KINDERGARTEN: ENVIRONMENTAL IMPACT

Standards Bundle

Standards are listed within the bundle. Bundles are created with potential instructional use in mind, based upon potential for related phenomena that can be used throughout a unit.

K-ESS2-2 Engage in argument from evidence for how plants and animals (including humans) can change the environment to meet their needs. (SEP: 7; DCI: ESS2.E, ESS3.C; CCC: Systems) [Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete.]

K-ESS3-3 Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.* (SEP: 8; DCI: ESS3.C; ETS1.B; CCC: Cause/Effect) [Clarification Statement: Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.]

Content Overview

This section provides a generic overview of the content or disciplinary core ideas as an entry point to the standards.

Systems in the natural and designed world have parts that work together. Humans use natural resources for everything they do which affects the world around them. For example, humans use soil and water to grow food and wood to burn for heat or to build shelters. These homes may be built in places where animals live or plants grow. People can make choices that reduce their impacts on the land, water, air, and other living things—for example, by reducing trash through reuse and recycling.

Phenomena

Phenomena can be used at varying levels of instruction. One could be used to anchor an entire unit, while another might be more supplemental for anchoring just a unit. Please remember that phenomena should allow students to engage in the SEP and use the CCC/DCI to understand and explain the phenomenon.

- A tree's root cracked the sidewalk.
- Rivers have a wide variety of plants and animals that live near them.
- Paper can be recycled.
- A piece of old net is wrapped around an animal's (seal, sea gull, turtle, pelican) neck or body.
- A bird carries a stick into a tree.

Storyline

This section aims to decode not only the DCI connections, but also the SEP and CCC in a detailed account of how they possibly fit together in a progression for student learning, including both rationale and context for the bundle.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Engaging in Argument from Evidence ● Construct an argument with evidence to support a claim. **Obtaining, Evaluating, and Communicating Information** ● Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas.	**ESS2.E: Biogeology** ● Plants and animals 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. **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.	**Cause and Effect** ● Events have causes that generate observable patterns. **Systems and System Models** ● Systems in the natural and designed world have parts that work together.

Plants and animals can change their environment. Even though all organisms rely on the environment to get the things they need, many organisms also have the power to change their environment to make it even better at meeting their needs. Since everything is connected in systems, changes by one organism can affect all the others.

Some of the best evidence that plants make changes comes by comparing soil under plants to a patch of soil that does not have plants. Without plants, some soils can blow away in the wind. Plant roots change the environment and prevent soil from blowing or washing away. A patch of dirt might be dry because it lacks plants whose roots draw up moisture from deep below the surface and whose leaves shade the surface from the sunlight that dries it up.

Things that people do to live comfortably can affect the world around them. For example, humans may build homes in places where animals live or plants grow or humans may eat plants and animals. People can make choices that reduce their impacts on the land, water, air, and other living things.

Formative Assessment

Formative assessment is crucial because all learners benefit from timely and focused feedback from others. It promotes self-reflection, self-explanation, and social learning. It can also make learning more relevant. Each of the questions below might be used throughout the formative assessment process. Specific prompts may focus on individual practices, core ideas, or crosscutting concepts, but, together, the components need to support inferences about students' three-dimensional science learning as described in a given bundle, standard or lesson-level performance expectation.

SEP Engaging in Argument from Evidence

- Engage in an argument that trees help people.

SEP Obtaining, Evaluating, and Communicating Information

- Communicate solutions of how to save trees.
- Communicate solutions of how to save water.

CCC Cause and Effect

- How do plants and animals affect their environment?
- How do the lives of people affect the world's land, water, air, and other living things?
- What is the relationship between animals and what they eat, and how does that determine where they live?

CCC Systems and System Models

- Use a model to represent relationships between the needs of different plants and the places they live in the natural world.

Performance Outcomes

These are statements of how students use knowledge and are similar to the standards in how they blend DCI, SEP, and CCC, but at a smaller grain-size. These are potential outcomes for instruction as it plays out in lessons and activities in the classroom. It is important to also think of these as smaller outcomes that build toward the larger goal of mastering the standards.

- **Construct an argument** that prairie dogs *affect* pasture land.
- **Communicate solutions** that will reduce the amount of water *we* use in our school.
- **Obtain, evaluate, and communicate information** many animals need *trees* for homes.