A Guide to Interpreting the
Next Generation Science Standard—Marine Science Institute Correlations

Our Guides are arranged by grade, type of program, and (when applicable) the habitat or animal theme, ie. Kindergarten Inland Voyage, Rocky Intertidal Habitat. Each guide is broken into Units of Study (UoS) with the performance expectations (PE) that are relevant to the MSI program. Under each UoS the foundations are highlighted by colored text boxes that correspond to the Next Generation Science Standard (NGSS) Appendences from http://www.nextgenscience.org/. These foundations include: SEPs (Science and Engineering Practices), DCIs (Disciplinary Core Ideas), and CCCs (Crosscutting Concepts).

In the NGSS—MSI correlations, each foundation is followed by a bulleted list of activities that support it, which are completed during the MSI program. These activities, discussions, observations, etc. are building blocks that help students grow in each area. They are foundational and are intended to be expanded upon. Many MSI programs have pre- and post-activities that can be used to tie these concepts into your ongoing curriculum, please visit our website to view and download these teacher guides.

Below is a breakdown of each section with examples.

Unit of Study (UoS)
The main topic of study. These are labelled with grade, discipline (eg LS = Life Sciences), a number for the “core idea” and its title.

Example: **K-LS1.** From Molecules to Organisms: Structures and Processes

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Performance Expectations (PE)
Statements of what students should be able to do after instruction. Labelled with grade, discipline abbreviation, core idea and sub-idea numbers.

Example: **K-LS1-1**. Use observations to describe patterns of what plants and animals (including humans) need to survive.

Science and Engineering Practices (SEP)
The blue box indicates just the MSI-relevant science and engineering practices used to construct the Pes. They are derived from the eight categories below. **In the NGSS—MSI correlations, the SEP is listed followed by a bulleted list of ways that students practice these skills during an MSI program.**

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)

7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

Example:

SEP Use observations to describe patterns in the natural world in order to answer scientific questions.
- Students observe rocky intertidal animals moving.
- Students observe animal shape, color, size, texture etc.

Disciplinary Core Ideas (DCI)

(Grey text in this section taken verbatim from: www.nextgenscience.org)

Disciplinary core ideas have the power to focus K–12 science curriculum, instruction and assessments on the most important aspects of science. To be considered core, the ideas should meet at least two of the following criteria and ideally all four:

- Have **broad importance** across multiple sciences or engineering disciplines or be a **key organizing concept** of a single discipline;
- Provide a **key tool** for understanding or investigating more complex ideas and solving problems;
- Relate to the **interests and life experiences of students** or be connected to **societal or personal concerns** that require scientific or technological knowledge;
- Be **teachable** and **learnable** over multiple grades at increasing levels of depth and sophistication.

Disciplinary ideas are grouped in four domains: the physical sciences; the life sciences; the earth and space sciences; and engineering, technology and applications of science.

They are labelled with an abbreviation for the domain plus core idea number and sub-idea letter. **In the NGSS—MSI correlations, the DCI is listed followed by a bulleted list of ways that students address these ideas during an MSI program.**

Example:

LS1.C All animals need food in order to live and grow. They obtain food from plants or from other animals. Plants need water and light to live and grow.
- Students discuss the stresses on rocky intertidal animals.
- Students discuss competition for food.
- Students observe animal mouths, bodies, and adaptations for feeding (ie. claws, tentacles, etc.)

Crosscutting Concepts (CCC)

(Grey text in this section taken verbatim from: www.nextgenscience.org)

Crosscutting concepts have application across all domains of science. As such, they are a way of linking the different domains of science. They include: Patterns, similarity, and diversity; Cause and effect; Scale, proportion and quantity; Systems and system models; Energy and matter; Structure and function; Stability and change. They are labelled simply with CCC and a brief statement of the concept. **In the NGSS—MSI correlations, the CCC is listed followed by a bulleted list of ways that students address these ideas during an MSI program.**

CCC Example:

CCC Patterns in the natural and human designed world can be observed and used as evidence.

- Students observe the patterns in the needs of living things.
- Students observe patterns in animal behavior.
- Students observe physical patterns in both rocky shore animals and humans (eyes, mouth, etc.)

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