



# NGSS Evidence Statements

## Executive Summary of the Front Matter

### Overview

- The NGSS identify assessable performance expectations (PEs), or what students should know and be able to do at the end of instruction.
- Each PE represents the integration of three “dimensions” of science education: scientific and engineering practices, disciplinary core ideas (DCIs), and crosscutting concepts (CCCs). As such, both student learning and assessment around the NGSS should be “three dimensional”.
- The evidence statements are meant to show what it looks like for students to fully satisfy the PE.

### Purpose

- The evidence statements were designed to articulate how students can use the practices to demonstrate their understanding of the DCIs through the lens of the CCCs, and thus, demonstrate proficiency on each PE. The evidence statements do this by clarifying:
  - How the three dimensions could be assessed together, rather than in independent units
  - The underlying knowledge required for each DCI
  - The detailed approaches to science and engineering practices
  - How crosscutting concepts might be used to deepen content- and practice-driven learning
- Given the shift to three dimensional learning, it is important to note that “minimum proficiency” on the NGSS is higher than for most previous standards, and will not look the same.
- The evidence were **not** created to:
  - Be used as curriculum
  - Limit or dictate instruction

### Structure

- The science and engineering practices are used as the organizing structure for the evidence statements (this **does not** mean that the practices are more important than the other dimensions). The proper integration of practices make students’ thinking visible.
- As such, there are templates for each practice that contain the categories necessary for students to demonstrate full proficiency on that practice.
- The evidence statements and the associated templates **are not** meant to be used for the following:
  - As a description of teacher prompts, instructional techniques, or steps in a classroom activity
  - As a description of increasing levels of cognitive difficulty, Depth of Knowledge levels, or varying levels of student proficiency
  - As a checklist that denotes the ordering or sequence of steps in a student’s performance

## How to Use the Evidence Statements

- All users should spend time understanding the NRC’s *Framework for K-12 Science Education* and NGSS prior to using the evidence statements
- For assessment: the evidence statements can be used to inform the development of summative assessments, but context would have to be added to the statements to align with the specific examples or prompts used in the assessment.
- For instruction: the evidence statements can be used in support of instructional design, but it is crucial to recognize that there are numerous pathways educators may use across the course of lessons and units to allow students to ultimately be prepared for success on the performance expectations (and thus to be able to demonstrate the evidence statements).
- Although evidence statements are listed individually for each performance expectation, **this does not indicate that they should be measured individually, or that performance expectations should be taught or assessed individually.** Classroom instruction should be focused on helping students build towards several PEs at one time because many concepts and practices are interrelated.

## Limitations of the Evidence Statements

- The evidence statements cannot do the following:
  - Provide or proscribe the contexts through which the PEs may be taught or assessed
  - Be the rubrics on which levels of student success would be measured
  - Identify the sequence of instruction or assessment
  - Put limits on student learning or student coursework
  - Replace lesson plans or assessment items
  - Serve as complete scoring rubrics

## Development Process & Criteria

- Discipline-based teams of scientists and educators — including many of the writers of the NGSS — worked together to create the evidence statements (starting with high school).
- These authors used the following guiding principles and criteria (among others) to craft the evidence statements:
  - Statements should describe observable evidence that a scorer or assessor could actually see and measure
  - Statements should be written as if they are the “proficient” level
  - Foundation box bullets from all three dimensions must be the focus of the statements and statements must not go beyond the bullets of each dimension’s foundation box
  - Specific mathematical formulae should be highlighted when required for student use
  - Concepts that are included in prior grades’ DCIs should not be repeated unless they are also in the current grade’s DCIs