SOUTH CAROLINA
DEPARTMENT OF EDUCATION

# Bundling Guide for Grade 2 Science

**Purpose and Use**

This document is intended to be a guide to provide examples of ways Performance Expectations (PEs) could be bundled. For this purpose, a bundle as defined by Pruit (2014), is, "a set of PEs that provide students with coherent connections among concepts within and across disciplines." This document is not intended to be read from cover to cover, but to be used, when needed, to support teacher professional learning and curriculum decisions. This is not intended for student use, and thus is not written in student-friendly language. This is not a curriculum or a means to limit instruction in the classroom. The bundles presented in this guide are not ordered for instruction. Although each PE states a dedicated Science and Engineering Practice (SEP) and Crosscutting Concept (CCC), students will need to use the whole range of SEPs and CCCs to achieve success by the end of instruction.

The bundles in this document do not represent the only way the PEs can be bundled. PEs bundled together may change depending upon the selected anchoring phenomenon that students are working to explain. The bundles presented in this guide were developed using an iterative process informed by the work of Krajick and colleagues (2014). This process is summarized in the steps below:

1. Review bundles that already exist.

2. Build bundles around an anchoring phenomenon.

a. The "Example anchoring phenomena to support 3D instruction" provided in this resource is just that, an example. There are myriad phenomena to support 3D instruction, and different phenomena may be more appropriate for different learning contexts.

3. Explore and look for unexpected relationships among the PEs, including bundling across disciplines (Earth and Space Science, Life Science, Physical Science) when appropriate. This can include identification of PEs that are only partially met in the bundle.

a. PEs within a bundle marked with an asterisk (*) share an authentic connection with the bundle but may not fully met.

4. Make sure each PE in the grade/course is found in at least one bundle.

**Physical Properties of Matter**

Matter makes up all materials in the natural world. Each material has physical properties that can be observed or measured, such as color, size, shape, texture, hardness, and shiny/dull (reflectivity). These properties are used to describe, compare, and classify materials. Physical properties help determine which materials are best suited for specific purposes. For example, metal is strong and durable, making it useful for construction while glass is transparent, making it suitable for windows.

**PEs aligned to this bundle:**

- 2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
- 2-PS1-2. Analyze data obtained from tests to determine which materials have the best properties for an intended purpose.
- 2-PS1-3. Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object. *

**Example anchoring phenomena to support 3D instruction:**

- Comparing windows and paper when wet
- Comparing fabrics in different moisture conditions
- Why do builders use different materials for walls, windows, and roofs?

**Observing Changes in Materials**

Some types of matter can exist as either a solid or a liquid, depending on temperature. Heating or cooling materials can cause observable changes in their state or structure. These changes may be reversible, meaning the material can return to its original form. For example, water can freeze into ice when cooled and melt back to liquid water when heated. Other changes are irreversible, meaning the material becomes something new and cannot return to its original state. When ingredients for a cake are mixed and baked, heat causes the materials to change in ways that cannot be undone. The baked cake has different properties than the original ingredients. Many objects are made from smaller parts that can be taken apart and used to build something new. The new object may have the same properties as the original or different properties, depending on how the pieces are used. For example, building blocks can be taken apart and used to make a new structure with similar properties. In contrast, when cake ingredients are mixed and baked, the result is a new material with different properties.

**PEs aligned to this bundle:**

- 2-PS1-3. Make observations to construct an evidence-based account of how an object made of a small set of pieces can be dissembled and made into a new object.
- 2-PS1-4. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.
- 2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. *
- 2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be a solid or liquid. *

**Example anchoring phenomena to support 3D instruction:**

- Melting crayons
- Recycling and reusing plastic bottles
- Creating clay objects and firing in a kiln

**Habitats**

A habitat is a specific environment that provides the resources a plant or animal needs to survive. Plants require air, water, sunlight, and minerals from the soil to grow and stay healthy. Different species of plants have different needs, which means they may live in the same habitat or in different ones. Some plants also depend on animals for pollination or seed dispersal, forming important relationships with their habitat. These needs and interactions help explain why different habitats support different types of plants and animals. Human activities, like building, farming, or pollution, can change or damage habitats. However, people can also make choices that protect land, water, air, and living things, helping to preserve habitats and the variety of life they support.

**PEs aligned to this bundle:**

- 2-LS2-1. Plan and conduct and investigation to determine what plants need to grow.
- 2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.
- 2-LS4-1. Make observations of plants and animals to compare patterns of diversity within different habitats.
- 2-ESS3-1. Design solutions to address human impacts on natural resources in the local environment.
- 2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid. *

**Example anchoring phenomena to support 3D instruction:**

- Carolina Bay Ecosystem
- School gardens
- Seed dispersal

**The Role of Water on Earth**

Liquid water is one of the key features that makes Earth able to support life. On Earth's surface, water can be found in both solid form (ice) and liquid form (rivers, lakes, oceans). These forms of water are located in different places across Earth's surface, and their presence affects where plants and animals, including humans, can live. By observing and recording where water is found in relation to land, people can better understand how to protect natural resources. This information helps guide decisions that reduce human impact on land, water, and living things, such as choosing where to build, how to conserve water, or how to protect habitats that depend on water.

**PEs aligned to this bundle:**

- 2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid.
- 2-LS4-1. Make observations of plants and animals to compare patterns of diversity within different habitats. *
- 2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area. *
- 2-ESS3-1. Design solutions to address human impacts on natural resources in the local environment. *

**Example anchoring phenomena to support 3D instruction:**

- Frogs are found more commonly near ponds but not by playgrounds
- Ice melts faster on different surfaces
- Preparation for flood events

**Earth's Changing Surface**

Earth's surface is constantly changing. Some changes happen rapidly, such as earthquakes, volcanic eruptions, or landslides. Other changes occur slowly, like erosion caused by rivers carving valleys or wind shaping deserts over time. These processes create and reshape landforms such as mountains, canyons, and coastlines. Recording land and water features on maps helps people understand these changes and develop solutions to reduce their impact. For example, planting native shrubs, trees, or grasses can help hold soil in place and slow down erosion caused by wind or water. These choices help protect natural resources and preserve the shape of the land.

**PEs aligned to this bundle:**

- 2-ESS1-1. Use information from serval sources to provide evidence that Earth events can occur rapidly or slowly.
- 2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
- 2-ESS3-1. Design solutions to address human impacts on natural resources in the local environment.
- 2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area. *
- 2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid. *

**Example anchoring phenomena to support 3D instruction:**

- Local rock formations (Ceasar's Head in Greenville County, Peachtree Rock in Lexington County, and Wood's Bay in Florence County)
- Formation of the Grand Canyon by the Colorado River
- Coastal erosion (rapid: hurricanes, slow: waves, tides, and wind)