

The Scholarship of Teaching and Learning: Understanding what *really* happens in the classroom

Agenda

10:00 – 10:20 Introductions and Announcements

10:20 – 11:00 SoTL at Light Speed

- History

- Examples

- Outcomes

- Human Subjects

- Getting started

11:00 – 11:20 Team discussions:

- “What do you want to know”?

11:20 – 11:45 Team Reports

11:45 – 12:30 Lunch

12:30 – 1:00 SoTL Details

- Methods

- Dissemination

1:00 – 1:30 Teams create project posters

1:30 – 2:00 Gallery walk

SoTL: The Scholarship of Teaching and Learning

Three definitions

Treating teaching and learning in a scholarly way.

Investigating teaching and learning rigorously, with the results documented carefully and disseminated broadly.

An approach to understanding and potentially improving teaching and learning using commonly accepted techniques of scholarly research. It begins with the identification of questions that are clear, answerable, and contribute new knowledge to the community of scholars; relies on evidence grounded in student learning and behavior; proceeds through careful analysis of that evidence; and concludes with the dissemination of new results to the community.

Team Discussion: What do you want to know?

The goal for this period is to experience the process of choosing and refining SoTL questions. Please work in teams of 3 or 4, preferably with people in your discipline.

Step one:

Choose a question that you want answered.

The field is broad but not unlimited. It could be focused on a topic in your course, e.g., "What problems do students have understanding X"? Where X is an essential idea in your field. It could also be about a resource: "What do students get out of Y"? Where Y is a reading, film, worksheet, etc.

Alternatively, it could be about your students themselves, such as "What activities (assigned or not) do my students believe are most helpful in learning my subject"?

There are MANY other possibilities. Let your imagination roam free!

One popular method is to start from a frustration you have, and try to rephrase it as a question. "My students seem unwilling or unable to deal with idea Z. Why is that?" or "... Will approaching it in a particular new way help?"

Hutchings' "Taxonomy of SoTL Questions" is on the back of this sheet

Step two:

Refine the question

Even experienced researchers often ask ill-defined questions once they step out of their own discipline. We want a question that is razor sharp, and clearly answerable. How do you know if your question is sharp enough?

1. You should be able to write it out in the form of a question!
2. It should not contain any "weasel words."
3. The answer should be worth writing about.
4. It should practically beg for a particular approach.

By the end of the period, you should have one or more good questions written out!

Hutchings' "Taxonomy of SoTL Questions"

- ***"What works" questions explore the effectiveness of specific teaching practices, materials, etc.***
 - Example: One group of students does a traditional "hands-on" chemistry lab while others do the same experiment in a computer simulation. Do their scores differ on test items relevant to the lab? Which group performs better, and by how much?
- ***"What is" questions are generally more exploratory, focusing on precise characterization of students, learning settings, etc.***
 - Example: When students work together to analyze a particular case study in a business class, what prior knowledge, personal experiences and beliefs underpin their work?
- ***"Visions of the possible" questions explore possible changes resulting from new practices or materials. (full disclosure, I don't think these get published very much).***
 - Example: If I require students to write a 15-page research paper on a topic of their choice, what topics will they choose, and what methods will they apply? Does the average student in my class have the maturity to handle this?
- ***"Formulating new conceptual frameworks" questions focus on finding constructs that can be used as a lens to analyze data.***
 - Example: What set of fundamental "reactions" can fully, but simply, describe a nursing student's overall response to his or her first clinical experience with a severely ill patient?

Resources

Online SoTL resources

- <https://my.vanderbilt.edu/sotl/>

A SoTL guide hosted by the Vanderbilt University Center for Teaching

- <http://www.issotl.com/>

Home page of the International Society for the Scholarship of Teaching and Learning

- <https://facet.iu.edu/sotl/sotl-101/index.html>

Includes a step-by-step guide similar to others, plus links to additional resources.

- <http://www.fctl.ucf.edu/ResearchAndScholarship/SoTL/>

An introduction to SoTL from the Faculty Center for Teaching and Learning at U. Central Florida.

- <http://onlinelibrary.wiley.com/doi/10.1002/bmb.20748/full>

DOI: 10.1002/bmb.20748

A nice article titled "Getting started in the scholarship of teaching and learning: A "how to" guide for science academics" by Susan L. Rowland and Paula M. Myatt

- <https://illinoisstateuniversysotl.wordpress.com/2016/06/20/designing-and-conducting-a-sotl-project-using-a-worksheet-a-bakers-dozen-of-important-sets-of-guiding-questions/>

A particularly relevant post for getting started with SoTL, but this blog is worth reading in general.

- <http://www.fctl.ucf.edu/ResearchAndScholarship/SoTL/journals/>

Extensive list of SoTL journals by focus and discipline. Also has a link to an excel file of acceptance rates.

Seminal Papers on SoTL

- Ernest Boyer (1990). *Scholarship Reconsidered: Priorities of the Professoriate*, The Carnegie Foundation for the Advancement of Teaching
- Charles E. Glassick (1997), Mary Taylor Huber, and Gene I. Maeroff. *Scholarship Assessed: Evaluation of the Professoriate*, The Carnegie Foundation for the Advancement of Teaching.

- Pat Hutchings & Lee S. Shulman (1999), "The Scholarship of Teaching: New Elaborations, New Developments", *Change: The Magazine of Higher Learning*, 31:5, 10-15, DOI: 10.1080/00091389909604218
- Bass, R. (1999), "The scholarship of teaching: what's the problem?" *Invention: Creative Thinking about Learning and Teaching*, **1**(1),1-10.
- Pat Hutchings (2000) "Approaching the Scholarship of Teaching and Learning"
<http://archive.carnegiefoundation.org/pdfs/elibrary/approaching.pdf>

Ethics and IRB

- <https://www.marian.edu/academics/institutional-review-board>
- <https://www.citiprogram.org>
- <https://www.nsf.gov/bfa/dias/policy/human.jsp>

Research Methods

- Creswell, John W. (2002) *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research*, Pearson, Upper Saddle River, NJ.

Creswell has written several textbooks on the subject of research methods. This one is probably the best one to start with.

- Gall, M. D. (1996), Borg, W. R., & Gall, J. P. *Educational research: An introduction*, 6th ed. White Plains, NY, England: Longman Publishing. Another highly cited text on research methods. I have not used this myself, though.

- <http://www.socscistatistics.com/>

Several nice online calculators and explanations of statistical methods

A few fundamental results and ideas

- A great overview of the fundamental ideas in the field.
 - Bransford, John D. (2000), et al. *How People Learn: Brain, Mind, Experience, and School*, National Research Council, National Academy Press, Washington, DC.
- Reviews of the evidence supporting active learning and student-centered experiences
 - Scott Freeman (2014), "Active learning increases student performance in science, engineering, and mathematics" *PNAS* **111** (23) pp.8410–8415, doi: 10.1073/pnas.1319030111.

- Michael, J (2006) "Where's the evidence that active learning works?", *Adv. Physiol. Educ.* **30**, pp. 159-167.
<https://doi.org/10.1152/advan.00053.2006>

If there is a single result in SoTL that is considered "proven," it is this: Active learning methods are better than passive ones. There are thousands of articles supporting this, these two provide meta-analysis and summary.

- Novices don't learn like experts
 - <https://www.csun.edu/science/ref/reasoning/how-students-learn/2.html>
 - Chapter 2 in Bransford (above).

One of the most important, and difficult, lessons for faculty to learn is that we are a self-selected group, and our experiences as learners are a poor guide to how our students learn. If we must think of our own learning experiences, we should think of our experiences in the classes outside our majors, that we did not like, and with which we had difficulty. Also, read these articles.

- How students are motivated matters
 - Ryan, R. M (2000) and Deci "Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions" *Contemporary Educational Psychology* 25, pp. 54-67 doi:10.1006/ceps.1999.1020.

This continues the expertise theme. If you are now teaching the field you studied, the odds are great that you approached your classes with a level of intrinsic motivation that is exceedingly rare among your students. Insisting that "they ought to work harder" is tilting at windmills.

- Cognitive overload is bad:
 - Sweller, J (1994), "Cognitive load theory, learning difficulty, and instructional design", *Learning and Instruction* **4** (4), pp. 295-312.
[https://doi.org/10.1016/0959-4752\(94\)90003-5](https://doi.org/10.1016/0959-4752(94)90003-5).

Cognitive load theory is a great lens with which to view curricula and curricular materials. This is a good article to get started.

Books

- Singer, S. (2012) (ed) *Discipline Based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering*. National Academies Press, Washington DC.

A major recent report on "DBER" in the STEM fields

- McKinney, K (2007) *Enhancing Learning through the Scholarship of Teaching and Learning: The Challenges and Joys of Juggling*, Anker Publishing, Boston, MA.