

A quick guide for observing classroom content and practice

In grade 3, instructional time should focus on seven core ideas:

ESS

2. Earth's Systems
3. Earth and Human Activity

LS

1. From Molecules to Organisms: Structures and Processes
3. Heredity: Inheritance and Variation of Traits
4. Biological Evolution: Unity and Diversity

PS

2. Motion and Stability: Forces and Interactions

ETS

1. Engineering Design

In a 3rd grade science class you should observe students engaged with at least one science concept and practice:

Science Concepts

Earth & Space Science (ESS2, ESS3)

- Describing and predicting local weather during a season
- Obtaining information to illustrate variations in weather by region
- Evaluating a design that reduces the impact of a weather-related hazard

Life Science (LS1, LS3, LS4)

- Representing the unique life cycles of organisms
- Providing evidence to explain traits are inherited from parents and can vary within a group of organisms
- Distinguishing between inherited characteristics and ones influenced by the environment
- Comparing environments and organisms from today and the past
- Explaining how variations in individual characteristics may provide advantages for survival

Life Science (LS1, LS3, LS4)

- Constructing an argument that some organisms can survive better in certain environments
- Describing how environmental changes can affect some organisms' ability to survive and reproduce
- Providing evidence that survival of a population depends on reproduction

Physical Science (PS2)

- Explaining the effect of various forces on an object
- Investigating forces between magnets
- Defining a design problem that can be solved using magnets

Technology/Engineering (ETS1)

- Defining a design problem
- Generating and comparing several solutions to a design problem
- Presenting representations of various solutions to a design problem

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

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).
- Practices are skills **students** are expected to learn and do; standards focus on some but not all skills associated with a practice.



Science and Technology/Engineering What to Look For Guide

The practices below, which are aligned to the MA Model Teacher Rubric, should be evident in planning and instruction. Any particular lesson will demonstrate some of the practices, not all. For each lesson, artifacts or observables might include: lesson plan, tasks and assessments, teacher instruction, student discussion and behavior, or student work.

Standard I: Curriculum, Planning, and Assessment (I-A, I-B)

- The lesson focuses on grade-level standard(s).
- The lesson integrates science and engineering practice(s) with core idea(s) to support development of skills and conceptual understanding.
- The lesson engages students in making sense of relevant phenomena or solving relevant problems (through firsthand experiences or representations).
- The lesson intentionally relates new learning to students' prior skills and knowledge.
- The lesson provides grade-appropriate connection(s) to Literacy and/or Mathematics standards.
- The lesson includes opportunities to monitor learning throughout the lesson (such as through questioning or student performance assessments).

Standard II: Teaching all Students (II-A)

- The teacher actively engages students in authentic scenarios that provide opportunities to make sense of phenomena or design solutions.
- The teacher promotes use of evidence and provides time for students to communicate, clarify, justify, and represent their thinking about the lesson content.
- The teacher uses variation in students' ideas and strategies to strengthen other students' understanding.
- The teacher addresses student variability and diverse needs (including English language learners and students with disabilities) to ensure equitable access to the lesson and achievement of the standard(s).
- The teacher references student work and discussion to summarize the practices and core ideas learned.

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