

SoTL and the Use of Cases and PBL

Presented by:
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Adapted from Klyczek, Waterman & Marsteller 2014

SOTL or Scientific Teaching

Goal is to create collegial, critical, evidence-based communities of faculty and students where student learning goals and outcomes are central.

Systematic

Reflective

Public: published, presented or shared with colleagues

Focused on continuous improvement

What is SoTL?

Scholarly Teaching: using research findings to make pedagogical decisions

Also called DBER: Discipline Based Educational Research

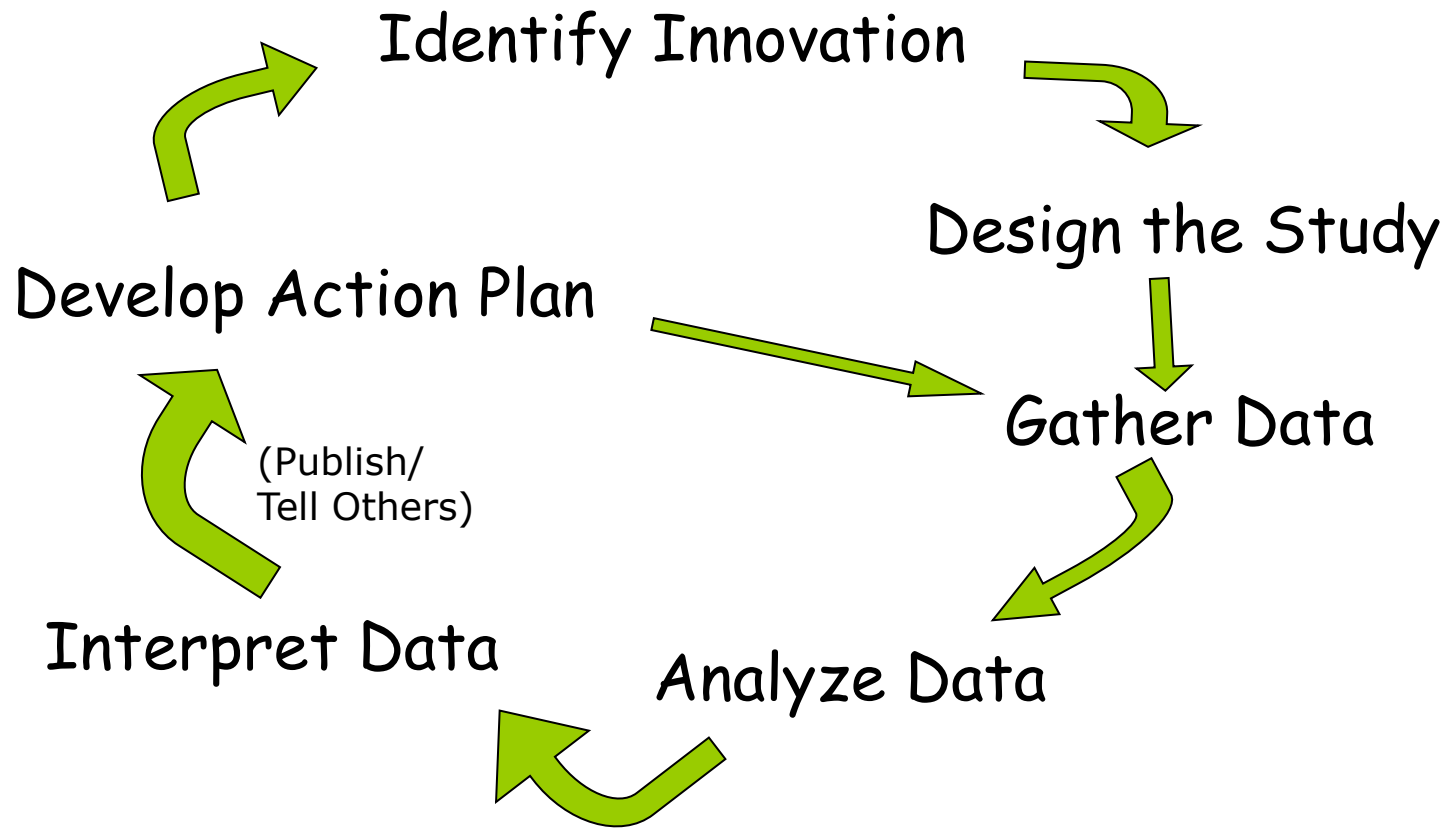
Thinking about Scientific Teaching...

- ❑ *What* did students learn? (assessment data)
- ❑ *Why* did students respond a particular way? (research)
- ❑ What are the working hypotheses or questions?
- ❑ What has already been done? Literature says...
- ❑ How and why to select methods? Conduct study...
- ❑ How to analyze and interpret data?
- ❑ What do the results mean?
- ❑ Are findings valid and generalizable?

Think, Pair, Think Some More

- ❑ Take 10 minutes to think about your SoTL project, consider the following:
 - What would you like to change? Why?
 - ❑ Structure? Pedagogy? Learning Outcomes? Attitudes? Process Skills? Other?
 - What so you want your students to...
 - ❑ Learn?
 - ❑ Know?
 - ❑ Be able to do?
- ❑ Be ready to share with the group

The SoTL Cycle: Research leading to action



SoTL Research is ...

- Important
- Difficult
- Rewarding
- Time-consuming
- Necessary
- Small effect sizes

Thinking about your project

- What are possible aspects/variables of your project that you could study?
 - Think of the project in 360°
 - Write down at least 3 aspects of your project that could be examined further
 - Discuss

SoTL on Effectiveness of Cases and PBL

Many possible aspects/variables to look at,
e.g.,

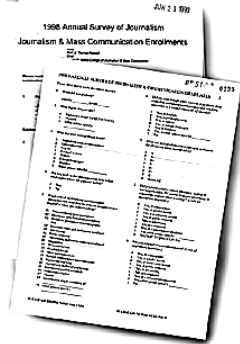
- Who is learning (Demographics, Misconceptions)
- How the case is being taught (Pedagogy, Technology)
- The content of the case (Knowledge, Curriculum Delivery)
- The story of the case (Process skills, social engagement, science and the media)
- What is being learned (Knowledge, outcomes, professional development)

SoTL Often Uses These Kinds of Methods to Gather Data

Observations

Serving customer	#####
Telephone call	#####
Paperwork	#####
Waiting	#####
Away	#####

Surveys



Interviews



Artifact Analysis



Longitudinal Analysis



Time Commitment

Complexity of Analysis

Authentic Interpretation

ScienceCaseNet



Four Methods to Gather Data

- **Make observations**
 - Unstructured or structured observations
- **Ask questions**
 - Surveys
 - Interviews
- **Examine and Score Artifacts**
 - Tests, portfolios, student comments
 - Must design scoring guide/rubric
- **Determine the Long Term Effects**
 - Changes in Major, GPA, learning gains across discipline
 - Professional Development
 - Career, academic outcomes

Methodology: Either? Both?

Quantitative

- empirical, statistical, comparative
- hypothesis testing, confirmatory
- predetermined, fixed
- large, representative sample
- scores, percentages, counts, rates
- outsider, non-perturbing
- analysis method deductive
- summative, precise, reliable

Qualitative

- naturalistic, fieldwork, constructivist
- descriptive, generative, finding meaning
- flexible, evolving
- small, purposeful
- interviews, observations, writings
- insider, perturbing
- inductive
- formative, rich, expansive

Less “Control”

- If you can't control it – measure it
 - Student demographics
 - Possible pre-test differences
 - Characteristics of “treatment”

Some Keys to Success

- ❑ Talk about your design and instruments with SCN members or other colleagues.
- ❑ Pilot test your instruments
- ❑ Keep your data collection focused.
- ❑ Try to keep the project reasonable in scope for the time you have available.
- ❑ Share your teaching innovations with the rest of the teaching community

Give SoTL a try!
Join a group at SCN!

Let's Begin to Design a Project

- ❑ Overall goal for project
- ❑ Research Question?
- ❑ Methods?
- ❑ What kinds of evidence?
- ❑ Assessments

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