EAST PENN SCHOOL DISTRICT

# 2nd Grade Science

July 14, 2025

ELEMENTARY STEELS VERTICAL ARTICULATION

| | | K | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| TRIMESTER 1 | Project | *Designing a Severe Weather Bag* | *Designing an Animal Sanctuary* | *Record & Observe Life Cycle of Butterfly* | *Design & Build a Cart that can stop at a specific location* | *Create a model of energy transfer or transformation* | *Create a model showing the cycling of matter in an ecosystem* |
| | Theme | **Weather** | **Plant & Animal Survival** | **Organisms & Their Habitat** | **Investigating Forces** | **Energy Transfer** | **Energy & Matter in Ecosystems** |
| TRIMESTER 2 | Project | *Designing a Mini Golf Course* | *Building a Communication Device* | Repurpose/ Design Something New | *Research & Create a Presentation on an Endangered Animal* | *Analyzing the Structure & Function of a Living Thing Research* | *Investigating Chemical Reactions* |
| | Theme | **Pushes & Pulls** | **Exploring Light & Sound** | **Properties of Matter** | **Habitats & Change** | **Structure & Functions of Living Things** | **Investigating Matter** |
| TRIMESTER 3 | Project | *Creating a Model for an Animal, Plant, or Person to live in* | *Creating a Model showing how the Sun impacts the moon* | *Record & Create a Travel Journal Based on National Park Virtual Visits* | *Design a solution to stop hail damage* | *Model a tool or concept that will reduce the impact of a natural disaster.* | *Carbon Footprint Research Project* |
| | Theme | **Needs of Plants & Animals** | **Sun, Moon & Stars** | **Exploring Land & Water** | **Weather & Climate** | **Processes That Shape Earth** | **Solar System & Our Place In IT** |

**Life Science** **Phsycial Science** **Earth & Space Science**

# Unit 1: Overview

| | |
|---|---|
| **Topics & Vocabulary Terms** | **Organisms and Their Habitat:** Biodiversity, habitat, environment, living, nonliving, observe, compare, properties (color, size, shape), food source, water source, shelter, stem, leaf, root, soil, tundra, tropical, grassland, ocean, forest, prairie, mountain, seed, pollen, pollination, dispersal, depend. |
| **Projects & Artifacts** | **Butterfly Journal**: Ongoing class journal documenting butterfly development from arrival to release. |
| **Resources** | Core Knowledge: Organisms & Their Habitats [Teacher Guide & Student Reader]<br>STEELS Routine |

# Unit 2: Overview

| | |
|---|---|
| **Topics & Vocabulary Terms** | **Properties of Matter:** Matter, solid, liquid, gas, texture, color, shape, properties, observe, investigate, material, reversible change, pieces, parts. |
| **Projects & Artifacts** | **What Can We Make From Matter? Investigation**: Students repurpose materials from a previous social studies project to create a new object and explain its properties and use. |
| **Resources** | Core Knowledge: Properties of Matter [Teacher Guide & Student Reader]<br>STEELS Routine<br>Hands-on Materials: water, salt, chocolate chips, containers, craft sticks, screws, fabric, metal wire, social studies project materials for repurposing (egg cartons, tubes, paper plates, etc.) |

# Unit 3: Overview

| | |
|---|---|
| **Topics & Vocabulary Terms** | **Exploring Land & Water:** Landform, landscape, land feature, water feature, mountain, hill, glacier, valley, river, stream, lake, ocean, pond, volcano, geyser, erosion, weathering, wear away, preserve, topography, plain, horizon, downhill, erupt, catastrophe. |
| **Projects & Artifacts** | **Travel Journal**: Students track observations and reflections during each virtual visit to the National Parks. |
| **Resources** | Core Knowledge: Exploring Land & Water [Teacher Guide & Student Reader]<br>STEELS Routine<br>Hands-on Materials: rocks, hand lenses, rulers, ice blocks, water containers, rubber gloves, catastrophe cards, white paper, markers, plastic sleeves |

# **Unit 1:** Organisms & Their Habitats

## STAGE 1 | DESIRED RESULTS

**Interdependent Relationships in Ecosystems**
3.1.2.A Plan and conduct an investigation to determine if plants need sunlight and water to grow.

3.1.2.B Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

**Biodiversity and Humans**
3.1.2.C Make observations of plants and animals to compare the diversity of life in different habitats.

### *Transfer*

*All living things have a habitat that contains what they need for survival.*

### *Meaning*

**Big Ideas:**

- Organisms grow, reproduce, and perpetuate their species by obtaining necessary resources through interdependent relationships with other organisms and the physical environment.
- Biodiversity—the multiplicity of genes, species, and ecosystems—provides humans with renewable resources, such as food, medicines, and clean water.
-

**Essential Questions:**

- How do organisms interact with the living and nonliving environments to obtain matter and energy?
- What is biodiversity, how do humans affect it, and how does it affect humans?

### *Acquisition*

**Knowledge:**

- I know plants depend on water and light to grow.
- I know plants depend on animals for

**Skills:**

- I can plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.
- I can develop a simple model based on evidence to represent a proposed object or tool.

| | | |
|---|---|---|
| | pollination or to move their seeds around.<br>● I understand there are many different kinds of living things in any area, and they exist in different places on land and in water. | ● Make observations (firsthand or from media) to collect data which can be used to make comparisons. |

# **Unit 2:** Properties of Matter

## STAGE 1 | DESIRED RESULTS

**Structure and Properties of Matter**
3.2.2.A Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

3.2.2.B Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

3.2.2.C 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

**Chemical Reactions**
3.2.2.D Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.

### ***Transfer***

*Matter exists in different forms that possess different properties.*

### ***Meaning***

**Big Ideas:**

- All forms of matter exist as a result of the combination or rearrangement of atoms.
- The atoms of some substances combine or rearrange to form new substances that have different properties.

**Essential Questions:**

- How do particles combine to form the variety of matter one observes?
- How do substances combine or change(react) to make new substances?
- How does one characterize and explain these reactions and make predictions about them?

### ***Acquisition***

**Knowledge:**

- I know that different kinds of matter exist and many of them can be either solid or liquid, depending on temperature.
- I understand matter can be described and classified by its observable properties.
- I understand different properties are suited to different purposes.
- I know a great variety of objects can be built up from a small set of pieces.

**Skills:**

- I can plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.
- I can analyze data from tests of an object or tool to determine if it works as intended.
- I can make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.
- I can construct an argument with evidence to support a claim.

| | | |
|---|---|---|
| | • I know heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. | |

# **Unit 3:** Exploring Land & Water

## STAGE 1 | DESIRED RESULTS

**The History of Planet Earth**
3.3.2.A Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

**Earth Materials & Systems**
3.3.2.B Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

**Plate Tectonics and Large-Scale System Interactions**
3.3.2.C Develop a model to represent the shapes and kinds of land and bodies of water in an area.

**The Roles of Water in Earth's Surface Processes**
3.3.2.D Obtain information to identify where water is found on Earth and that it can be solid or liquid.

Some events happen very quickly; others occur very slowly, over a time period much longer than anyone can observe.

Wind and water can change the shape of land.

Maps show where things are located. One can map the shapes and kinds of land and water in any area.

Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.

### *Transfer*

*Landforms and water features change over time.*

### *Meaning*

**Big Ideas:**

- Earth scientists use the structure, sequence, and properties of rocks, sediments, and fossils, as well as the locations of current and past ocean basins, lakes, and rivers, to reconstruct events in Earth's planetary history.
- Earth is a complex system of interacting subsystems: the geosphere, hydrosphere, atmosphere, and biosphere.
- Plate tectonics is the unifying theory that explains the past and current movements of the rocks at Earth's surface and provides a coherent account of its geological history.
- Earth is often called the water planet because of the abundance of liquid water on its surface and because water's unique combination of physical and chemical properties is central to Earth's dynamics.

**Essential Questions:**

- **How can things that happen on Earth change the land?**
- How do people reconstruct and date events in Earth's planetary history?
- How do Earth's major systems interact?
- Why do the continents move, and what causes earthquakes and volcanoes?
- How do the properties and movements of water shape Earth's surface and affect its systems?

### *Acquisition*

**Knowledge:**

**Skills:**

| | | |
|---|---|---|
| | • I understand some events happen very quickly; others occur very slowly, over a time period much longer than one can observe.<br>• I know wind and water can change the shape of the land.<br>• I know maps show where things are located. One can map the shapes and kinds of land and water in any area<br>• I know water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. | • I can make observations from several sources to construct an evidence based account for natural phenomena.<br>• I can compare multiple solutions to a problem.<br>• I can develop a model to represent patterns in the natural world.<br>• I can 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. |