Second Grade

South Carolina second-grade students engage in thinking and solving problems the way scientists and engineers do to help them better see how science is relevant to their lives. To capitalize on the natural curiosity all students have about the world around them, learning experiences are built around the three dimensions of science: **Science and Engineering Practices (SEPs),** **Crosscutting Concepts (CCCs),** and **Disciplinary Core Ideas (DCIs).** This three-dimensional approach to teaching and learning helps educators provide meaningful learning experiences that offer varied entry points for students from diverse backgrounds.

The performance expectations in second grade help students engage in inquiry questions such as, **but not limited to:**

How are materials similar and different from one another, and how do the properties of the materials relate to their use?

Students develop an understanding of observable properties of materials through the analysis and classification of different materials.

How does land change and what are some things that cause it to change?

Students apply their understanding of the idea that wind and water can change the shape of the land to compare design solutions to slow or prevent such change.

What do plants need to grow?

Students investigate and use models to develop an understanding of what plants need to grow and how plants depend on animals for seed dispersal and pollination.

What are the different kinds of land and bodies of water?

Students use information and models to identify and represent the shapes and kinds of land and bodies of water in an area and where water is found on Earth.

How many types of living things live in a place?

Students make observations and compare the diversity of life in different habitats.

***The PEs should be bundled to design classroom experiences. There are multiple ways to bundle the PEs to help students lead inquiry and see connections between ideas, and help teachers facilitate phenomenon-driven learning with efficient use of instructional time.**

Second Grade

Through the second-grade performance expectations, students demonstrate grade-appropriate proficiency in each of three dimensions. When students explore **Disciplinary Core Ideas** (Dimension 3), they will do so by engaging in **Science and Engineering Practices** (Dimension 1) and should be supported in making connections to the **Crosscutting Concepts** (Dimension 2) to link their understanding across the four disciplinary core domains.

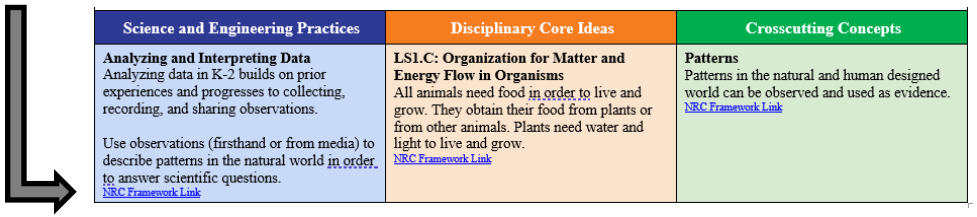
Each performance expectation contains one **SEP** and one **CCC** to be assessable and represents the student performance goal for the end of instruction; however, other **SEPs** and **CCCs** should be applied by students to support their progress leading up to the end of instruction. In second grade, these **end-of-instruction SEPs**, **DCIs**, and **CCCs** include:

SEPs	DCIs	CCCs
• Developing and Using Models • Planning and Carrying Out Investigations • Analyzing and Interpreting Data • Constructing Explanations and Designing Solutions • Engaging in Argument from Evidence	• Physical Science (PS1) • Life Science (LS2, LS4) • Earth and Space Science (ESS1, ESS2, ESS3) • Engineering, Technology, and Applications of Science (ETS1, ETS2)	• Patterns • Cause and Effect • Systems and System Models • Energy and Matter • Structure and Function • Stability and Change

Hyperlinks within the Standards Document

SC Conceptual Vertical Articulation links: Hover over the above underlined and hyperlinked titles to view links for all SEPs, DCIs, and CCCs.

A Framework for K-12 Science Education links: Hover over titles found within the foundation boxes under each PE to link the guiding research for all SEPs, DCIs, and CCCs.



*Equity in science education requires that all students are provided with equitable opportunities to learn science and become engaged in science and engineering practices; with access to quality space, equipment, and teachers to support and motivate that learning and engagement; and adequate time spent on science. In addition, the issue of connecting to students' interests and experiences is particularly important for broadening participation in science (NRC Framework, p. 28).

Matter and Its Interactions (PS1)

2

2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

Clarification Statement: *Observations could include color, texture, hardness, and flexibility.*

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. NRC Framework Link	**PS1.A: Structure and Properties of Matter** Different kinds of matter exist and many of them can be either solid or liquid, depending on temperature. Matter can be described and classified by its observable properties. NRC Framework Link	**Patterns** Patterns in the natural and human designed world can be observed. NRC Framework Link

Matter and its Interactions (PS1)		
2-PS1-2. Analyze data obtained from tests to determine which materials have the best properties for an intended purpose. ***Clarification Statement:*** *Examples of properties could include strength, flexibility, hardness, texture, and absorbency.* ***State Assessment Boundary:*** *Assessment of quantitative measurements is limited to length.*		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
Analyzing and Interpreting Data Analyzing data in K-2 builds on prior experiences and progresses to collecting, recording, and sharing observations. Analyze data from tests of an object or tool to determine if it works as intended. NRC Framework Link	**PS1.A: Structure and Properties of Matter** Different properties are suited to different purposes. NRC Framework Link	**Cause and Effect** Simple tests can be designed to gather evidence to support or refute student ideas about causes. NRC Framework Link

Matter and its Interactions (PS1)		
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. ***Clarification Statement:*** *Examples of pieces could include manipulatives, or other assorted small objects.*		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. NRC Framework Link	**PS1.A: Structure and Properties of Matter** Different properties are suited to different purposes. A great variety of objects can be built up from a small set of pieces. NRC Framework Link	**Energy and Matter** Objects may break into smaller pieces and be put together into larger pieces, or change shapes. NRC Framework Link

Matter and its Interactions (PS1)		
2-PS1-4. Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. ***Clarification Statement:*** *Examples of reversible changes could include materials such as water, crayons, or butter at different temperatures. Examples of irreversible changes could include cooking an egg, baking a cake, or preparing popcorn.*		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
Engaging in Argument from Evidence Engaging in argument from evidence in K-2 builds on prior experiences and progresses to comparing ideas and representations about the natural and designed world(s). Construct an argument with evidence to support a claim. NRC Framework Link	**PS1.B: Chemical Reactions** Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. NRC Framework Link	**Cause and Effect** Events have causes that generate observable patterns. NRC Framework Link

Ecosystems: Interactions, Energy, and Dynamics (LS2)		
2-LS2-1. Plan and conduct an investigation to determine what plants need to grow. ***Clarification Statement:*** *Emphasis is on plants depending on water, light, or soil to grow.* ***State Assessment Boundary:*** *Assessment is limited to testing one variable at a time.*		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. NRC Framework Link	**LS2.A: Interdependent Relationships in Ecosystems** Plants depend on air, water, minerals (in the soil), and light to grow. Different plants survive better in different settings because they have varied needs for water, minerals, and sunlight. NRC Framework Link	**Cause and Effect** Events have causes that generate observable patterns. NRC Framework Link

Ecosystems: Interactions, Energy, and Dynamics (LS2)		
2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
Developing and Using Models Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. Develop a simple model based on evidence to represent a proposed object or tool. NRC Framework Link	**LS2.A: Interdependent Relationships in Ecosystems** Plants depend on animals for pollination or to move their seeds around. NRC Framework Link **ETS1.B: Developing Possible Solutions** Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. NRC Framework Link	**Structure and Function** The shape and stability of structures of natural and designed objects are related to their function(s). NRC Framework Link

Biological Evolution: Unity and Diversity (LS4)		
2-LS4-1. Make observations of plants and animals to compare patterns of diversity within different habitats. ***Clarification Statement:*** *Emphasis is on the diversity of living things in a variety of different habitats.* ***State Assessment Boundary:*** *Assessment does not include specific animal and plant names in specific habitats.*		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in K-2 builds on prior experiences and progresses to simple investigations, based on fair tests, which provide data to support explanations or design solutions. Make observations (firsthand or from media) to collect data which can be used to make comparisons. NRC Framework Link	**LS4.D: Biodiversity and Humans** There are many different kinds of living things in any area, and they exist in different places on land and in water. NRC Framework Link	**Patterns** Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence NRC Framework Link

Earth's Place in the Universe (ESS1)		
2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur rapidly or slowly. ***Clarification Statement:*** *Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly or erosion of rocks, which occurs slowly.* ***State Assessment Boundary:*** *Assessment does not include quantitative measurements of timescales.*		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. Make observations from several sources to construct an evidence-based account for natural phenomena. NRC Framework Link	**ESS1.C: The History of Planet Earth** Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. NRC Framework Link	**Stability and Change** Things may change slowly or rapidly. NRC Framework Link

Earth's Systems (ESS2)		
2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land. ***Clarification Statement:*** *Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, or different designs for using shrubs, grass, or trees to hold back the land.*		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. Compare multiple solutions to a problem. NRC Framework Link	**ESS2.A: Earth Materials and Systems** Wind and water can change the shape of the land. NRC Framework Link **ETS1.C: Optimizing the Design Solution** Because there is always more than one possible solution to a problem, it is useful to compare and test designs. NRC Framework Link **ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World** Developing and using technology has impacts on the natural world. *(secondary)* NRC Framework Link	**Stability and Change** Things may change slowly or rapidly. NRC Framework Link

Earth's Systems (ESS2)		
2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area. ***State Assessment Boundary:*** *Assessment does not include quantitative scaling in models.*		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
Developing and Using Models Modeling in K-2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions. Develop a model to represent patterns in the natural world. NRC Framework Link	**ESS2.B: Plate Tectonics and Large-Scale System Interactions** Maps show where things are located. One can map the shapes and kinds of land and water in any area. NRC Framework Link	**Patterns** Patterns in the natural world can be observed. NRC Framework Link

Earth's Systems (ESS2)		
2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid.		
Science and Engineering Practices	**Disciplinary Core Ideas**	**Crosscutting Concepts**
Obtaining, Evaluating, and Communicating Information Obtaining, evaluating, and communicating information in K-2 builds on prior experiences and uses observations and texts to communicate new information. Obtain information using various texts, text features (e.g., headings, tables of contents, glossaries, electronic menus, icons), and other media that will be useful in answering a scientific question. NRC Framework Link	**ESS2.C: The Roles of Water in Earth's Surface Processes** Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. NRC Framework Link	**System and System Models** Objects and organisms can be described in terms of their parts. Systems in the natural and designed world have parts that work together. NRC Framework Link

Earth and Human Activity (ESS3)

2-ESS3-1. Design solutions to address human impacts on natural resources in the local environment.

State Assessment Boundary: *Assessment does not include energy resources such as coal or other fuels.*

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Constructing Explanations and Designing Solutions Constructing explanations and designing solutions in K-2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions. Use tools and/or materials to design and/or build a device that solves a specific problem or a solution to a specific problem. NRC Framework Link	**ESS3.C: Human Impacts on Earth Systems** Things that people do to live can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. NRC Framework Link **ETS1.B: Developing Possible Solutions** Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem's solutions to other people. NRC Framework Link **ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World** Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. Thus, developing and using technology has impacts on the natural world. NRC Framework Link	**Cause and Effect** Events have causes that generate observable patterns. NRC Framework Link