

**DEVELOPING A SOTL PROJECT FOCUSED ON A LEARNING PROBLEM:
A STEP-BY-STEP GUIDE
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The questions below are intended to help you define a SoTL project that focuses on a specific learning problem, by which I mean a learning challenge or difficulty faced by students. A project that starts with students and desired learning outcomes, in this way, is more likely to yield useful results (and convincing evidence) than a project that starts with a teacher problem (How should I organize my lectures?) or with a particular pedagogy or technology in mind (Should I use clickers or blogs?). If you decide to pursue a project along the lines that you sketch below, you will probably need to return to these questions after you have begun the process of exploring the literature relevant to your research question. See <http://davidjvoelker.com/sotl-resources/> for the “Templates for Analyzing Learning Problems” and the annotated bibliography that supplement this guide.

① What are your learning goals, and what problems do they raise?

In *How Learning Works*, Susan Ambrose, *et al.*, define learning as “a process” that “involves change in knowledge, beliefs, behaviors, or attitudes” and is “the direct result of how students interpret and respond to their *experiences*” (p. 3). A learning problem might thus be understood as any barrier to the learning process. To identify a researchable learning problem, consider: What fundamental learning are you trying to cultivate in your course? How does your existing course design (teaching strategies, assignments, assessments, etc.) already support this desired learning? What learning problems present a barrier to student learning? Why do these learning problems present a teaching challenge? **Make a short list of goals (in the left column) and related problems (in the right column) for one particular course that you teach. Then circle one goal/problem set that seems especially important and difficult for further exploration below.**

Learning Goals: <i>Students should be able to:</i>	Learning Problems:

② What's the nature of the learning problem you selected above?

Is the learning problem specific to your discipline, or is it a general learning challenge? How does the existing literature on teaching and learning help you define the problem? Does the problem involve, for example, disciplinary “moves,” a disciplinary “bottleneck” or “threshold concept,” disciplinary big ideas, knowledge structures (mental schema for organizing knowledge), problematic prior knowledge, attitudinal or motivational barriers, or challenges involving learning how to learn? How might these categories help you frame the problem? (See the “Templates for Analyzing Learning Problems” below for help.)

③ What's the scope of the teaching and learning challenge?

What steps do you already take to cultivate the desired learning (as opposed to simply transmitting it)? How lengthy is this teaching and learning process? Can the learning be cultivated and assessed through a single assignment or exercise, through a course unit of several assignments or exercises, or should you be thinking about overall course design? Gaining clarity about the scope of the learning problem will help you figure out how to teach to the problem and also when and how to assess the learning.

④ How can you best study the learning problem?

Do you want to study the effectiveness of a current practice? Do you want to try to improve a current practice and assess the effectiveness of the change? Or, do you want to study the impact of a new practice or “intervention”? (If you think that you want to study a new intervention, consider studying your current practice first in order to gather some benchmark data and to deepen your understanding of the learning challenge. See the “What is the Case?” template below.)

⑤ How does the existing SoTL literature help you define a research question? What conversation can you join?

[Note: You will not be able to complete this step during the workshop, but it is critical to realize that, whatever your research topic, it is very likely that there are published, evidence-based resources that can help you define your research question and methodology, as well as help contextualize your findings.]

How does the relevant scholarly literature help you articulate the learning problem and define what the desired learning might look like? Be sure to consider general SoTL research, discipline-specific scholarship, and scholarship from related fields. (See below for a guide to engaging with the literature on teaching and learning. You will likely need to return to this step after delving into this literature.) The existing scholarship may help you both to define your project and to locate a scholarly conversation that you can join.

⑥ What is your research question?

Based on your reflections above, do your best to articulate a tentative research question. This question will drive your research design, evidence collection, and evidence analysis.

⑦ What kinds of evidence might you collect to evaluate learning?

Asking this question (and trying new evaluation strategies) will help you bring your regular course assessments into alignment with your highest learning priorities for your students. Consider using embedded assessment (additional analysis of regular class assignments and exams); qualitative analysis of “think alouds,” concept maps, essays, journals, or portfolios; cross-course comparison of student exam results; and surveys or focus groups to gather information about student perceptions and learning practices. Depending on the nature of your research question, you may find it useful to collect more than one form of evidence or data. Reminder: if you plan to publish or publicly present your findings, you must secure IRB approval before you collect any data. (See “Collecting Evidence” below for ideas.)

⑧ How will you analyze and contextualize the evidence that you collect?

Before you finalize your project, you should consider how you will make sense of the evidence or data that you collect. What will be the frame of reference for the data? Possibilities include but are not limited to: pre-test/post-test research design; use of a comparison or control group; evaluation of student learning using an established rubric or instrument (*e.g.*, Bloom’s taxonomy, AACU’s VALUE rubrics, or the Color-Blind Racial Attitudes Scale); and evaluation of student learning according to a rubric of your own design (but informed by documented disciplinary standards). It is important to consider how you will analyze and contextualize your evidence or data in advance, because doing so may improve your efficiency later. (For example, if you have students complete an online survey, you may save yourself the trouble of transcribing hand-written comments.) Additionally, you will want to be confident that you are collecting and analyzing evidence in a manner that will be persuasive to your likely audiences. (See the note about “Research Design” below for more help with this question.)



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