A Brief Note about Research Design

If your project is focused on trying to describe and understand a facet of student learning, you may not need to assess or measure the effectiveness of a specific pedagogical strategy. If, however, you are attempting to evaluate how well a specific strategy worked to support student learning, then you will likely want to develop a research design that allows for a comparison of students who have undergone an intervention—a specific learning experience (lesson, assignment, activity, etc.)—with those who have not. Two of the most common possibilities are:

- Pre- and post-intervention assessments: Assess students prior to an intervention to establish a baseline, and then assess them again after the intervention to evaluate its impact.
- Comparison group: Compare the performance of students who experienced an intervention with a similar group of students who did not experience the intervention; this comparison group could be another section of a course or a past group of students, for example.

Especially if you are coming from the arts or humanities, keep in mind that there are many different approaches to improving our shared knowledge of teaching and learning, and humanistic methods have essential contributions to make. The kinds of comparisons described above can be made using either qualitative or quantitative evidence, or you can used a mixed-methods approach based on both kinds of evidence. The list below provides some options for types of evidence you might collect, but there are many other possibilities, ranging from a classroom ethnography (which focuses on the group) to "think alouds," which focus on making individual thought processes more visible.

Collecting Evidence of Learning: Some common approaches

- Surveys: Surveys can provide insight into many areas, including student study strategies, attitudes, and perceptions of learning. While surveys can provide a good measure of attitudinal change across a semester, they are considered to provide fairly limited, indirect evidence of student learning.
- Objective Exams: Objective exams provide an efficient way to evaluate student knowledge, especially if you are dealing with large numbers of students and you want to compare student learning among various groups who did and did not experience an intervention.
- Measurement against an Objective Performance Standard: Evaluate student work, awareness, or knowledge using a well-developed rubric, survey, or objective exam. Examples include the AAC&U's VALUE rubrics, the Force Concept Inventory, the Color-Blind Racial Attitudes Scale (CoBRAS), and the Measure of Intellectual Development (MID).
- Embedded Assessments: An embedded assessment is an assessment of student learning through additional, focused analysis of student work on assignments or exams that are already part of a course.
- Reflective Writing: Reflective writings of various kinds, including student journals and responses to particular prompts, can provide a way to assess student understanding of a body of knowledge as well as of ways of thinking. For example, a reflection on how historians interpret a primary (historical) source can allow an instructor to assess the extent to which students understand this important component of historical thinking.
- Focus Groups or Interviews: Usually carried out with assistance, focus groups or interviews allow the SoTL scholar to gain a better understanding of student experiences, perceptions, and reflections. Typically, recordings of these sessions are transcribed before being analyzed.
- Concept Maps: Student-generated concept maps can allow you to assess student understanding of a complex idea or process. Concept maps are graphical representations of knowledge that focus on the relationships among the various components of an idea or process. For example, a concept map of photosynthesis would show how various physical and biochemical components of a plant function to convert solar energy into chemical energy. Susan Ambrose, et al., *How Learning Works*, includes a helpful appendix on using concept maps to enhance and evaluate student learning.

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