Ohio Project Kaleidoscope, 4th Annual Conference
Promoting Effective Learning in a Diverse STEM Environment

GETTING STARTED IN THE SCHOLARSHIP OF TEACHING AND LEARNING (SoTL)

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WHAT TO EXPECT FOR THE NEXT 1.5 HOURS

Participants will

• Be introduced to SoTL – what it is and how it can be used to improve teaching
• Reflect on their teaching and construct a potential research question
• Learn the steps involved in designing and conducting a SoTL project
• Learn what is involved in conducting ethical research
• Discuss venues for taking a SoTL project public
BRIEF INTRODUCTIONS

• Name
• Discipline or department
• Why you are participating in this SoTL workshop
WHAT IS SoTL?

Systematic examination

Focused on improving teaching or learning

Disseminated publicly

Scholarship of Teaching & Learning

(Friberg, 2014, p.4)
WHY DO SoTL?

What are benefits of a SoTL project?

• Improve reflection on teaching and learning
  • Program review and accreditation
  • Revitalize some senior faculty members
• Can complement your discipline-specific research for R, P, & T
STANDARDS FOR SoTL

Quality SoTL work must have:

• Clear goals – research question
• Appropriate methods – to address your research question
• Significant results – what can be learned from your research?
• Reflective critique – consider alternative interpretations of your results
• Effective dissemination – conference presentation and/or peer-reviewed journal
HOW TO DESIGN A SoTL PROJECT

• Literature Review – What has been done before?
• Theoretical Framework – Framing your study in the literature
• Methods – What evidence will address your research question?
  Context – participants and setting
  Data Collection – quantitative vs. qualitative data
• Data Analysis, Interpreting Results – How do I analyze the data?
REFLECT ON YOUR TEACHING
What could serve as a SoTL research project?

• Is there a learning problem in your class?

• Have you been doing something innovative, but aren’t really sure how effective it is?

• What challenges do students experience?

• Are your concerns on an individual course, a sequence of courses, perceived student needs?
TYPES OF SoTL RESEARCH QUESTIONS

- *What is* or *Why* questions investigate the student experience
- *What works* questions investigate the effectiveness of pedagogical approaches
- *Visions of the possible* to explore new strategies
WRITING A SoTL RESEARCH QUESTION

Factors of effective SoTL research questions

- Focuses on a learning/teaching problem
- Data can be collected to address the research question
- Has the potential to improve student learning
SAMPLE SoTL QUESTIONS

• What skills do the teaching assistants for the first-year engineering honors program develop as a result of their employment?
• How well does the advice given by students to each other in the peer review of writing exercise follow guidelines of good technical communication practice and improve students’ writing practice?
• How do students in a SCALE-UP class develop conceptual understanding of physics compared to those in a traditional lecture on the same campus?
• Do students who participate in the metacognitive training sessions develop more expert-like attitudes toward learning chemistry than those who do not participate?
• What factors lead to students learning from reflecting on graded exams - the reflective element, spending more time with the content, or other factors?
• Do students’ control of variables skills improve in an introductory physics lab course that target the development of scientific reasoning skills?
BRAINSTORM RESEARCH QUESTIONS

• Use a reflection or concern about learning or teaching
• Record an idea or two to pursue…
• Share your topic/question with those around you
DOUBLE-CHECK YOUR INITIAL IDEAS….

Do your questions…

• focus on a learning/teaching problem?
• address an issue where data can be collected to inform the answer?
• have the potential to improve student learning?
SoTL – Literature Review

• What is known about this topic?
• What has been done previously?
• What methods were used?
• What conclusions were drawn, including conflicting conclusions?
• In what context were these studies conducted?
SoTL – Theoretical Framework

• What is a theoretical framework?
• How does a theoretical framework inform a SoTL project?
• Why should I use a theoretical framework?
SoTL – Methods

• Who are your participants? What is your context? Timeframe?
• What evidence will address your research question?
  • Quantitative data (e.g. student performance)
  • Qualitative data (e.g. student/instructor perceptions, interviews, focus groups)
• When and how to use both quantitative and qualitative data
MEASURING OUTCOMES IN SoTL PROJECTS

- Consider what data you can collect for your Research Question

Quantitative Data

• Student skills
• Student content knowledge
• Student use/application/transfer/retention of knowledge or skills

Qualitative Data

• Student attitudes/perceptions/beliefs/values
• Student affective development or change over time
• Student communication and interactions with peers, faculty/staff

Multiple Data Sources (Mixed Methods) - triangulation
MEASURING STUDENT LEARNING IN SoTL PROJECTS

Published instruments:

• Attitudinal surveys
• Conceptual evaluations

Where can I find published instruments?

• STEM: https://cgi.tu-harburg.de/~zllwww/fachdidaktik/ci/?lang=en (your mileage may vary)
• Physics: https://www.physport.org/assessments/ (includes quality information)
SoTL – Data Analysis and Interpreting Results

• How do I analyze the data?
  • Quantitative data
  • Qualitative data
• Using multiple sources of data to interpret/inform results
CONDUCTING ETHICAL SoTL RESEARCH

- Balancing teacher and researcher roles
- IRB (human subjects) construction/approval
  - Social Behavioral IRB Training
  - Exempt/expedited status
  - Confidentiality/anonymity
  - Coercion
  - Informed Consent
SoTL - GOING PUBLIC
SoTL Friendly Conferences

- International Society for Exploring Teaching & Learning (ISETL) - October
- International Society for the Scholarship of Teaching & Learning (ISSOTL) - October
- International Lilly Conference on College Teaching – November (@ Miami U.)
- National Science Teachers Association (NSTA) – National & Regional conference
- Regional: OH PKAL (May), Association for University Regional Campuses (AURCO) - April

Discipline-specific (sample of conferences)
  - National Association of Biology Teachers – National (November)
  - Conferences on Chemistry Education and Research – International (June, July), National (July)
  - American Association of Engineering Education (ASEE) Annual Conference – June
  - National Council of Teachers of Mathematics (NCTM) Annual Meeting - April
  - American Association of Physics Teachers (AAPT) – National (Jan & July), Regional (Spring, Fall)
SoTL - GOING PUBLIC
SoTL friendly peer-reviewed journals

• International Journal of Teaching & Learning in Higher Education (IJTLHE)
• Teaching & Learning Inquiry: The ISSOTL Journal
• Journal on Excellence in College Teaching – affiliated with Lilly Conference
• Journal of College Science Teaching (JCST) – affiliated with NSTA
• Journal for Research & Practice in College Teaching (JRPCT) – affiliated with UC

http://www.fctl.ucf.edu/ResearchAndScholarship/SoTL/journals/
https://belmont.libguides.com/c.php?g=174362&p=1149193
WHAT QUESTIONS DO YOU HAVE ABOUT SoTL?

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REFERENCES


THE JOURNAL FOR RESEARCH AND PRACTICE IN COLLEGE TEACHING

The JRPCT promotes scholarly teaching and the scholarship of teaching and learning.
http://journals.uc.edu

A journal from the University of Cincinnati, *The Journal for Research and Practice in College Teaching*, publishes articles focused on promoting student learning. Articles should address themes around promoting effective practices in teaching and learning. The Journal reflects the breadth of the work in the scholarship of teaching and learning. We accept articles in the following categories.

1. *Data-Driven Studies*: formal research projects using appropriate empirical methods for examining a particular research question. Acceptable articles establish a research rigor that leads to significant new understanding of pedagogy.

2. *Literature Reviews*: reviews should illuminate new relationships and understanding of the area under review. Literature reviews include meta-analysis, analytical and integrated reviews.

3. *Case Studies*: should focus on an intense analysis of a specific teaching situation or problem that led to a solution. Case studies should have the following components: description of the teaching situation or problem, solution or solutions attempted, quantitative or qualitative analysis of the effectiveness of the solution, reflection on the implications and possible generalization to other settings or populations.

Due Dates for Volume 4

Submissions: December 15, 2018
Notification of Acceptance: February, 2019
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