

A quick guide for observing classroom content and practice

In **grade 1**, instructional time should focus on five core ideas:

**ESS**

1. Earth's Place in the Universe

**LS**

1. From Molecules to Organisms: Structures and Processes  
3. Heredity: Inheritance and Variation of Traits

**PS**

4. Waves and their Applications in Technologies for Information Transfer

**ETS**

1. Engineering Design



In a **1<sup>st</sup> grade science** class you should observe students engaged with at least one science concept and practice:

Science and Engineering Practices

- Asking questions and defining problems
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

Science Concepts

**Earth & Space Science (ESS1)**

- Observations of the sun, moon, and stars to describe apparent motion
- Analyzing data about seasonal patterns of change (sunrise, sunset, temperature, precipitation, environmental changes)

**Life Science (LS1, LS3)**

- Using evidence to explain the function of animal senses and body parts and the function of plant parts
- Comparing different animals' behavior that helps offspring survive
- Using observations to compare individuals of the same kind

**Physical Science (PS4)**

- Demonstrating the relationship of vibrating materials and sound
- Experimenting with different materials and light
- Designing and building a device that uses light or sound to send a signal

**Technology/Engineering (ETS1)**

- Gathering information and asking questions that can be solved by developing or improving an object or tool
- Generating and sketching multiple solutions to a problem

NOTES

Comments on the Science and Engineering Practices:

- For a list of specific skills, see the *Science and Engineering Practices Progression Matrix* ([www.doe.mass.edu/stem/review.html](http://www.doe.mass.edu/stem/review.html)).
- Practices are skills **students** are expected to learn and do; standards focus on some but not all skills associated with a practice.

**STE What to Look For** The example below features three Indicators from the [CT Common Core of Teaching](#). These Indicators are just a sampling from the full set of Standards and were chosen because they create a sequence: the educator plans a lesson that sets clear and high **expectations**, the educator then delivers high quality **instruction**, and finally the educator uses a variety of **assessments** to see if students understand the material or if re-teaching is necessary. This example highlights teacher and student behaviors aligned to the three Indicators that you can expect to see in a rigorous 1<sup>st</sup>-grade science classroom.

**Connections to Theory and/ or Research**

<b>Domain 1</b>	<b>Classroom Environment, Student Engagement and Commitment to Learning</b>
<p style="text-align: center;"><b>What is the teacher doing?</b></p> <ul style="list-style-type: none"> <li>•Creating culturally responsive lessons that engage and sustain student attention</li> <li>•Supporting inquiry about what evidence is relevant to a scientific question</li> <li>•Explaining the difference between a model and the object it represents</li> </ul>	<p style="text-align: center;"><b>What are the students doing?</b></p> <ul style="list-style-type: none"> <li>• Understanding what they will learn in a lesson</li> <li>• Using information from observations to construct an evidence based account for natural phenomena</li> <li>• Using scientific language precisely to convey meaning and understanding of concepts</li> <li>• Identifying common features and differences between a model and the real object</li> </ul>

<b>Domain 2</b>	<b>Planning for Active Learning</b>
<p style="text-align: center;"><b>What is the teacher doing?</b></p> <ul style="list-style-type: none"> <li>•Providing opportunities for students to communicate ideas, ask questions, and make their thinking visible in writing and speaking</li> <li>•Designing lessons that support successful cooperation in culturally sensitive ways</li> <li>•Asking students to describe patterns in observations</li> </ul>	<p style="text-align: center;"><b>What are the students doing?</b></p> <ul style="list-style-type: none"> <li>•Asking questions that can be answered by observations</li> <li>•Discussing scientific ideas with other students</li> <li>•Using counting and numbers to identify and describe patterns</li> <li>•Making observations based on prior experiences</li> </ul>

<b>Domain 3</b>	<b>Instruction for Active Learning</b>
<p style="text-align: center;"><b>What is the teacher doing?</b></p> <ul style="list-style-type: none"> <li>•Using multiple formative approaches to assess student learning (e.g., classroom conversation, completion of investigation)</li> <li>•Providing concrete strategies to respond to feedback (e.g., emphasizing importance of recorded observations)</li> <li>•Providing exemplars of work (e.g. historical examples, student work)</li> </ul>	<p style="text-align: center;"><b>What are the students doing?</b></p> <ul style="list-style-type: none"> <li>•Demonstrating learning in multiple ways (e.g., classroom conversation, completion of investigation)</li> <li>•Engaging in challenging learning tasks regardless of learning needs (e.g., linguistic background, disability, academic gifts)</li> <li>•With guidance, planning and conducting an investigation collaboratively with peers</li> </ul>

\*This document is based on the CT Core Standards Classroom "Look Fors" and the MA Curriculum Guide