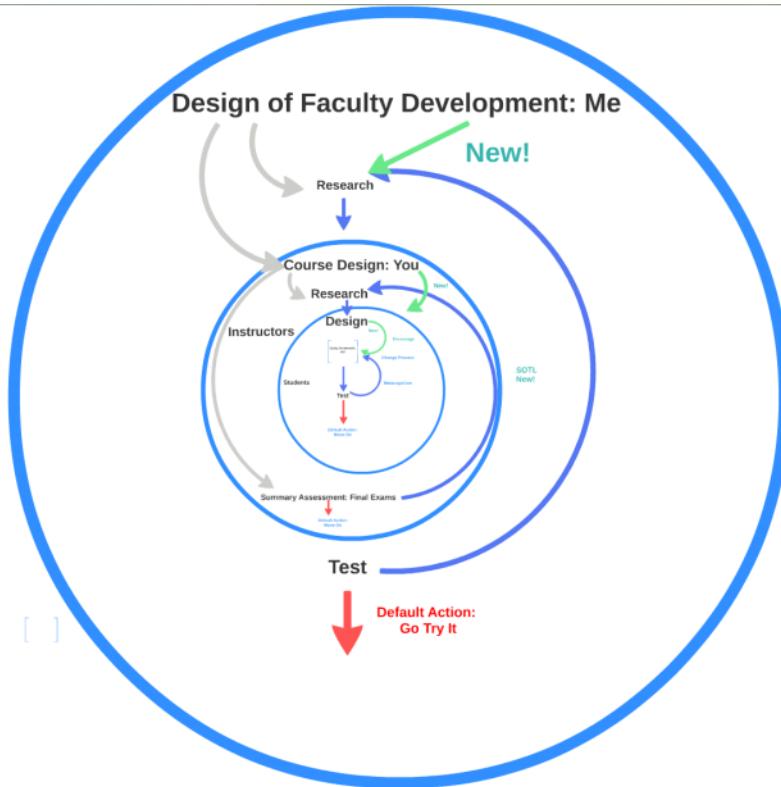
Discussion: What kind of student were you?

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.  
[http://bjorklab.psych.ucla.edu/pubs/RBjork\\_1994a.pdf](http://bjorklab.psych.ucla.edu/pubs/RBjork_1994a.pdf).

<<file:///C:/Users/hertzber/Documents/O3miscf/CIRTL/STRIPE/Prezi>>



**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



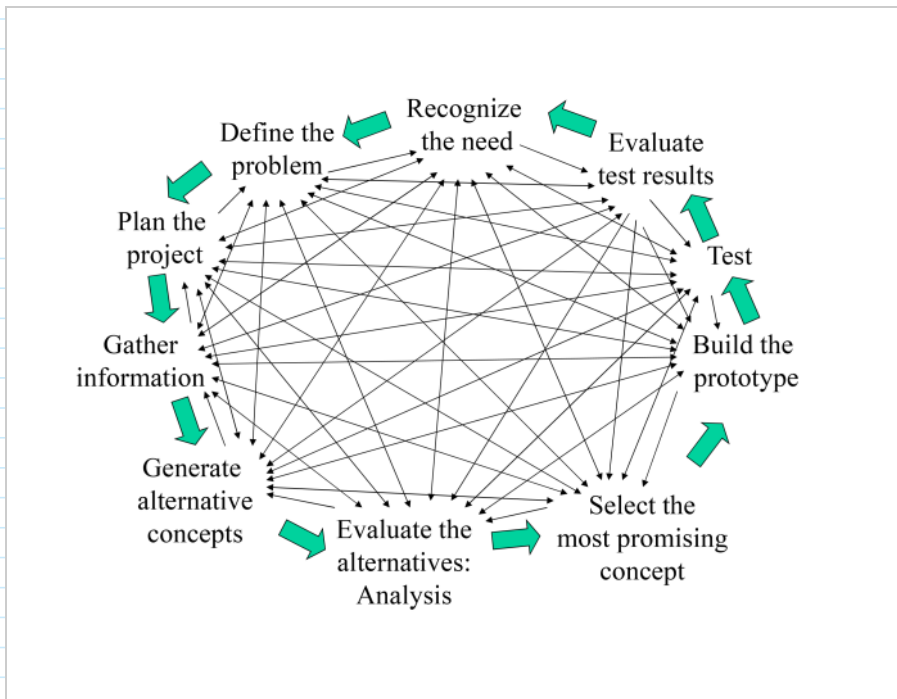
[http://laborpains.org/wp-content/uploads/2009/08/2318062662\\_736cb636ca.jpg](http://laborpains.org/wp-content/uploads/2009/08/2318062662_736cb636ca.jpg)

Matryoshka  
Russian nesting dolls



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

### Another Example: The Engineering Design Loop



[http://itil.colorado.edu/images/uploads/courses\\_workshops/geen1400/textbook/ch03the\\_design\\_loop.pdf](http://itil.colorado.edu/images/uploads/courses_workshops/geen1400/textbook/ch03the_design_loop.pdf)

Turn to a partner and exchange stories of when this type of process worked for you and when it didn't

## Summary:

### Learning Objectives for STRIPE

- 1) Participants will be able to apply new teaching techniques, including active learning approaches
- 2) Participants will be able to apply their disciplinary techniques (of research) to help students improve their learning
- 3) Participants will be able to apply their disciplinary techniques (of research) to improving their own teaching

### Schedule

#### Monday

- Intro
- Metaloops
- Learning Objectives

#### Tuesday

- Assessments
- Active Learning

#### Wednesday

- Constructive feedback
- Practice Teaching 1

#### Thursday

- Elective topics
- Reflection and Revision

#### Friday

- Practice Teaching 2
- Wrap up