Second Grade Performance Targets

for the
South Carolina College- and Career-Ready Science Standards 2021

For use 2025-2026

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Ellen E. Weaver

State Superintendent of Education

Contents

Purpose and Use

Science is a way of understanding the physical universe using observation and experimentation to explain natural phenomena. Science also refers to an organized body of knowledge that includes core ideas to the disciplines and common themes that bridge the disciplines. As science educators we must take a 3-dimensional approach in facilitating student learning. By addressing content, science and engineering practices and crosscutting concepts, students can have relevant and evidence-based instruction that can help solve current and future problems.

This document is intended as a guide for discerning and describing features of students and their work who have met the stated Performance Expectation (PE). 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. 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.

Three-dimensional science learning requires discipline specific communication skills. This means that effective science learning occurs when students are expected to speak, listen, read, and write in ways that are appropriate to science. With each Performance Target, there are question/sentence stems and terminology to support student discourse about phenomena to help teachers facilitate the acquisition of science discourse. Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding. The terms and stems in this section are intended to provide a baseline for teachers, neither list is exhaustive nor complete.

In addition to the doing (SEP), thinking (CCC), and learning of science knowledge (Disciplinary Core Ideas) outlined here, students will also require a working knowledge of grade-level appropriate tools and techniques of science. Students should know and recognize how scientists and engineers use these tools and techniques, not just identify them. Students should be able to use these tools to gather data, describe how these tools gather data, and/or interpret data sampled from them. These tools and techniques for Grade 2 include all those previously identified and add or emphasize:

- balance
- beaker
- light source
- meter tape/stick
- ruler
- thermometer
- timing device

Document Updates

August 2025

- All Performance Expectation statements have been reformatted to call out each of the dimensions as follows:
    - Science and Engineering Practice – **bold**
    - Crosscutting Concept – *italicize*
    - Disciplinary Core Idea – regular
- The watermark from previous versions of this resource has been replaced with the wording “For use 2025-2026” on the title page and in the footer. This change was made to improve accessibility of this resource.
- Adjusted formatting and grammar

June 2024

- Updated watermark to 2024-2025
- Adjusted formatting and grammar

PS1 – Motion and Stability: Forces and Interactions

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.	**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.	**Patterns** Patterns in the natural and human designed world can be observed.

Observable features of student performance by the end of the course:

1. **Identifying the phenomenon under investigation**
    a. Students identify the phenomenon under investigation including the idea that different kinds of matter that have different properties, and sometimes the same kind of matter has different properties depending on temperature.
    b. Students describe the purpose of the investigation, to describe and classify different kinds of materials by their observable properties.
2. **Identifying the evidence to address the purpose of the investigation**
    a. Students develop an investigation plan and describe the data to be collected and the evidence to be derived, including:
        i. properties of matter (for example: color, texture, hardness, flexibility, state, etc.), and
        ii. temperature at which those properties are observed.
    b. Students describe that:
        i. observations of different materials provide evidence about the properties of different kinds of materials and
        ii. observed patterns in the properties of different materials provide evidence to classify the different kinds of materials.

3. **Planning the investigation**
    a. In the investigation plan, students describe:
        i. which materials will be observed and classified (for example: different kinds of metals, rocks, wood, soil, powders, etc.),
        ii. which materials will be observed at different temperatures, and how those temperatures will be determined (for example: using ice to cool and a lamp to warm, etc.) and measured (for example: qualitatively or quantitatively),
        iii. how the properties of the materials will be determined, and
        iv. how the materials will be classified (limited to sorted) by the pattern of the properties.
4. **Collecting the data**
    a. Students collect and record data on the properties of the materials.

2-PS1-1 Academic Language

Question/Sentence Stems

- _____ are some similarities of the properties.
- _____ are some differences of the properties.
- I/We can sort (classify or group) the following patterns of _____ to create groups.
- The following materials can be grouped when using the pattern of _____ found in the data.

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- classify
- color
- conclude
- difference
- flexibility
- hardness
- liquid
- matter
- properties
- similarity
- solid
- sort
- strength
- temperature
- texture

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.	**PS1.A: Structure and Properties of Matter** Different properties are suited to different purposes.	**Cause and Effect** Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Observable features of student performance by the end of the course:

1. **Organizing data**
    a. Students organize data from tests of different materials using graphical displays (for example: pictures, charts, grade-appropriate graphs, etc.) by their properties (for example: strength, flexibility, hardness, texture, absorbency, etc.).
2. **Identifying relationships**
    a. Students use the organized data to describe:
        i. relationships between materials and their properties (for example: metal is strong, paper is absorbent, rocks are hard, sandpaper is rough, etc.), and
        ii. relationships between material properties and their use (for example: hardness is good for breaking or supporting; roughness is good for keeping objects in place; flexibility is good to keep materials from breaking but not good for keeping materials rigidly in place, etc.).

3. **Interpreting data**
    a. Students use the analyzed data to describe which properties allow a material to be well suited for a given intended use (for example: ability to absorb for cleaning up spills, strength for building material, hardness for breaking a nut, etc.).
    b. Students use the analyzed data to support or refute a claim about which properties of materials allow the object or tool to be best suited for the intended purpose relative to the other given objects/tools:
        i. Students could support the idea that hardness allows a wooden shelf to be better suited for supporting materials placed on it than a sponge would be, based on the patterns relating property to a purpose;
        ii. Students could refute an idea that a thin piece of glass is better suited to be a shelf than a wooden plank would be because it is harder than the wood by using data from tests of hardness and strength to give evidence that the glass is less strong than the wood.
    c. Students describe how the data from the tests provided evidence of the suitability of different materials for the intended purpose.

2-PS1-1 Academic Language

Question/Sentence Stems

- The property of _____ would be best for its purpose because _____.
- The property of _____ would not work well because _____.
- _____ affects _____ by _____.
- If I/we _____ this will cause _____.

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- cause
- classify
- color
- effect
- flexibility
- hardness
- liquid
- matter
- properties
- purpose
- solid
- strength
- temperature
- texture

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.	**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.	**Energy and Matter** Objects may break into smaller pieces and be put together into larger pieces, or change shapes.

Observable features of student performance by the end of the course:

1. **Articulating the explanation of phenomena**
    a. Students articulate a statement describing/explaining that an object made of a small set of pieces can be disassembled and made into a new object.
    b. Students use evidence and reasoning to construct an evidence-based account of the phenomenon.
2. **Evidence**
    a. Students identify and describe evidence from observations (firsthand or from media), including:
        i. characteristics (for example: size, shape, arrangement of parts, etc.) of the original object,
        ii. that the original object was disassembled into pieces,
        iii. that the pieces were reassembled into a new object or objects, and
        iv. characteristics (for example: size, shape, arrangement of parts, etc.) of the new object or objects.

3. **Reasoning**
    a. Students use the following chain of reasoning to connect the evidence to support or refute an explanation:
        i. The original object was disassembled into its pieces and is reassembled into a new object or objects.
        ii. Many different objects can be built from the same set of pieces
        iii. Compared to the original object, the new object or objects can have different characteristics, even though they were made of the same set of pieces.

2-PS1-3 Academic Language

Question/Sentence Stems

- _____ are some similarities and differences among the solutions.
- I/We can optimize my solution by _____.
- The function of each part is _____.
- The property of each is part is _____.

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- assembled
- characteristics
- disassembled
- function
- liquid
- matter
- properties
- reshaped
- solid
- structure

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.	**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.	**Cause and Effect** Events have causes that generate observable patterns.

Observable features of student performance by the end of the course:

1. **Supported claims**
    a. Students make, support, or refute a claim that some changes caused by heating or cooling can be reversed and some cannot.
2. **Identifying scientific evidence**
    a. Students identify and describe the evidence to support or refute a claim, including:
        i. characteristics of the material before heating or cooling,
        ii. characteristics of the material after heating or cooling, and
        iii. characteristics of the material when the heating or cooling is reversed.
3. **Evaluating and critiquing the evidence**
    a. Students evaluate and identify the strengths and weaknesses of the evidence, including:
        i. The change in the material after heating (for example: ice becomes water, an egg becomes solid, solid chocolate becomes liquid, etc.).
        ii. Whether the change in the material after heating is reversible (for example: water becomes ice again, a cooked egg remains a solid, liquid chocolate becomes solid but can be a different shape, etc.).
        iii. The change in the material after cooling (for example: when frozen, water becomes ice, a plant leaf dies, etc.).

iv. Whether the change in the material after cooling is reversible (for example: ice becomes water again, a plant leaf does not return to normal, etc.).

4. **Reasoning and synthesis**
    a. Students use the following chain of reasoning to connect the evidence:
        i. Some changes caused by heating or cooling can be reversed by cooling or heating (for example: ice that is heated can melt into water, but the water can be cooled and can freeze back into ice [and vice versa], etc.).
        ii. Some changes caused by heating or cooling cannot be reversed by cooling or heating, for example:
            1. A raw egg that is cooked by heating cannot be turned back into a raw egg by cooling the cooked egg.
            2. Cookie dough that is baked does not return to its uncooked form when cooled.
            3. Charcoal that is formed by heating wood does not return to its original form when cooled.

2-PS1-4 Academic Language

Question/Sentence Stems

- _____ caused the patterns I/we am observing. I/we know this because _____.
- When I/we change _____ in the system, _____ is affected.
- In this situation, even a small change of _____ can cause a big effect of _____.
- My/Our claim is _____. My/Our evidence from the investigation is _____.

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- changes
- cooling
- heating
- irreversible
- properties
- reversible

LS2 – Ecosystems: Interactions, Energy, and Dynamics

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.	**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.	**Cause and Effect** Events have causes that generate observable patterns.

Observable features of student performance by the end of the course:

1. **Identifying the phenomenon under investigation.**
    a. Students identify and describe the purpose of the investigation, to determine if plants need water, light, and soil to grow.
2. **Identifying the evidence to address the purpose of the investigation**
    a. Students describe the data to be collected and the evidence to be derived, including:
        i. plant growth with both light and water,
        ii. plant growth without light but with water,
        iii. plant growth without water but with light, and
        iv. plant growth without water and without light.

3. **Planning the investigation**
    a. In the investigation plan, students describe:
        i. plants used,
        ii. light source,
        iii. how plants will be kept with/without light in both the light/dark test and the water/no water test,
        iv. amount of soil plants will be given in both the light/dark test and the water/no water test,
        v. amount of water plants will be given in both the light/dark test and the water/no water test, and
        vi. how plant growth will be determined (for example: observations of plant height, number and size of leaves, thickness of the stem, number of branches, etc.).
4. **Collecting the data**
    a. Students collect and record data on the effects on plant growth by:
        i. providing both light, water, and soil,
        ii. withholding light but providing water and soil,
        iii. withholding water but providing light and soil,
        iv. withholding both water, light, and soil, and
        v. withholding soil but providing water and light.

2-LS2-1 Academic Language

Question/Sentence Stems

- I/We can test this by_____.
- In this situation, even a small change of _____can cause a big effect of _____.
- _____ caused the patterns I/we am/are observing. I/We know this because _____.
- My/Our claim is _____. My/Our evidence from the investigation is _____.

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- air
- cause
- effect
- grow
- investigation
- light
- observe
- plant
- soil
- sunlight
- test
- water

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.	**LS2.A: Interdependent Relationships in Ecosystems** Plants depend on animals for pollination or to move their seeds around. **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.	**Structure and Function** The shape and stability of structures of natural and designed objects are related to their function(s).

Observable features of student performance by the end of the course:

1. **Components of the model**
    a. Students develop/use a model (for example: representation, diagram, drawing, physical replica, diorama, dramatization, story board, etc.) that mimics the function of an animal in seed dispersal or pollination of plants and identify the relevant components of their model, including:
        i. natural animal structure that helps it disperse seeds, or
        ii. mimic the natural structure of an animal that pollinates,
        iii. relevant plant structure(s), and
        iv. plant pollen or seeds.
2. **Relationships**
    a. Students develop/use a model to represent and describe the relationships between components, including:
        i. movement of pollen or seeds and
        ii. parts of the model and the animal structures mimicked.
3. **Connections**
    a. Students develop/use a model to describe:
        i. How the structure of the model gives rise to its function.
        ii. Structure-function relationships in the natural world that allow some animals to disperse seeds or pollinate plants.

2-LS2-2 Academic Language

Question/Sentence Stems

- The _____ structures allow the plant to reproduce or move its seeds by _____.
- The _____ structures help _____ to function because _____.
- These structures help the organism to _____ (describe function).

Terminology to Support Student Discourse about Phenomena

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- animals
- disperse
- environment
- function
- habitat
- plants
- pollinate
- reproduce
- seed
- structure
- survival

LS4 – Biological Evolution: Unity and Diversity

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.	**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.	**Patterns** Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.

Observable features of student performance by the end of the course:

1. **Identifying the phenomenon under investigation**
    a. Students identify and describe the purpose of the investigation, to compare plant and animal diversity of life in different habitats.
2. **Identifying the evidence to address the purpose of the investigation**
    a. Students describe the data to be collected and the evidence to be derived, including:
        i. descriptions based on observations (firsthand or from media) of habitats, including land habitats (for example: playground, garden, forest, parking lot, etc.) and water habitats (for example: pond, stream, lake, etc.);
        ii. descriptions based on observations (firsthand or from media) of different types of living things in each habitat (for example: trees, grasses, bushes, flowering plants, lizards, squirrels, ants, fish, clams, etc.); and
        iii. comparisons of the different types of living things that can be found in different habitats.

3. **Planning the investigation**
    a. In the investigation plan, students describe how the different plants and animals in the habitats will be observed, recorded, and organized.
4. **Collecting the data**
    a. Students collect, record, and organize data on different types of plants and animals in the habitats.

2-LS4-1 Academic Language

Question/Sentence Stems

- From this pattern, I/we know that_____.
- Based on this pattern, I/we believe_____.
- _____ caused the patterns I/we am observing. I/we know this because _____.
- I/We can test this by_____.

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- animals
- characteristics
- diversity of living things (biodiversity)
- environments
- habitats
- humans
- investigation
- plants
- test

ESS1 – Earth's Place in the Universe

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.	**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.	**Stability and Change** Things may change slowly or rapidly.

Observable features of student performance by the end of the course:

1. **Articulating the explanation of phenomena**
    a. Students articulate a statement describing/explaining that Earth events can occur very quickly or very slowly.
    b. Students use evidence and reasoning to construct an evidence-based account of the phenomenon.
2. **Evidence**
    a. Students identify and describe evidence from at least three sources, including:
        i. some Earth events occur quickly (for example: the occurrence of flood, severe storm, volcanic eruption, earthquake, landslides, erosion of soil, etc.),
        ii. some Earth events occur slowly,
        iii. some results of Earth events that occur quickly,
        iv. some results of Earth events that occur very slowly (for example: erosion of rocks, weathering of rocks, etc.), and

v. the relative amount of time it takes for the given Earth events to occur (for example: slowly, quickly, hours, days, years, etc.).

3. **Reasoning**
    a. Students use the following chain of reasoning to logically connect the evidence:
        i. In some cases, Earth events and the resulting changes can be directly observed; therefore, those events must occur rapidly.
        ii. In other cases, the resulting changes of Earth events can be observed only after long periods of time; therefore, these Earth events occur slowly, and change happens over a time that is much longer than one can observe.

2-ESS1-1 Academic Language

Question/Sentence Stems

- The things that stay the same are _____.
- The things that change are _____.
- The things that are changing slowly in this system are _____.
- The things that are changing quickly in this system are _____.
- The _____ (event) changed this system by _____.
- _____ was affected by the change of _____.
- _____ are causing this system to be unstable.

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- change
- Earth's surface
- earthquakes
- fast
- landslide
- stability
- stable
- unstable
- volcanic eruptions

ESS2 – Earth's Systems

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.	**ESS2.A: Earth Materials and Systems** Wind and water can change the shape of the land. **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. **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*)	**Stability and Change** Things may change slowly or rapidly.

Observable features of student performance by the end of the course:

1. **Using scientific knowledge to generate design solutions**
    a. Students describe a problem, which includes the idea that wind or water can change the shape of the land by washing away soil or sand.
    b. Students describe at least two solutions in terms of how they slow or prevent wind or water from changing the shape of the land.

2. **Describing features of the design solution, including quantification where appropriate**
    a. Students describe the specific expected or required features of the solutions that would solve the problem, including:
        i. slowing or preventing wind or water from washing away soil or sand, and
        ii. addressing problems created by both slow and rapid changes in the environment (such as many mild rainstorms or a severe storm and flood).
3. **Evaluating potential solutions**
    a. Students describe and compare how each solution addresses the problem.

2-ESS2-1 Academic Language

Question/Sentence Stems

- The _____ (event) changed this system by _____.
- _____ in the system may be affected over time.
- _____ is how the solutions are similar.
- _____ is how the solutions are different.
- _____ are causing this system to be unstable.
- To make this design more stable, I/we could _____.

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- change
- compare
- design
- Earth's surface
- model
- prevent
- solution
- stability
- stable
- test
- unstable
- water
- wind

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.	**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.	**Patterns** Patterns in the natural world can be observed.

Observable features of student performance by the end of the course:

1. **Components of the model**
    a. Students develop/use a model (limited to: a map) and identify the relevant components (for example: bodies of water and types of landforms).
2. **Relationships**
    a. Students develop/use a model to represent and describe relationships between the components, including:
        i. specific shapes and kinds of land (for example: playground, park, hill, etc.),
        ii. specific bodies of water (for example: creek, ocean, lake, river, etc.), and
        iii. patterns of water and land (for example: an area may have many small bodies of water; and area may have many types of land or different shapes, etc.).
3. **Connections**
    a. Students describe that because they can map the shapes and kinds of land and water in any area, maps can be used to represent many different types of areas.

2-ESS2-2 Academic Language

Question/Sentence Stems

- I/We can observe (notice) the pattern of _____ presented in the maps we created.
- I/We can observe (notice) the pattern of _____ in the maps we are viewing.
- The pattern seen in the map allows me to know that _____.
- Some similarities are _____.
- Some differences are_____.
- I/We can sort (classify or group) the following landforms by _____.

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- canyons
- floodplains
- ice
- lakes
- landforms
- liquid
- location
- maps
- models
- mountains
- oceans
- patterns
- ponds
- rivers
- solid
- valleys
- water

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.	**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.	**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.

Observable features of student performance by the end of the course:

1. **Obtaining information**
    a. Students use grade-appropriate texts and other reliable media to obtain the following scientific information:
        i. where water is found on Earth, including in oceans, rivers, lakes, and ponds,
        ii. that water can be found on Earth as liquid water or solid ice (for example: a frozen pond, liquid pond, frozen lake, etc.), and
        iii. patterns of where water is found, and what form it is in.
2. **Evaluating Information**
    a. Students evaluate and identify which sources of information are likely to provide scientific information (for example: versus opinion).

2-ESS2-3 Academic Language

Question/Sentence Stems

- The key components of the system are _____.
- In the system, _____ and _____ work together to _____.
- In the system, _____ and _____ interact in _____ way.
- If I/we remove _____ from the system _____ will happen.
- From these characteristics, I/we know that _____.

Terminology to Support Student Discourse about Phenomena
*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- frozen
- ice
- lakes
- liquid
- media
- ocean
- pond
- rivers
- solid
- system
- water

ESS3 – Earth and Human Activity

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.	**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. **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. **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.	**Cause and Effect** Events have causes that generate observable patterns.

Observable features of student performance by the end of the course:

1. **Using scientific knowledge to generate design solutions**
    a. Students describe a problem involving human impacts on the local environment.
    b. Students design a solution to the problem involving human impacts on the local environment.
    c. Students describe the scientific information used to design the solution (for example: versus opinion).
2. **Describing features of the design solution, including quantification when appropriate**
    a. Students describe the specific expected or required features of the design solution including:
        i. the design can reduce human impact on natural resources, and
        ii. the design must relate to natural resources.
3. **Evaluating potential solutions**
    a. Students describe how the design solution:
        i. meets the required features of the design solution, and
        ii. provides a solution to the problem involving human impact on the local environment.

2-ESS3-1 Academic Language

Question/Sentence Stems

- _____ affects _____ by _____.
- If I/we _____ this will cause _____.
- I/We can test this by _____.
- My/Our claim is _____. My/Our evidence from the investigation is _____.
- If _____ happens, I/we predict that _____ will occur.

Terminology to Support Student Discourse about Phenomena

*Teaching words or concepts in isolation or prior to experiences that give context (frontloading) deprives students of sense-making opportunities that lead to a greater depth of conceptual understanding.

- air
- cause
- design
- effect
- environment
- humans
- impact
- land
- model
- natural resources
- solution
- water

References

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