Central Connecticut State University | SCIENCE | 5

WHAT TO LOOK FOR

A quick guide for observing classroom content and practice

In **grade 5**, instructional time should focus on nine core ideas:

ESS
1. Earth's Place in the Universe
2. Earth's Systems
3. Earth and Human Activity

LS
1. From Molecules to Organisms: Structures and Processes
2. Ecosystems: Interactions, Energy, and Dynamics

PS
1. Matter and Its Interactions
2. Motion and Stability: Forces and Interaction
3. Energy

ETS
3. Technological Systems

In a **5th 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, ESS2, ESS3)

- Constructing an argument about the sun's appearance
- Using models to explain Earth's relationship to the sun, moon and stars
- Using a model to explain the cycling of water on Earth
- Graphing the locations and relative amounts of fresh and saltwater
- Obtaining information about human's impact on the environment
- Testing, and proposing a change to, a water filter design

Life Science (LS1, LS2)

- Asking scientific questions about how plants obtain materials to live and grow
- Developing a model to describe movement of matter in the environment
- Comparing the effectiveness of composter designs

Physical Science (PS1, PS2, PS3)

- Using a model of matter to explain phase changes
- Measuring conservation of matter
- Observing and measuring substances to describe characteristic properties
- Experimenting to see if mixing substances creates a new substance
- Supporting an argument that gravity is directed towards Earth's center
- Describing that the food animals digest provides energy and nutrients for life processes

Engineering (ETS3)

- Using drawings to show the relationships between parts of a device
- Communicating about changes to improve technologies and he development of new technologies that fulfill a want or need

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 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 5th grade science classroom.

Domain 1 — Classroom Environment, Student Engagement and Commitment to Learning

What is the teacher doing?

- Asking students to apply scientific knowledge and ideas when engaging with real-world problems
- Focusing attention on scientific language (e.g., linguistic complexity, conventions, and vocabulary)
- Showing students how to use models to explain phenomena and generate evidence

What are the students doing?

- Persisting when engaging with meaningful scientific tasks
- Applying scientific knowledge when explaining natural phenomena or real world problems
- Identifying limitations of a model

Domain 2 — Planning for Active Learning

What is the teacher doing?

- Highlighting when students draw explicitly upon class content during discussions with peers
- Modeling ways of using computation and analysis to find patterns in observations
- Providing resources that support the comparison of students' results

What are the students doing?

- Asking questions that can be answered by investigations and predicting answers based on patterns
- Using computation and mathematical analysis to find patterns
- Comparing data collected by different groups to discuss similarities and differences in their findings

Domain 3 — Insrtruction for Active Learning

What is the teacher doing?

- Providing concrete strategies to respond to feedback (e.g., emphasizing importance of recorded observations)
- Conducting frequent checks for student understanding and adjusting instruction accordingly
- Providing exemplars of work (e.g. historical examples, student work)

What are the students doing?

- Demonstrating learning in multiple ways (e.g., classroom conversation, completion of investigation)
- Engaging in challenging learning tasks regardless of learning needs (e.g., linguistic background, disability, academic gifts)
- Using exemplars to inform their work

Connections to Theory and/ or Research

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