

Writing Three-Dimensional Assessment Tasks

A Step-By-Step Guide

Sources Needed to Supplement this Guide:

<http://stemteachingtools.org/brief/29>

<http://stemteachingtools.org/brief/30>

<http://stemteachingtools.org/brief/41>

1. Decide **WHAT** you want to assess: (what standard?)
what practice(s) SEP - <https://ngss.nsta.org/PracticesFull.aspx>
what concept, CCC - <https://ngss.nsta.org/CrosscuttingConceptsFull.aspx>
what content, DCI - <https://ngss.nsta.org/disciplinarycoreideastop.aspx>

Use the text from the standard -- **(the performance expectation and the foundation boxes)** to write a set of learning claims you want to make about what students know and can do - *see page 2 of STEM Tool #29 - blue box - for an example.*

The claim should include all three dimensions -- SEP, CCC, DCI.

2. Think of a **scenario about the natural world** related to the content that you can use as the context for eliciting student understanding of the claim. You want to be able to write multi-component tasks in which students answer them about that one scenario.

Describe the scenario and in the description include what explanation or model students must produce in their answers and how they will apply their understanding of the content in the scenario and connect the concept with it. -- *see page 3 of STEM Tool #29 - purple box - for an example*

3. **Build questions** to engage students with the scenario -- you want to write questions that assess specific parts of the claim from step 1. The format of the task should be organized around a range of practices, but especially the practices found in the standard you are assessing. Use a variety of question formats with varying levels of challenge. (multiple choice, multiple select, short answer explanations -- this makes the task multi-component. -- *see page 4 of STEM Tool #29 - green box - for an example*

See STEM Tool #30 -- this tool provides task format examples for all 8 practices

4. You want **students to provide answers that support the claim** from step 1, so a good next step is to consider hypothetical student responses. This will tell you if your task has questions that are specific enough to get the student response you want and possibly if the scenario is sufficient. --See page 5 of STEM Tool #29- orange box - for examples

You want the claim, scenario, task formats, and student answers to be in alignment.

You might also think about typical responses you might get at different levels of correctness to create a **rubric** for the task (limited, partial, full understanding)

5. Designing a good assessment requires **developing it, testing it, and revising it in cycles**. Each time you give it to students and get feedback can be an opportunity to revise and improve it for next time. Sharing with a colleague and asking for feedback from them is a good way to improve it as well.

Ask these questions as you evaluate your assessment task:

Does the claim contain what you want to assess?

Does the scenario engage students with the content and require them to engage in the practices and concepts?

Which task formats are most appropriate to use to form your questions so that you get student responses that align with your claim?

It is very difficult to develop tasks that allow all students to show what they know and can do. However, the best way to learn about our students' three-dimensional science proficiency is to create and revise tasks that give them the opportunity!

Main Source of Information: <http://stemteachingtools.org/brief/29>