Next Generation Science Standards Science

Grade 2

Adopted 2013

Matter and its Interactions 2-PS1

Students who demonstrate understanding can:

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

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-PS1-2

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-PS1-3

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

Ecosystems: Interactions, Energy, and Dynamics 2-LS2

Students who demonstrate understanding can:

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

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

Biological Evolution: Unity and Diversity 2-LS4

Students who demonstrate understanding can:

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

Earth's Place in the Universe 2-ESS1

Students who demonstrate understanding can:

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

Earth's Systems 2-ESS2

Students who demonstrate understanding can:

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

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

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

Engineering Design K-2-ETS1

Students who demonstrate understanding can:

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-ETS1-1

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-ETS1-2

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. K-2-ETS1-3

Science and Engineering Practices SEP

1. Analyzing and Interpreting Data SEP.1

K-2. Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. SEP.1.K-2

- Analyze data from tests of an object or tool to determine if it works as intended. SEP.1.K-2.1

2. Asking Questions and Defining Problems SEP.2

K-2. Asking questions and defining problems in grades K–2 builds on prior experiences and progresses to simple descriptive questions that can be tested. SEP.2.K-2

- Ask questions based on observations to find more information about the natural and/or designed world(s). SEP.2.K-2.2
- Define a simple problem that can be solved through the development of a new or improved object or tool. SEP.2.K-2.3

3. Constructing Explanations and Designing Solutions SEP.3

K-2. 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. SEP.3.K-2

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. SEP.3.K-2.2
- Make observations from several sources to construct an evidence-based account for natural phenomena. SEP.3.K-2.5
- Compare multiple solutions to a problem. SEP.3.K-2.6

4. Developing and Using Models SEP.4

K-2. 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. SEP.4.K-2

- Develop a simple model based on evidence to represent a proposed object or tool. SEP.4.K-2.2
- Develop a model to represent patterns in the natural world. SEP.4.K-2.3

5. Engaging in Argument from Evidence SEP.5

K-2. 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). SEP.5.K-2

- Construct an argument with evidence to support a claim. SEP.5.K-2.1

6. Obtaining, Evaluating, and Communicating Information SEP.6

K-2. Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information. SEP.6.K-2

- 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. SEP.6.K-2.4

7. Planning and Carrying Out Investigations SEP.7

K-2. 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. SEP.7.K-2

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. SEP.7.K-2.4
- Make observations (firsthand or from media) to collect data which can be used to make comparisons. SEP.7.K-2.5

9. Scientific Knowledge is Based on Empirical Evidence SEP.9

- Scientists look for patterns and order when making observations about the world. SEP.9.1

11. Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena SEP.11

- Scientists search for cause and effect relationships to explain natural events. SEP.11.1

Disciplinary Core Ideas DCI

A. Structure and Properties of Matter DCI.PS1.A

- 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. DCI.PS1.A.K-2.1
- Different properties are suited to different purposes. DCI.PS1.A.K-2.2
- A great variety of objects can be built up from a small set of pieces. DCI.PS1.A.K-2.3

B. Chemical Reactions DCI.PS1.B

- Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. DCI.PS1.B.K-2.1

A. Interdependent Relationships in Ecosystems DCI.LS2.A

- Plants depend on water and light to grow. DCI.LS2.A.K-2.1
- Plants depend on animals for pollination or to move their seeds around. DCI.LS2.A.K-2.2

D. Biodiversity and Humans DCI.LS4.D

- There are many different kinds of living things in any area, and they exist in different places on land and in water. DCI.LS4.D.K-2.1

C. The History of Planet Earth DCI.ESS1.C

- Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. DCI.ESS1.C.K-2.1

A. Earth Materials and Systems DCI.ESS2.A

- Wind and water can change the shape of the land. DCI.ESS2.A.K-2.1

B. Plate Tectonics and Large-Scale System Interactions DCI.ESS2.B

- Maps show where things are located. One can map the shapes and kinds of land and water in any area. DCI.ESS2.B.K-2.1

C. The Roles of Water in Earth's Surface Processes DCI.ESS2.C

- Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. DCI.ESS2.C.K-2.1

A. Defining and Delimiting an Engineering Problem DCI.ETS1.A

- Asking questions, making observations, and gathering information are helpful in thinking about problems. DCI.ETS1.A.K-2.1
- A situation that people want to change or create can be approached as a problem to be solved through engineering. DCI.ETS1.A.K-2.2
- Before beginning to design a solution, it is important to clearly understand the problem. DCI.ETS1.A.K-2.3

C. Optimizing the Design Solution DCI.ETS1.C

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. DCI.ETS1.C.K-2.1

Crosscutting Concepts CCC

1. Patterns CCC.1

- Patterns in the natural and human designed world can be observed. CCC.1.K-2.3
- Patterns in the natural world can be observed. CCC.1.K-2.4

2. Cause and Effect CCC.2

- Simple tests can be designed to gather evidence to support or refute student ideas about causes. CCC.2.K-2.1
- Events have causes that generate observable patterns. CCC.2.K-2.2

5. Energy and Matter CCC.5

- Objects may break into smaller pieces and be put together into larger pieces, or change shapes. CCC.5.K-2.1

6. Structure and Function CCC.6

- The shape and stability of structures of natural and designed objects are related to their function(s). CCC.6.K-2.1

7. Stability and Change CCC.7

- Things may change slowly or rapidly. CCC.7.K-2.1

8. Influence of Engineering, Technology, and Science on Society and the Natural World CCC.8

- Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. CCC.8.K-2.2
- Developing and using technology has impacts on the natural world. CCC.8.K-2.3

10. Science Addresses Questions About the Natural and Material World CCC.10

- Scientists study the natural and material world. CCC.10.K-2.1