



Introduction

Science, Technology & Engineering, and Environmental Literacy & Sustainability (STEELS) Standards guide the study of the natural and human-made world through inquiry, problem-solving, critical thinking, and authentic exploration. This document displays a curriculum framework for Grade 2 Science. It is designed to focus curriculum and teaching, provide guidance for multiple approaches to curriculum development, encourage less reliance on textbooks as curriculum, and avoid activity-oriented teaching without focus/purpose.

Science Long Term Transfer Goals

In support of the Curriculum Framework, Long Term Transfer Goals (LTTG) provide the overarching practices that ground the foundation for a robust curriculum; thus, all curriculum should relate to one or more of the LTTGs detailed below – as they highlight the effective uses of understanding, knowledge, and skill that we seek in the long run; i.e., what we want students to be able to do when they confront new challenges – both in and outside of school.

Students will be able to engage as technological and engineering literate members of a global society, using their learning to:

1. Approach science as a reliable and tentative way of knowing and explaining the natural world and designed world.
2. Weigh evidence and use scientific approaches to ask questions, investigate, and make informed decisions.
3. Make and use observations to analyze relationships and patterns in order to explain phenomena, develop models, and make predictions.
4. Evaluate systems, in order to connect how form determines function and how any change to one component affects the entire system.
5. Explain how the natural and designed worlds are interrelated and the application of scientific knowledge and technology can have beneficial, detrimental, or unintended consequences.

Grade 2 Science

Interdependent Relationships in Ecosystems						
Big Idea	Essential Question	Standard	Science and Engineering Practices	Disciplinary Core Idea	Crosscutting Concepts	Vocabulary
Organisms grow, reproduce, and perpetuate their species by obtaining necessary resources through interdependent relationships with other organisms and the physical environment.	How do organisms interact with the living and nonliving environments to obtain matter and energy?	3.1.2.A Plan and conduct an investigation to determine if plants need sunlight and water to grow.	Planning and Carrying Out Investigations Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.	Plants depend on water and light to grow.	Cause and Effect Events have causes that generate observable patterns.	environment survive organism species investigation observation needs
Organisms grow, reproduce, and perpetuate their species by obtaining necessary resources through interdependent relationships with other organisms and the physical environment.	How do organisms interact with the living and nonliving environments to obtain matter and energy?	3.1.2.B Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.	Developing and Using Models Develop a simple model based on evidence to represent a proposed object or tool.	Plants depend on animals for pollination or to move their seeds around.	Structure and Function The shape and stability of structures of natural and designed objects are related to their function(s).	pollinate disperse reproduce model
Biodiversity and Humans						
Big Idea	Essential Question	Standard	Science and Engineering Practices	Disciplinary Core Idea	Crosscutting Concepts	Vocabulary
Biodiversity—the multiplicity of genes, species, and ecosystems—provides humans with renewable resources, such as food, medicines, and clean water.	What is biodiversity, how do humans affect it, and how does it affect humans?	3.1.2.C Make observations of plants and animals to compare the diversity of life in different habitats.	Planning and Carrying Out Investigations Make observations (firsthand or from media) to collect data which can be used to make comparisons.	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 world can be observed, used to describe phenomena, and used as evidence.	diversity biodiversity needs organism survive habitat land water

All forms of matter exist as a result of the combination or rearrangement of atoms.	How do particles combine to form the variety of matter one observes?	3.2.2.A Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.	Planning and Carrying Out Investigations Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.	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.	classify investigate observable properties matter solid liquid gas weight texture describe flexibility patterns
All forms of matter exist as a result of the combination or rearrangement of atoms.	How do particles combine to form the variety of matter one observes?	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.	Analyzing and Interpreting Data Analyze data from tests of an object or tool to determine if it works as intended.	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.	boiling cause and effect evidence freezing melting reverse test analyze purpose
All forms of matter exist as a result of the combination or rearrangement of atoms.	How do particles combine to form the variety of matter one observes?	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.	Constructing Explanations and Designing Solutions Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.	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.	construct design reverse engineer assemble disassemble problem solving solutions

Chemical Reactions

Big Idea	Essential Question	Standard	Science and Engineering Practices	Disciplinary Core Idea	Crosscutting Concepts	Vocabulary
The atoms of some substances combine or rearrange to form new	How do substances combine or change (react) to make new substances?	3.2.2.D Construct an argument with evidence that some	Engaging in Argument from Evidence	Heating or cooling a substance may cause changes that can be	Cause and Effect	substance react evidence

substances that have different properties.	How does one characterize and explain these reactions and make predictions about them?	changes caused by heating or cooling can be reversed and some cannot.	Construct an argument with evidence to support a claim.	observed. Sometimes these changes are reversible, and sometimes they are not.	Events have causes that generate observable patterns.	irreversible irreversible
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The History of Planet Earth

Big Idea	Essential Question	Standard	Science and Engineering Practices	Disciplinary Core Idea	Crosscutting Concepts	Vocabulary
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.	How do people reconstruct and date events in Earth's planetary history?	3.3.2.A Use information from several sources to provide evidence that Earth events can occur quickly or slowly.	Constructing Explanations and Designing Solutions. Make observations from several sources to construct an evidence-based account for natural phenomena.	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.	fossils erosion weathering geologic sediment Earth materials landform map

Earth Materials and Systems

Big Idea	Essential Question	Standard	Science and Engineering Practices	Disciplinary Core Idea	Crosscutting Concepts	Vocabulary
Earth is a complex system of interacting subsystems: the geosphere, hydrosphere, atmosphere, and biosphere.	How do Earth's major systems interact?	3.3.2.B Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.	Constructing Explanations and Designing Solutions Compare multiple solutions to a problem.	Wind and water can change the shape of the land.	Stability and Change Things may change slowly or rapidly.	condensation Earth groundwater landscape liquid planet precipitation solid/ice vapor/gas solution

Plate Tectonics and Large-Scale System Interactions

Big Idea	Essential Question	Standard	Science and Engineering Practices	Disciplinary Core Idea	Crosscutting Concepts	Vocabulary
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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.	Why do the continents move, and what causes earthquakes and volcanoes?	3.3.2.C Develop a model to represent the shapes and kinds of land and bodies of water in an area.	Developing and Using Models Develop a model to represent patterns in the natural world.	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.	landform (multiple examples) model patterns maps continents earthquakes bodies of water
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The Roles of Water in Earth’s Surface Processes

Big Idea	Essential Question	Standard	Science and Engineering Practices	Disciplinary Core Idea	Crosscutting Concepts	Vocabulary
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.	How do the properties and movements of water shape Earth’s surface and affect its systems?	3.3.2.D Obtain information to identify where water is found on Earth and that it can be solid or liquid.	Obtaining, Evaluating, and Communicating 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.	Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form.	Patterns Patterns in the natural world can be observed.	water cycle evaporation transpiration condensation infiltration patterns scientific question