

TEMPLATES FOR ANALYZING LEARNING PROBLEMS
by David J. Voelker

Note: Each of the templates below is structured to help you articulate a learning goal, a learning problem, a teaching intervention or strategy, and a means of collecting evidence of learning. I adapted the idea from a general SoTL project template created by historian Lendol Calder, who was in turn inspired by the argument templates of Gerald Graff and Cathy Birkenstein. Citations in this document refer to a bibliography entitled “Engaging with the Literature on Teaching and Learning,” which is available online at: <http://davidjvoelker.com/sotl-resources/>. —DV

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What is the Case?

The most basic kind of SoTL question does not involve testing out a new assignment or “intervention” but rather focuses on a “what is” question—as in, “what’s going on?” Because this kind of question seems so basic, it is often neglected. But figuring out what is happening with student learning can be a crucial first step toward more effective course design and teaching. When asking a “what is” question, you keep your course design and teaching methods stable while investigating how students are studying, where they are having difficulty, etc. You can use some combination of surveys, interviews, reflective journals, “think alouds,” and focused analysis of submitted assignments in order to formulate a careful description of how and what students are learning and where and why they are having difficulties. The results of this research alone may be worth sharing, or they can be used to inform an “intervention” that you can study to evaluate its impact and effectiveness.

Students in my course on _____

seem to have difficulty with _____

_____.

To begin to understand this difficulty, I am first going to collect evidence as follows:

_____.

After I have a preliminary understanding of the problem, I will do a second round of inquiry

using _____ in order to delve deeper.

Problematic Prior Knowledge

Students do not enter the classroom as blank slates. All learners bring a variety of ideas, assumptions, values, and knowledge frameworks to whatever they are learning, and this prior knowledge (however sound or unsound) fundamentally shapes new learning. Effective teaching thus often requires instructors to make this prior knowledge visible to students, so that they can self-consciously evaluate it and can become aware of its strengths and weaknesses. This process can sometimes be frustrating or even painful for students, because it can demand that students rethink cherished ideas and values. (See ch. 1 of Ambrose, *et al.*, *How Learning Works.*)

I want students to develop a deep understanding of _____

_____.

But many students come into my class with the mistaken (idea / assumption / belief) that

_____.

_____ . This (idea / assumption / belief) impedes their

learning, because _____

_____.

I propose to help students become aware of the strengths and weaknesses of their prior

knowledge by _____

_____.

I will evaluate how well students are evaluating their prior knowledge based upon the following

evidence: _____

_____.

NOTES:

Disciplinary “Moves”

A disciplinary “move” is a specific skill, procedure, or strategy used by expert practitioners of a discipline. For example, literary scholars practice close reading, historians contextualize primary documents, psychologists manipulate and control variables (or explore relationships among variables), and chemists first convert to common units before making any other calculations. An expert practitioner, of course, is able to combine many such moves into a disciplinary mode of thought and action. If you are trying to teach disciplinary thinking, you might consider breaking down your discipline’s tools into a series of moves that students can practice. (In many disciplines, SoTL scholars have already begun such work. See the “Discipline-Specific SoTL” resources on the reading list below for more discussion of disciplinary moves.)

In my discipline, one key move is _____

_____.

I currently try to help students learn this move by _____

_____.

But students have a hard time _____

because _____.

I propose to improve how I help students learn this move by _____

_____.

I will evaluate how well students are learning this move based upon the following evidence:

_____.

NOTES:

Threshold Concepts

All disciplines have fundamental concepts that students must master before they can continue to develop disciplinary thinking and skills. These “threshold concepts” create a sort of “bottleneck” through which students must pass, but these ideas are subject to misunderstanding and over-simplification. For example, students in fields that use quantitative data must understand the concept of statistical significance before they can evaluate research. In history, students must understand that the past is like a foreign country where words and concepts that seem familiar might mean something very different than they do today. Threshold concepts like these are not simple facts that can be memorized: they often constitute ways of thinking. In many disciplines, SoTL scholars are working to identify these threshold concepts and develop instructional strategies for guiding students through the bottleneck. (See the “Discipline-Specific SoTL” resources on the reading list below for in-depth discussion of threshold concepts. The seminal essay on threshold concepts is Jan Meyer and Ray Land, “Threshold Concepts and Troublesome Knowledge,” cited below under “Foundational Works.”)

In my discipline of _____, you can’t get very far without a good understanding of _____

_____.

but students often struggle with this concept because _____

_____.

I propose to guide students through this disciplinary bottleneck by _____

_____.

I will evaluate how well students are learning this concept based upon the following evidence:

_____.

NOTES:

Inclusive Excellence

In many courses and programs, there is an “achievement gap,” which means that students from a particular group, such as students of color, women, or first-generation college students are less successful than we might predict, based upon other factors such as their overall GPA and test scores. Rather than blaming the students or accepting the “weed-out” principle, it’s possible to study an achievement gap to find interventions that preserve academic rigor while improving performance. For example, well-tested interventions to mitigate stereotype threat can help underperforming students to substantially improve their grades. See, for example: Akira Miyake, et al., “Reducing the Gender Achievement Gap in College Science: A Classroom Study of Values Affirmation,” *Science* 330 (26 Nov. 2010): 1234–1237. One of the first steps to achieving inclusive excellence is to identify where problems exists—in what courses or programs, and for whom? Your campus likely has an office of institutional research that can provide you with this kind of information. Before crafting a strategy to address the achievement gap, you should do a thorough literature review, as there are many existing examples of successful interventions. See, for starters, David Yeager, Gregory Walton, and Geoffrey L. Cohen, “Addressing Achievement Gaps with Psychological Interventions,” *Kappan Magazine* 94:5 (2013): 62–65.

In my class/program of _____, there is (or may be) an achievement gap involving (name the affected student groups here) _____.

_____.

To better understand this problem, I will ask my office of institutional research the following questions: _____.

_____.

To learn about relevant precedents for addressing this problem, I will search the SoTL and higher education literature for resources about: _____.

_____.

I will then develop and test an intervention, based upon this information, to help the underperforming students to: _____.

_____.

Transfer and Application of Knowledge

According to Grant Wiggins and Jay McTighe: “Understanding is about *transfer*. . . . To be truly able [*viz.*, knowledgeable and capable] requires the ability to transfer what we have learned to new and sometimes confusing settings.” In other words, students who really understand something will be able to apply that understanding appropriately in different contexts. If they cannot do so, they may be using memorization and other strategies to merely simulate learning. This stumbling block to learning is especially common in disciplines such as mathematics, physics, and chemistry where students must make use of formulas to solve problems. Students may seem capable as long as they are told which formula to use, but they may be unable to determine appropriate procedures when they encounter an authentic, unstructured problem. To cultivate deep understanding, then, instructors must find ways to help students develop their ability to transfer and apply what they know. (For more about “Understanding as transferability,” see *Understanding by Design*, cited below, pp. 39–43.)

Students in my course on _____
seem to have difficulty applying their knowledge of _____

in situations where _____.

In order to help students practice applying their knowledge, I am going to create an exercise in
which they _____

I will evaluate how well students are transferring and applying knowledge based upon the
following evidence: _____

NOTES:

Feedback and Learning

Receiving and responding to feedback (from various sources) is an essential part of the learning experience. Students can receive feedback in many ways. Although a simple grade is a rough form of feedback, a grade explained by a rubric can be much more useful for helping students improve their work. Students can also receive feedback informally from instructors and peers. Feedback is most effective if students receive the feedback close to the time of the performance and then have a chance to refine their performance, but accomplishing this feat is easier said than done, especially in large classes. Strategies for providing more timely and effective feedback include making frequent comments on brief assignments, using a detailed rubric to give feedback, and allowing students to respond to feedback through revision (or partial revisions). (On the importance of feedback more generally, see Ch. 5 of Ambrose, *et al.*, *How Learning Works*. On best practices for grading, see Walvoord and Anderson, *Effective Grading*. For help with rubrics, see Stevens and Levy, *Introduction to Rubrics*, cited below.)

Students in my class on _____ need feedback in order to improve their ability to _____.

In order to give more timely and effective feedback, I propose to _____.

I will evaluate how well students are learning from the feedback based upon the following evidence: _____.

NOTES:

Learning to Learn

Different disciplines and levels of study demand different learning tactics. Furthermore, the more advanced the learning, the more important it is for students to be self-aware of their learning process. When students bring inappropriate learning tactics to bear on learning challenges, the results can be frustrating and unproductive. In these situations, it is appropriate and even necessary for instructors to guide students to more effective learning techniques. Projects that focus on basic learning skills such as note taking and studying strategies, especially if they help students reflect on their learning strategies, have great promise to improve student success. (For a useful discussion of how students can become “self-directed learners,” see Ch. 7 of Ambrose, *et al.*, *How Learning Works*. On best practices for students, see Christine Harrington, *Student Success in College: Doing What Works!* (2nd ed., Cengage, 2016) and Ken Bain, *What the Best College Students Do* (Belknap Press of Harvard University Press, 2012).

Students in my class on _____ often have trouble doing the requisite class preparation and studying because _____
_____.

In order to help students learn how to learn in this class, I propose to _____

_____.

I will evaluate how well students are managing the learning process based upon the following evidence: _____

_____.

NOTES:

Awareness, Appreciation, Attitude, or Disposition

One of the more subtle kind of learning goals involves students developing a specific awareness, appreciation, attitude, or disposition. For example, Professor Dallas Blaney, formerly at UW–Green Bay wants students in “Politics of Developing Areas” to develop an awareness of how their own lives are connected to the lives of people living in developing nations. (He created and studied a group project aimed at cultivating this awareness.) Even less tangible, perhaps, is the goal of many humanities courses to teach students an appreciation of complexity or ambiguity. For this kind of project, it’s important to figure out how you will know when a student has developed the desired appreciation or awareness. Some attitudes, such as those involving race and gender, can be documented using existing survey instruments. But many kinds of awareness or appreciation may require you to develop your own mode of assessment. Before designing a new intervention (exercise, assignment, etc.) to cultivate the desired awareness, appreciation, or attitude, you might consider doing an initial assessment to gauge the effectiveness of your current practices. Then you can repeat the assessment after trying a new instructional method. (See chapter 8 on “Exploring Attitudes, Feelings, and Perspectives” of James R. Davis and Bridget D. Arend, *Seven Ways of Facilitating Learning*.)

I want my students in my course on _____

to develop a strong (appreciation of / awareness of / attitude about / disposition regarding)

_____.

Students who lack this (appreciation / awareness / attitude /disposition) are likely to:

_____.

_____.

Students who possess this (appreciation / awareness / attitude / disposition) demonstrate it

through _____

_____.

I will use the following method to evaluate how well students are developing this

(appreciation / awareness / attitude): _____

_____.

_____.

NOTES:



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