

SCHOOL DISTRICT OF THE CHATHAMS

Science Grade 2 Full Year

Course Overview

In 2nd Grade, students are expected to develop an understanding of what plants need to grow and how plants depend on animals for seed dispersal and pollination. Students are also expected to compare the diversity of life in different habitats. An understanding of observable properties of materials is developed by students at this level through the analysis and classification of different materials. Students are able to apply their understanding of the idea that wind and water can change the shape of the land to compare design solutions to slow or prevent such change. Students are able to use information and models to identify and represent the shapes and kinds of land and bodies of water in an area and where water is found on Earth. The crosscutting concepts of patterns; cause and effect; energy and matter; structure and function; stability and change; and the influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. In the second-grade performance expectations, students are expected to demonstrate grade-appropriate proficiency in developing and using models, planning and carrying out investigations, analyzing and interpreting data, constructing explanations and designing solutions, engaging in argument from evidence, and obtaining, evaluating, and communicating information. Students are expected to use these practices to demonstrate an understanding of the core ideas.

New Jersey Student Learning Standards

The New Jersey Student Learning Standards (NJSLS) can be located at www.nj.gov/education/cccs/2020/.

Physical Science

2-PS1-1 Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.

2-PS1-2 Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.

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.

2-PS1-4 Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.

Life Science

2-LS2-1 Plan and conduct an investigation to determine if plants need sunlight and water to grow.

2-LS2-2 Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

2-LS4-1 Make observations of plants and animals to compare the diversity of life in different habitats.

Earth and Space Sciences

2-ESS1-1 Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

2-ESS2-1 Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

2-ESS2-2 Develop a model to represent the shapes and kinds of land and bodies of water in an area.

2-ESS2-3 Obtain information to identify where water is found on Earth and that it can be solid or liquid.

Engineering, Technology & Applications of Science

K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Technology Standards

9.4.2.TL.2: Create a document using a word processing application.

9.4.2.TL.3: Enter information into a spreadsheet and sort the information.

9.4.2.TL.4: Navigate a virtual space to build context and describe the visual content.

9.4.2.IML.2: Represent data in a visual format to tell a story about the data

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9.2.4.A.4 - Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.

Interdisciplinary Connections

English Language Arts

Reading:

- RI.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
- RI.2.3 Describe the connection between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text.
- RI.2.8 Describe how reasons support specific points the author makes in a text.

Writing:

- W.2.1 Write opinion pieces in which they introduce the topic or book they are writing about, state an opinion, supply reasons that support the opinion, use linking words (e.g., because, and, also) to connect opinion and reasons, and provide a concluding statement or section.
- W.2.7 Participate in shared research and writing projects (e.g., read a number of books on a single topic to produce a report; record science observations).
- W.2.8 Recall information from experiences or gather information from provided sources to answer a question.

Speaking and Listening:

- SL.2.5 Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.

Mathematics

- 2.MD.D.10 Draw a picture graph and a bar graph (with a single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.

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- 2.NBT.A Understand place value.
- 2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
- 2.MD.B.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.

Units of Study

Unit 1: Structure and Properties of Matter (~ 30 days)

- How do the properties of materials determine their use?
- How can we sort objects into groups that have similar patterns?
- How can an object change from a liquid to a solid or vice versa?
- How can an object made of a small set of pieces be a new object?

Unit 2: Interdependent Relationships in Ecosystems (~20 days)

- Why do we see different living things in different habitats?
- How does the diversity of plants and animals compare among different habitats?
- What do plants need to live and grow?
- Why do some plants rely on animals for reproduction?

Unit 3: Earth Systems (~20 days)

- How can we identify where water is found on Earth and if it is solid or liquid?
- In what ways can you represent the shapes and kinds of land and bodies of water in an area?
- In what ways do humans slow or prevent wind or water from changing the shape of the land?
- What evidence can we find to prove that Earth events can occur quickly or slowly?

Learning Objectives/Discipline Standards of Practice

Learning Objectives:

Physical Science

- 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.
- Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not.
- Objects may break into smaller pieces and be put together into larger pieces or change shapes.
- A great variety of objects can be built up from a small set of pieces.
- Different properties are suited to different purposes

Life Science

- Plants depend on water and light to grow.
- Plants depend on animals for pollination or to move their seeds around.
- Different types of living things can be found in different habitats.

Earth Science

- Wind and water can change the shape of the land.
- Maps show where things are located.

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- 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.
- Earth events occur quickly (e.g., the occurrence of flood, severe storm, volcanic eruption, earthquake, landslides, erosion of soil).
- Earth events that occur very slowly (e.g., erosion of rocks, weathering of rocks)

Discipline Standards of Practice:

Science and Engineering Practices

- Plan and Carryout and Investigation
- Asking Questions and Defining Problems
- Analyzing and Interpreting Data
- Developing and Using Models
- Constructing Explanations and Designing Solutions
- Obtaining, Evaluating, and Communicating Information
- Engaging In Argument From Evidence

Crosscutting Concepts:

- Patterns
- Cause and Effect
- Energy and Matter
- Structure and Function
- Interdependence of Science, Engineering, and Technology
- Influence of Engineering, Technology, and Science on Society and the Natural World
- System and System Models

Instructional Resources and Materials

Whole class resources have been identified with an asterisk.

Resources

- Picture-Perfect Science by Karen Ansberry and Emily Morgan
- More Picture-Perfect Science by Karen Ansberry and Emily Morgan
- Even More Picture-Perfect Science by Karen Ansberry and Emily Morgan
- Generation Genius

Materials

- Science Journal

Assessment Strategies

Assessment is designed to measure a student's mastery of a course standard and learning objective. Assessment can be used for both instructional purposes (formative assessment) and for evaluative purposes (summative assessment).

The following is a general list of the many forms assessment may take in learning.

- Science Journals
- Investigations
- Class discussions