So, what’s your problem?
Identifying the research question for your SoTL project
SoTL is about teaching problems

- “Asking a colleague about a problem in one’s research is an invitation; asking about a problem in one’s teaching would probably seem like an accusation.” Randy Bass

- SoTL is about moving “teaching problems” from remediation to ongoing investigation
Two ways to frame the problem:

**What works?**
- Seeks evidence about relative effectiveness of different approaches.
  - Does this assignment bring about the learning I wanted to see?
  - Are online discussions more effective than face-to-face discussions for developing accountability for learning?
- Most always includes evidence of learning

**What is?**
- Seeks to understand learning, to *describe what it looks like*.
  - What makes it *hard* to learn history? Or economics?
  - What do students believe “interdisciplinary” learning is? And what *is* it or should it be?
- Often, but not always, includes evidence of learning.

Examples of “What is?” projects
What principles of fairness underlie different grading methods?

Documenting alternative conceptions students bring to your course

- Common “alternative conceptions” students have about chemistry:
  - Energy is released during the breaking of chemical bonds
  - A catalyst only speeds up the forward reaction.
Halloun and Hestenes found that even after a *successful* semester of college physics, students held on to prior/Aristotelian conceptions about force and motion.

Threshold concepts (Meyers and Land)

- A “troublesome” concept because it is often counter-intuitive, difficult for the student to grasp
- Transformative -- once acquired, shifts student perceptions
- Irreversible, integrative, and bounded
- Examples: limit, opportunity cost, gravity, signification, representation, metabolism, ideology
Other “what is” examples: What happens when a student tries to solve a problem?
Faculty teaching a first-year history course presented 12 students with documents related to Little Bighorn and asked them to “think aloud” while making sense of the documents. The students read through the documents aloud and verbalized all the thoughts that came to them.
The researchers used a rubric to identify different types of thinking processes.

- Comprehension monitoring (I don’t understand that part) or elaboration, e.g.

Also analyzed six different kinds of historical thinking:

- Sourcing a document (I can’t trust Whittaker; he wasn’t there”)
- Asking an historical question (“I wonder what caused this battle”)
- Recognizing limits to knowledge (“I need to see more evidence than this”)
Under-performing students struggled more with reading than with historical thinking.

Difference between historical understanding and expressing that understanding on paper.

“Some of best insights and meaning-making came from students who, in the gradebook, were steady “C” performers.”

Jim Sandefur videotaped students talking through their mental steps as they solved math problem.

Found:

- When students can't see the solution immediately, they often get stuck right in the beginning.
- There seems to be an unwillingness to try different approaches, even when it is clear that the student's current approach isn't working.

http://cndls.georgetown.edu/projects/you-do-the-math/
Other “What is . . .?” examples

- Applying cognitive research to the disciplines
  - Example: Dave Concepcion’s “Reading Philosophy with Background Information and Metacognition” *Teaching Philosophy*, 27:4, 351-368.

- Longitudinal studies of cognitive/intellectual development
  - Perry’s developmental schemes
  - *Study of Undergraduate Learning*
  - *Wabash National Study of Liberal Arts*
Other examples?

Your examples?
What Works?

Is your pedagogical approach/strategy more effective in improving learning than another type of approach/strategy?
Does Pecha Kucha produce stronger student presentations?


Image: http://www.flickr.com/photos/edmontonnextgen/6150276785/
Will looking at works of art in a museum improve nursing students’ observational skills?

This project asked ½ of a group of students to participate in a museum experience; the other half were taught by traditional methods. All groups were then asked to make observations about patient photographs.


Image: http://www.fotopedia.com/items/flickr-2906875357
Other examples:

Will chemistry students engaged in cooperative learning perform better on exams measuring conceptions of reaction rate than students who were taught through direct instruction methods?
Other “what works” examples?

Your examples?
If you don’t already have a problem:

- Still not sure where to start?
- Start with the research literature
- Adapt variables from prior studies
Framing your problem

- Complete both sides of the “Developing the Research Problem” worksheet
- If you’re stuck, do the “What to do if you’re stuck” worksheet
- Discuss in teams