

How to Start: Thinking of a Problem and the Questions It Raises

Often the most difficult yet important stage in a SoTL project is the initial phase, choosing a “problem” ([Bass](#)) to investigate and then developing your research question(s). First, you want to choose a “problem” that

- is meaningful and significant to you,
- is possible to research with the time, resources, and students you have, and
- is deliberate, narrow, and focused, so that your project will adequately answer your research question.

Take time to reflect on your problem, and consider how it is contextualized within your specific student body, institution, and discipline. Writing a page about these issues will help you in the future as you think back on your beginnings and prepare to go public.

Now that you have reflected on your problem, what questions does it raise? Revisit [Hutchings’s taxonomy](#) to brainstorm a variety of questions, looking at your problem from multiple angles. (See the examples in the box to the left.) How would they map onto Hutchings’s taxonomy?

Problem: My students have trouble with x (a concept, a skill, etc.).

- What do they understand about x? What does it look like to understand it?
- What do they not understand about it? What are their misconceptions, bottlenecks, mental roadblocks about it? What do these difficulties look like?
- Why do they have difficulty with it? What are the sources of these struggles?
- What are the consequences of the misconceptions?
- How can I help students understand x?
- Does this intervention of z help them understand it? Does doing z improve students’ understanding, ability, persistence?

Keep in mind that you really can’t “fix” something until you understand what’s happening in the first place, so if you gravitate toward “what works?” questions, you’ll need to do a lit review to learn “what is” going on as this problem occurs.

Once you have decided on the type of SoTL question you’re asking, you’ll need to begin planning your project design.

Consider the following logistics:

Timeframe

Are you facing a deadline as part of a SoTL program, grant, or other source? If so, how long do you have? How and *when* will you collect the data you need in the time you have? To answer your question within your timeframe, will you need...

- a single snapshot of a point in time?
- a cross-section of all the students in the class?
- a longitudinal study of students over the course of the semester?
- a thick description of a single assignment or class period?
- a case study of one student’s progress?
- a large number of students?

Think carefully about what’s feasible in the time and resources you have, and how you can incorporate your methods of collecting evidence of student learning into the normal schedule of your course.

Access to Students

Not all courses allow the same flexibility with the curriculum, assessments, and time as others. While the instructor of record for a course will have the most access, it is possible to do SoTL projects as the teaching assistant, guest lecturer, or even student—with the instructor of record’s permission, of course. Consider the following:

- What access do you have to students?
- In what aspects of the course do you have influence? How can you use those aspects to design and carry out your project?
- How can you incorporate your assessments or data collection into the existing structure of the course?

Researchers

Many SoTL projects are conducted by collaborative teams from within a single discipline, a range of disciplines, and/or a variety of ranks, roles, or statuses.

- Will you do this project on your own? (Don’t worry: many SoTL projects are done this way, too.)

If collaborating with others makes sense, consider the following:

- Would a colleague from a different discipline effectively complement your strengths (e.g., a quantitative researcher partnering with a qualitative one, a humanist with a social scientist, someone new to the institution working with an established senior colleague)?
- Would a student’s perspective,¹ or a librarian’s skills, or someone from student services be a relevant partner for your specific project?
- What role will each of you play? Decide up front.

Examples of SoTL Projects

A “What Is?” Project

... begins with questions that seek to describe but not evaluate: What’s happening in the classroom? What are students thinking when they __?

- Many of my literature students don’t handle reading difficult literary texts well. They get frustrated. They blame the text/author for their frustration (“poetry is hard,” “this story is stupid,” “that author is a bad writer”) and often quit trying. At best, they may go to the internet or a classmate to find out “what it means.” Literary scholars relish this challenge of making meaning of difficult texts, and many of the most widely read literary works are indeed challenging. Rather than assuming my students are lazy or have short attention spans, I want to go know what’s really going on when they come upon a text they consider difficult. What are they thinking?
- I will assign a “difficulty log” (Salvatori & Donahue, 2004) in my class three times throughout the semester—early, middle, end—when the students will be reading texts I know they find difficult. In this log, students will reflect upon and write about a) precisely what they consider difficult in the assigned text, b) how they responded to the experience of reading it, and c) what meaning they were able to make of the text.



¹ The video to the right offers reasons [why integrating students into SoTL projects is effective](#).

- I will analyze their anonymous logs, looking for themes or patterns in their responses. From these logs, I will document specific types of difficulty from their perspective and understand more broadly what thinking processes they go through (and don't) during these key disciplinary moments.
- My hope is that I'll discover something about their preconceptions about reading literature that will help literature instructors guide future students more successfully through this process.

A "What Works?" Project

... begins with questions that seek evidence about the effectiveness of specific teaching strategies or approaches: Will students understand this concept/apply this skill more effectively if they do x, instead of the y I've assigned in the past?

- I suspect that too many students in my calculus class solve problems by memorizing formulas and plugging them in when they come across familiar problem types. They don't do well when I assign new, less familiar problems, and most can't articulate their process when I ask them to explain how they solved a problem. I know that developing these metacognitive skills (the ability to think about and articulate how they think about a problem) is key to transferring their knowledge to new situations. Will assigning a metacognitive activity as part of their regular work improve their problem-solving ability?
- I will assign the "Documented Problem Solutions" classroom assessment technique (Angelo & Cross, 1993) in which students write out the steps they take as they solve a problem. Students will then share them in class and, in small groups, attempt to solve new problems by comparing and attempting the steps each group member had documented.
- I will measure the effectiveness of this activity by looking at their scores on the test prior to and then after the activity. The post-test will include another Documented Problem Solution, which I'll compare with their first versions to see if their metacognitive explanations of their problem-solving steps improved.
- Through a low-stakes, collaborative, metacognitive activity that will require students to practice, articulate, share, test, and correct their processes, I hope to demonstrate an improvement in students' problem-solving skills.