Kindergarten Performance Targets

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

For use 2025-2026

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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 Kindergarten emphasize:

- calendar
- light source
- ramp
- 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.
- K-PS2-1 edits in observable features.
    - Planning the Investigation: “speed” replaced with “direction”.

PS2 – Motion and Stability: Forces and Interactions

K-PS2-1. Plan and conduct an investigation to compare *the effects of* different strengths or different directions of pushes and pulls on the motion of an object.

> ***Clarification Statement:*** Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.
>
> ***State Assessment Boundary:*** Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.

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. With guidance, plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.	**PS2.A: Forces and Motion** Pushes and pulls can have different strengths and directions. Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. **PS2.B: Types of Interactions** When objects touch or collide, they push on one another and can change motion. **PS3.C: Relationship Between Energy and Forces** A bigger push or pull makes things speed up or slow down more quickly.	**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. **Identifying the phenomenon under investigation**
    a. With guidance, students identify the phenomenon under investigation~~,~~ including the idea that: the effect of different strengths and directions of pushes and pulls on the motion of an object.
    b. With guidance, students describe the purpose of the investigation, including determining the relationships between:
        i. different strengths of pushes and/or pulls and the resulting motion of and object,
        ii. different directions of pushes and/or pulls and the resulting motion of an object and/or
        iii. two objects that collide with one another and the resulting motion.
2. **Identifying the evidence to address this purpose of the investigation**
    a. With guidance, students develop an investigation plan to investigate the relationship between the strength and direction of pushes and/or pulls and the motion of an object (limited to: qualitative measures or expressions of strength and direction; for example: harder, softer, descriptions of "which way," etc.).
    b. Students describe how the observations they make connect to the purpose of the investigation.
    c. Students predict the effect of the push of pull on the motion of the object, based on prior experiences.
    d. Students predict the resulting motion of two objects after a collision.
3. **Planning the Investigation**
    a. In the investigation plan, students describe:
        i. the object whose motion will be investigated,
        ii. what will be in contact with the object to cause the push or pull,
        iii. the relative strengths of the push or pull that will be applied to the object to start or stop its motion or change its direction,
        iv. the relative directions of the push or pull that will be applied to the object,
        v. how the motion of the object will be observed and recorded, and
        vi. how the push or pull will be applied to vary strength or direction.
4. **Collecting the Data**
    a. With guidance, students collect and record observations that allow them to compare the effect on the motion of an object caused by changes in the strength or direction of the pushes and/or pulls.

K-PS2-1 Academic Language

Question/Sentence Stems

- When I/we push harder/softer it causes _____ to move _____.
- When I/we pull harder/softer it causes _____ to move _____.
- When it collides from the direction it causes _____ to move in _____direction.
- When I/we change _____, then, _____ is affected.

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
- change
- collide
- direction
- distance
- effects
- faster
- motion
- pull
- push
- shape
- strength

K-PS2-2. Analyze data to determine if a design solution works as intended *to change* the speed or direction of an object with a push or a pull.

> ***Clarification Statement:*** Emphasis on exploration-based play as a means to test objects or tools to determine if they work as intended. Examples of solutions could include tools such as a ramp to increase the speed of the object or a structure that would cause an object, such as a marble or ball, to turn.
>
> ***State Assessment Boundary:*** Assessment does not include friction as a mechanism for change in speed.

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.	**PS2.A: Forces and Motion** Pushes and pulls can have different strengths and directions. Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. **ETS1.A: Defining and Delimiting an Engineering Problem** A situation that people want to change or create can be approached as a problem to be solved through engineering. Such problems may have many acceptable solutions. **ETS2.A: Interdependence of Science, Engineering, and Technology** There are many types of tools produced by engineering that can be used in science to help answer these questions through observation or measurement. Observations and measurements are also used in engineering to help test and refine design ideas.	**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. With guidance, students organize data using graphical or visual displays (for example: pictures, pictographs, drawings, written observations, tables, charts, etc.) including:
        i. relative speed or direction of the object before a push or pull is applied (limited to: qualitative measures and expressions of speed and direction; for example: faster, slower, descriptions of "which way," etc.)
        ii. relative speed or direction of the object after a push or a pull is applied, and
        iii. how the relative strength of a push or a pull affects the speed or direction of an object (limited to: qualitative measures or expressions of strength; for example: harder, softer, etc.).
2. **Identifying relationships**
    a. Students use the organized data to describe relative changes in the speed or direction of the object caused by pushes or pulls from different solutions.
3. **Interpreting Data**
    a. Students describe the goal of different solutions.
    b. Students use the analyzed data to describe:
        i. how the pushes and/or pulls from the design solution change the object's motion, and/or
        ii. whether the push or pull from the design solution caused the intended change in speed or direction of the object's motion.

K-PS2-2 Academic Language

Question/Sentence Stems

- When I/we change _____ it causes _____.
- By looking at patterns in the data, I/we saw that _____ caused _____.
- These designs are similar because they both _____.
- If I/we need it to _____ then I/we would _____.
- The data show if I/we _____ it causes _____.

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.

- analyze
- change
- compare
- data
- direction
- motion
- problem
- pull
- push
- relationship
- solution
- strength
- test

PS3 – Energy

K-PS3-1. Make observations to determine *the effect of* sunlight on Earth's surface.

Clarification Statement: Examples of Earth's surface could include sand, soil, rocks, and water.

State Assessment Boundary: Assessment of temperature is limited to relative measures such as warmer/cooler.

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 that can be used to make comparisons.	**PS3.B: Conservation of Energy and Energy Transfer** Sunlight warms Earth's surface.	**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. With guidance, students identify the phenomenon under investigation involving sunlight warming the Earth's surface.
    b. With guidance, students describe the purpose of the investigation, to determine the effect of sunlight on Earth's surface by identifying patterns of relative warmth of Earth materials in sunlight and shade (for example: sand, soil, rocks, water, etc.).
2. **Identifying the evidence to address the purpose of the investigation**
    a. With guidance, students describe the data to be collected and the evidence to be derived including:
        i. The relative warmth of materials in the presence or absence of sunlight (limited to qualitative measures of temperature; for example: hotter, warmer, colder, etc.).
    b. Students describe how the observations they make connect to the purpose of the investigation.

3. **Planning the investigation**
    a. In the investigation plans, students describe:
        i. The materials on the Earth's surface to be investigated (for example: dirt, sand, rocks, water, grass, etc.).
        ii. How the relative warmth of the materials will be observed and recorded.
4. **Collecting the data**
    a. With guidance, students collect and record data that will allow them to:
        i. compare the warmth of Earth materials placed in sunlight and the same Earth materials placed in shade,
        ii. identify patterns of relative warmth of materials in sunlight and in shade (limited to: qualitative measures of temperature; for example: hotter, warmer, colder, etc.), and/or describe that sunlight warms the Earth's surface.

K-PS3-1 Academic Language

Question/Sentence Stems

- If _____ happens, I/we predict that _____ will occur.
- If a surface is _____ this will cause _____.
- Less sunlight will cause _____ to be _____.
- _____ is more/less warm than _____ when both have the same amount of sunlight.

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.

- data
- investigate
- investigation
- location
- materials
- observation (sight, touch)
- shade
- sunlight
- surfaces
- temperature
- test

K-PS3-2. Use tools and materials to design and build a structure *that will reduce* the warming effect of sunlight on an area.

Clarification Statement: Structures could incorporate shade, color, and materials that minimize the warming effects of the sun.

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 materials provided to design and build a device that solves a specific problem or a solution to a specific problem.	**PS3.B: Conservation of Energy and Energy Transfer** Sunlight warms Earth's surface. **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.A: Interdependence of Science, Engineering, and Technology** There are many types of tools produced by engineering that can be used in science to help answer these questions through observation or measurement.	**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 use scientific information about Sunlight's warming effect on the Earth's surface to design and build a structure that reduces warming caused by the Sun.
    b. With support, students describe:
        i. the problem,
        ii. the design solution, and
        iii. how the design solution uses the scientific information.
2. **Describing features of the design solution, including quantification when appropriate**
    a. Students describe that the design solution is expected to reduce warming for a designated area by providing shade.

3. **Evaluating potential solutions**
    a. Students describe how the design solution solves the problem by identifying the cause (Sunlight blocked) and effect (less warming of the surface) relationship.
    b. Students compare data from tests of different designs (for example: across student groups) to determine which solution is most effective in solving the problem.

K-PS3-2 Academic Language

Question/Sentence Stems

- _____ affects _____ by _____.
- Testing shows me/us that _____ causes _____ because _____.
- These designs are similar because they both _____.
- These designs are different because they both _____.
- 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.

- compare
- design
- effect
- materials
- model
- problem
- reduce
- shade
- solution
- sunlight
- surface
- test
- warm

LS1 – From Molecules to Organisms: Structures and Processes

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

> ***Clarification Statement:*** Examples of patterns could include that animals need to take in food, but plants make food; the different kinds of food needed by different types of animals; the requirement of plants to have light; and that all living things need water. Patterns could be described using multiple modes of representation.

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. Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.	**LS1.C: Organization for Matter and Energy Flow in Organisms** All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to live and grow.	**Patterns** Patterns in the natural and human designed world can be observed and used as evidence.

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

1. **Organizing data**
    a. With guidance, students organize data from observations (firsthand or from media) using graphical displays (for example: pictures, charts, etc.), including:
        i. different types of animals (including humans) and plants,
        ii. data about the foods different animals eat,
        iii. data about animals drinking water,
        iv. data about plants' need for water (for example: observations of the effects on plants in a classroom or school when they are not watered, observations of natural areas that are very dry, etc.), and/or
        v. data about plants' need for light (for example: observations of the effect on plants in a classroom when they are kept in the dark for a long time; observations about the presence or absence of plants in very dark places, such as under rocks or porches, etc.).

2. **Identifying relationships**
    a. Students use the organized data to identify patterns, including:
        i. All animals eat food.
            1. some animals eat plants,
            2. some animals eat other animals,
            3. some animals eat both plants and animals, and
            4. no animals do not eat food.
        ii. All animals drink water.
        iii. Plants cannot live or grow if there is no water.
        iv. Plants cannot live or grow if there is no light.
3. **Interpreting data**
    a. Students use the analyzed data to describe:
        i. Plants need light and water to live and grow.
        ii. Animals need food and water to live and grow.
        iii. Animals get their food from plants, other animals, or both.

K-LS1-1 Academic Language

Question/Sentence Stems

- The pattern seen in the collected data allows me/us to conclude that _____.
- If _____ doesn't have _____ it will cause it to _____.
- If _____ does have _____ it will cause it to _____.

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
- humans
- needs
- plants
- survival

ESS2 – Earth's Systems

K-ESS2-1. Use and share observations of local weather conditions *to describe patterns* over time.

> ***Clarification Statement:*** Examples of qualitative observations could include descriptions of the weather (sunny, cloudy, rainy, or warm). Examples of quantitative observations could include numbers of Sunny, windy, and rainy days in a month. Examples of patterns could include that mornings are cooler than afternoons and the number of Sunny days versus cloudy days during different months.
>
> ***State Assessment Boundary:*** Assessment of quantitative observations are limited to whole numbers and relative measures such as warmer/cooler.

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. Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions.	**ESS2.D: Weather and Climate** Weather is the combination of Sunlight, wind, snow, or rain, and temperature in a particular region at a particular time. People measure these conditions to describe and record the weather and to notice patterns over time.	**Patterns** Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.

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

1. **Organizing data**
    a. With guidance, students organize data (firsthand or from media) about local weather conditions using graphical displays (for example: pictures, charts, etc.), including:
        i. number of sunny, cloudy, rainy, windy, cool, or warm days and
        ii. relative temperature at various times of the day (for example: cooler in the morning, warmer during the day, cooler at night, etc.).
2. **Identifying relationships**
    a. Students use the organized data to identify and describe patterns, including:
        i. relative number of days of different types of weather conditions in a month, and
        ii. change in the relative temperature over the course of a day.

3. **Interpreting data**
    a. Students use the analyzed data to describe:
        i. certain months have more days of some kinds of weather than do other months (for example: some months have more hot days, some have more rainy days, etc.), and
    b. differences in relative temperature over the course of a day (for example: between early morning and the afternoon, between one day and another, etc.) are directly related to the time of day.

K-ESS2-1 Academic Language

Question/Sentence Stems

- I/we observe (notice) the pattern of _____ so tomorrow I/we predict _____.
- The pattern in the data helps me/us show that _____.
- Counting and making graphs could help me/us to identify patterns of _____ in the data.
- The pattern of _____ is changing over time.
- _____ is the same as _____.
- _____ is different from _____.
- This week I/we observed _____ I/we predict _____ for next week.
- The temperature this week is getting warmer/colder so tomorrow I/we predict _____ because _____.

Terminology to Support Student Discourse about Phenomena

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- cloudy
- cold
- local
- observable
- patterns
- predict
- rainy
- snowy
- sunny
- temperature
- warm
- weather
- windy

K-ESS2-2. Construct an argument supported by evidence for how *plants and animals (including humans) can change the environment* to meet their needs.

> ***Clarification Statement:*** Examples of plants and animals changing their environment could include beavers building dams, a squirrel digging in the ground to hide its food, and tree roots breaking concrete. Humans have developed means to heat and/or cool our homes and vehicles to protect ourselves from the elements.

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.	**ESS2.E: Biogeology** Plants and animals depend on and can change their environment. **ESS3.C: Human Impacts on Earth Systems** Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things. (*secondary*)	**Systems and System Models** Systems in the natural and designed world have parts that work together.

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

1. **Supported Claims**
    a. Students make, support, or refute a claim that plants and animals (including humans) can change the environment to meet their needs.
2. **Identifying scientific evidence**
    a. Students identify and describe the evidence to support or refute a claim, including examples of:
        i. plants changing their environments (for example: plant roots lifting sidewalks, etc.),
        ii. animals (including humans) changing their environments (for example: ants building an ant hill, humans clearing land to build houses, birds building a nest, squirrels digging holes to hide food, beavers building a dam, etc.), and/or
        iii. plant and animal needs (for example: shelter, food, room to grow, etc.).
3. **Evaluating and critiquing evidence**
    a. Students describe how the evidence does or does not support the claim.

4. **Reasoning and synthesis**
    a. Students use the following chain of reasoning to connect the appropriate evidence:
        i. Examples of how plants affect other parts of their systems by changing their environments to meet their needs (for example: roots push soil aside as they grow to better absorb water, etc.).
    b. Examples of how animals (including humans) affect other parts of their systems by changing their environments to meet their needs (for example: ants, birds, rabbits, and humans use natural materials to build shelter; some animals store food for winter, beavers use natural materials to build dams that create a pond to provide shelter, etc.).

K-ESS2-2 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.

Terminology to Support Student Discourse about Phenomena

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- animals
- environment
- humans
- impact
- plants
- survival
- system

ESS3 – Earth and Human Activity

K-ESS3-1. Use a model to represent *the relationship between the needs* of different plants or animals (including humans) *and the places they live*.

> ***Clarification Statement:*** Examples of relationships could include that deer eat buds and leaves; therefore, they usually live in forested areas, humans use soil and water to grow food, and grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.
>
> ***State Assessment Boundary:*** Assessment does not include specific habitats or biomes.

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, storyboard) that represent concrete events or design solutions. Use a model to represent relationships in the natural world.	**ESS3.A: Natural Resources** Living things need water, air, and resources from the land, and they live in places that have the things they need. Humans use natural resources for everything they do.	**Systems and System Models** Systems in the natural and designed world have parts that work together.

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, storyboard, etc.) and identify the relevant components, including:
        i. different plants and animals (including humans),
        ii. places where the different plants and animals live, and
        iii. things that plants and animals need (for example: water, air, and land resources such as wood, soil, and rocks, etc.).

2. **Relationships**
    a. Students use a model to represent and describe relationships between the components, including:
        i. relationships between the different plants and animals and the materials they need to survive (for example: fish need water to swim, deer need buds and leaves to eat, plants need water and sunlight to grow, etc.),
        ii. relationships between places where different plants and animals live and the resources those places provide, and
        iii. relationships between specific plants and animals and where they live (for example: fish live in water environments, plants live in sunny and moist areas, humans get resources from nature (for example: building materials from trees to help them live where they want to live, etc.).
3. **Connections**
    a. Students use a model to represent and describe the relationship between:
        i. the needs of different plants and animals (including humans) are met by the various places in which they live (for example: plants need sunlight so they are found in places that have sunlight; fish swim in water so they live in lakes, rivers, ponds, and oceans; deer eat buds and leaves so they live in the forest, etc.), and
        ii. plants and animals (including humans), the places in which they live and the resources found in those places are each part of a system, and that these parts of systems work together and allow living things to meet their needs.

K-ESS3-1 Academic Language

Question/Sentence Stems

- _____survives well in _____ because _____.
- _____ needs _____ and they get that from their environment because _____.
- In the model of the system, I/we notice _____.

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
- animal needs
- human needs
- needs
- plant needs
- resources
- water

K-ESS3-2. Ask questions to understand the purpose of *weather forecasting to prepare for and respond to* severe weather.

Clarification Statement: Emphasis is on weather forecasting of local weather and how weather forecasting can help people plan for and respond to specific types of local weather.

State Assessment Boundary: Assessment does not include how severe weather is formed.

Science and Engineering Practices	Disciplinary Core Ideas	*Crosscutting Concepts*
Asking Questions and Defining Problems Asking questions and defining problems in grades K-2 builds on prior experiences and progresses to simple descriptive questions that can be tested. Ask questions based on observations to find more information about the designed world.	**ESS3.B: Natural Hazards** Some kinds of severe weather are more likely than others in a given region. Weather scientists forecast severe weather so that the communities can prepare for and respond to these events. **ETS1.A: Defining and Delimiting an Engineering Problem** Asking questions, making observations, and gathering information are helpful in thinking about problems. (*secondary*) **ETS2.A: Interdependence of Science, Engineering, and Technology** People encounter questions about the natural world every day.	**Cause and Effect** Events have causes that generate observable patterns.

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

1. **Addressing phenomena of the natural world**
    a. Students formulate questions about local severe weather to clarify how weather forecasting can help people avoid the most serious impacts of severe weather events in specific areas.
2. **Identifying the scientific nature of the question**
    a. Students' questions are based on their observations.

3. **Obtaining information**
    a. Students collect information (for example: from questions, grade appropriate texts, media) about local severe weather advisories, watches, and warnings (for example: tornadoes, hurricanes, thunderstorms, winter storms, etc.), including:
        i. There are patterns related to local severe weather that can be observed (which includes, certain types of severe weather happen more in certain places).
        ii. Weather patterns (which includes, some events are more likely in certain regions) help scientists predict severe weather before it happens.
        iii. Severe weather advisories, watches, and warnings are used to communicate predictions about severe weather.
    b. Weather forecasting can help people plan for, and respond to, specific types of local weather (which includes, responses: stay indoors during severe weather, go to cooling centers during heat waves; preparations: evacuate coastal areas before a hurricane, cover windows before storms).

K-ESS3-2 Academic Language

Question/Sentence Stems

- The pattern of _____ is changing over time.
- I/We can use the pattern of _____to help us make a prediction.
- What are some similarities and difference among _____.
- I/We can group data to look for patterns in _____.
- Patterns in weather help me/us to know _____ because _____.
- Patterns in severe weather help communities to know _____.

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.

- forecast
- patterns
- predictable
- prepare
- severe
- typical
- weather

K-ESS3-3. Obtain and communicate information to define problems related to human *impact on the local environment*.

> ***Clarification Statement:*** Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of human choices could include reusing and recycling materials.

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. Communicate information with others in oral and/or written forms using models, drawings, writing, or numbers that provide detail about scientific ideas.	**ESS3.C: Human Impacts on Earth Systems** Things that people do to live comfortably 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. (secondary)	**Cause and Effect** Events have causes that generate observable patterns.

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

1. **Obtaining information**
    - **a.** Students use grade-appropriate texts and other media to obtain the following scientific information:
        - i. how humans positively and/or negatively affect the land, water, air, and/or other living things in local environments and
        - ii. solutions that reduce the negative effects of humans on the local environment.
2. **Evaluating information**
    - a. Students evaluate and identify which sources are likely to provide scientific information (for example: versus opinion).

3. **Communicating information**
    a. Students communicate information about solutions that reduce the negative effects of humans on the local environment, including examples of:
        i. things that people do to live comfortably and how those things can cause changes to the land, water, air, and/or living things in the local environment, and
        ii. choices that people can make to reduce negative impacts and the effect those choices have on the local environment.
    b. Students communicate the information about solutions with others in oral and/or written form (which include using models and/or drawings).

K-ESS3-3 Academic Language

Question/Sentence Stems

- The problem is _____ and it has caused _____.
- To fix the problem _____ needs to happen.
- I/We will know that the problem is solved when _____.
- If I/we change _____ I/we predict that _____ will happen.
- These designs are similar because they both _____.
- These designs are different because they both _____.

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
- compare
- design
- effect
- environment
- human
- model
- problem
- natural resources
- reduce
- respond
- solution
- surroundings
- survival

References

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