Massachusetts Curriculum Framework | SCIENCE | 3

WHAT TO LOOK FOR

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 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 (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

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.

STE What to Look For The example below features three Indicators from the Standards of Effective Practice. 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 3rd-grade science classroom.

Expectations (Standard II, Indicator D)	Plans and implements lessons that set clear and high expectations and also make knowledge accessible for all students.

What is the teacher doing?	What are the students doing?
•Asking students to apply scientific knowledge and ideas to everyday situations	•Understanding what they will learn in a lesson and how it connects to prior learning
•focusing attention on scientific language (e.g., linguistic complexity, conventions, and vocabulary)	•Persisting when engaging with meaningful scientific tasks
•Providing structures for students to explain relationships among things they observe	•Comparing and refining arguments based on an evaluation of evidence
	•Identifying limitations of a model

Instruction (Standard II, Indicator A)	Uses instructional practices that reflect high expectations regarding content and quality of effort and work; engage all students; and are personalized to accommodate diverse learning styles, needs, interests, and levels of readiness.

What is the teacher doing?	What are the students doing?
•Providing opportunities for students to communicate ideas, ask questions, and make their thinking visible in writing and speaking	•Asking scientific (testable) questions that can be answered by investigation
•Highlighting when students draw explicitly upon class content during discussions with peers	•Showing persistence and focus in working together toward a shared goal
•Providing resources that support the collection and recording of results	•Using computation and mathematical analysis to find patterns
	•Carefully collecting and recording results

Assessment (Standard I, Indicator B)	Uses a variety of informal and formal methods of assessments to measure student learning, growth, and understanding to develop differentiated and enhanced learning experiences and improve future instruction.

What is the teacher doing?	What are the students doing?
•Providing concrete strategies to respond to feedback (e.g., emphasizing importance of recorded observations)	•Purposefully incorporating feedback from teacher and peers into actions
•Using multiple formative approaches to assess student learning (e.g., classroom conversation, completion of investigation)	•Engaging in challenging learning tasks regardless of learning needs (e.g., linguistic background, disability, academic gifts)
•Conducting frequent checks for student understanding and adjusting instruction accordingly	•Using exemplars to inform their work
	•Conducting investigations with a controlled variable