

Designing Effective and Innovative Courses in the Geosciences

Part 1.2 Setting overarching goals

In this section of the tutorial, we will ask you to focus on answering the question, "**What do I want my students to be able to do when they are done with my course?**" If this question is answered thoughtfully and realistically, the goals that you have set for your students will provide a road map for developing an innovative course that helps students achieve those goals. Assessment, sometimes viewed as a real bugbear, falls out naturally from the desire to determine whether students have met the goals.

Task 1.2a: What to *you* do as a professional in your discipline?

One very useful way to begin to approach setting student-focused goals is to think about what sorts of things *you* do simply because you are a professional in your discipline, because **your course should enable your students, at the appropriate level, to do what you do in your discipline, not just expose them to what you know.**

In the context of your general course topic, what do *you* do simply because you are a professional in your discipline? What does "analyze", "evaluate", etc. involve? Alternatively, what is unique about your world view or the view of your discipline??

Task 1.2b: Practice in critical evaluation of overarching goals

In this tutorial, we will ask you to set goals that meet very specific criteria. Below, you will find a list of overarching goals for courses, some of which meet the criteria and some of which don't.

For each of the goals listed below, answer the questions:

- Is the goal student-focused, rather than teacher-focused?
 - Does the goal focus on higher order thinking skills?
 - Could you design an activity/assignment that would allow you to determine whether students have met the goal or not (does the goal have "measurable outcomes")?
 - Is the goal concrete, rather than vague and abstract?
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1. I want to introduce students to the fundamental concepts of fluid dynamics.
 - Student-focused?
 - Higher order thinking skills?
 - Measurable outcomes?
 - Concrete, rather than vague and abstract?
2. I want students to appreciate the awesome power of Nature.
 - Student-focused?
 - Higher order thinking skills?
 - Measurable outcomes?
 - Concrete, rather than vague and abstract?
3. I want students to understand the scientific method.
 - Student-focused?
 - Higher order thinking skills?
 - Measurable outcomes?
 - Concrete, rather than vague and abstract?
4. I want students to be able to apply geologic knowledge to municipal planning and land use decisions.
 - Student-focused?
 - Higher order thinking skills?
 - Measurable outcomes?
 - Concrete, rather than vague and abstract?
5. I want students to be able to describe the seven major disasters covered in the course and explain the geologic processes involved in the disasters.
 - Student-focused?
 - Higher order thinking skills?
 - Measurable outcomes?
 - Concrete, rather than vague and abstract?

6. I want students to be able to understand why geologic catastrophes happen in some places but not in others.
 - Student-focused?
 - Higher order thinking skills?
 - Measurable outcomes?
 - Concrete, rather than vague and abstract?

7. I want students to be able to identify rocks and minerals.
 - Student-focused?
 - Higher order thinking skills?
 - Measurable outcomes?
 - Concrete, rather than vague and abstract?

8. I want students to be able to analyze historical and geologic records in an area and predict the likelihood of future natural disaster events.
 - Student-focused?
 - Higher order thinking skills?
 - Measurable outcomes?
 - Concrete, rather than vague and abstract?

9. I want students to be able to go up to an unfamiliar outcrop, ask appropriate questions, make observations and collect data, analyze their observations and data, make interpretations, and make decisions about where to proceed next in the field.
 - Student-focused?
 - Higher order thinking skills?
 - Measurable outcomes?
 - Concrete, rather than vague and abstract?

10. I want students to be able to evaluate old hypotheses in light of new data.
 - Student-focused?
 - Higher order thinking skills?
 - Measurable outcomes?
 - Concrete, rather than vague and abstract?

Task 1.2c: Set one to three overarching goals for your course.

What do you want your students to be able to *do* when they are done with your course? Several months down the road? Next year? Five years from now? As you write your goals, keep the following in mind:

- **Factor in context.** Who are your students, and what do they need? Remember what you wrote on course context for the tasks in Part 1.1 of this tutorial!
- **Factor in what *you do* as a professional.** Remember the list that you made in Task 1.2b above.
- **Set student-focused goals.**
- **Phrase your goals as "Students will be able to..." or "I want students to be able to..."**.
- **Avoid phrases such as "I want to expose students to..." or "I want to show students that..."**. Don't fall into the trap of writing a goal that says "I want students to be able to be exposed to...."!
- **Set goals involving higher order thinking skills.**
- **Use verbs that signal higher order thinking skills**, such as *derive, predict, analyze, design, interpret, synthesize, formulate, plan, correlate, evaluate, create, critique* and *adapt*.
- **Avoid verbs that signal lower order thinking skills**, such as *list, explain, calculate, know about, identify, describe, recognize, summarize, discuss, define, recall, paraphrase*, and *locate*.
- **Set goals that are concrete, have measurable outcomes, and provide clear direction for course design.**
- Avoid verbs such as *understand, appreciate, value*.
- Remember that there is no one right set of overarching goals for a course. Different instructors with different students will likely have different goals or phrase goals differently even if the course is on the same topic.