

“Algorithm” for a SoTL Project

The problem or question What is the problem or question about teaching or learning you wish to address in your investigation? Describe the student behavior that you wish to change or to better understand.

Background Try to find out what others have done to address this problem or question. As a start, decide what topics you will search on databases such as ERIC or SIGMAA RUME. Consult librarians on your campus.

Your approach Develop a plan to solve the problem or answer the question. What will you do to change/understand the behavior you wish to investigate? [Has this been tried before?]

Evidence How will you demonstrate the success and effectiveness of your solution or approach? What evidence will you gather? [If you think you will want to publish your results, before gathering evidence from your students seek approval from your campus’ Human Subjects Review Board.]

Moving forward Draft a timeline, seek collaborators, consider possible dissemination venues.

Recommended Reading

Adhikari, N., & Nolan, D. (2002). “But what good came of it at last?”: How to assess the value of undergraduate research. *Notices of the AMS*, 49(10): 1252-1257. <http://www.ams.org/notices/200210/comm-nolan.pdf>

The issues encountered and approaches undertaken by two statisticians at UC Berkeley and described in this article are typical of those encountered in SoTL work.

Bennett, C. & Dewar, J. (2012). An overview of the scholarship of teaching and learning in mathematics. *PRIMUS*, 22(6), 458-473. <http://www.tandfonline.com/doi/abs/10.1080/10511970.2011.585389>

Dewar, J. (2008). An Apology for the Scholarship of Teaching and Learning. *InSight: A Journal for Scholarly Teaching*, 3, 17-22. <http://www.insightjournal.net/Volume3/ApologyScholarshipTeaching.pdf>

Intended as a defense of SoTL, this paper examines the roots of SoTL, offers examples of SoTL investigations that can be pursued in any discipline and suggests that SoTL might serve as a natural and organic response to challenges facing higher education in the 21st century.

Dewar, J. & Bennett, C. (Eds.). (2015). *Doing the scholarship of teaching and learning in mathematics*. Washington, DC: Mathematical Association of America.

This book, appearing as volume #83 in the MAA Notes series, has two goals: to assist mathematics faculty interested in undertaking a scholarly study of their teaching practice and to promote a greater understanding of this work and its value to the mathematics community. The four chapters in Part I provide background on SoTL and instructions for undertaking a SoTL investigation in mathematics. Part II contains fifteen examples of SoTL projects in mathematics written to “reveal the process of doing SoTL” by illustrating many of the concepts, issues, methods and procedures discussed in Part I. In the final chapter the editors present a synthesis of the contributing authors’ perceptions of the value of SoTL.

Dewar, J. & Bennett, C. (2010). Situating SoTL within the disciplines: Mathematics in the United States as a case study. *International Journal of the Scholarship of Teaching and Learning*, (4)1.

http://academics.georgiasouthern.edu/ijstotl/v4n1/essays_about_sotl/_DewarBennett/index.html

Two Carnegie scholar-mathematicians describe efforts by the Carnegie Foundation and individuals within the mathematics community to build disciplinary support for the scholarship of teaching and learning and suggest more publication venues are needed for SoTL in math journals.

Resources for Going Public

Conference List: <http://cetl.kennesaw.edu/teaching-conferences-directory>

Journal List: <http://cetl.kennesaw.edu/teaching-journals-directory>

Other Resources

How-to-do SoTL Website: <https://my.vanderbilt.edu/sotl/>

Listserves: Join one run by RUME or another SIGMAA related to your SoTL investigation topic (<http://sigmaa.maa.org/>) or by a SoTL organization (<http://isstotl.com>)

SoTL Mentoring: An MAA minicourse on the scholarship of teaching and learning will be offered at MathFest 2015 in Washington, DC. Watch the website for more details (<http://www.maa.org/meetings/mathfest>)

Possible Sources of Evidence for SoTL projects

Quantitative – Numerical data

Scores

- pre/post tests
- course work
 - exams
 - projects
 - papers
 - assignments
- standardized scales and tests

Surveys

- attitudes (Likert scale: Strongly agree ... Strongly disagree)
- beliefs (Likert scale)
- knowledge (See Nuhfer, E. & Knipp, D. (2003). The Knowledge Survey: A Tool for All Reasons.)

Frequency counts or percentages

- multiple choice test item responses
- course completion rates
- participation on blogs or discussion boards
- office visits ...

Measures of time use

Institutional research data

- GPA's
- grades
- admission or placement test scores
- retention data (in course, program or major, institution, tec.)
- demographics

Qualitative – Non-numerical data (words, text, audio recordings, pictures, video ...)

Interviews

Performance tasks or think alouds

Focus groups (Download a kit from http://facultydevelopment.csuci.edu/on_line_resources.htm)

Student work

- exams
- projects
- papers
- assignments
- portfolios

Reflective writings or journals

Reports of others (advisors, other instructors, etc.)

Note: While quantitative data is often characterized as ‘hard,’ ‘rigorous,’ ‘credible,’ ‘scientific’ and qualitative as ‘sensitive,’ ‘nuanced,’ ‘detailed,’ ‘contextual,’ the fact is *All quantitative data is based upon qualitative judgments (i.e., selecting the questions for an exam or the wording of a survey); and all qualitative data can be described and manipulated numerically (e.g., by coding the data and reporting the results numerically by category).* For a booklet on how to code/analyze qualitative data, see <http://learningstore.uwex.edu/pdf/g3658-12.pdf>