# Grade 2 Science Standards

| Domain: Structure and Properties of Matter | | | |
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| **Code:** | **Strand:** | **Rating** | **Completed** |
| 2.PS.1 | Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties. [Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.] | Priority | |
| 2.PS.2 | Know that different objects are made up of many different types of materials (e.g., cloth, paper, wood, metal) and have many different observable properties (e.g., color, size, shape, weight). Formerly 1.S5.C1.DPO3. | Supporting | |
| 2.PS.3 | Describe objects in terms of measurable properties (e.g., length, volume, weight, temperature) using scientific tools. Formerly 2.S5.C1.DPO1 | Supporting | |
| 2.PS.4 | Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.* [Clarification Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.] [Assessment Boundary: Assessment of quantitative measurements is limited to length.] | Supporting | |
| 2.PS.5 | Compare the following physical properties of basic Earth materials: color, texture, capacity to retain water. Formerly 1.S6.C1.DPO2. | Supporting | |
| 2.PS.6 | 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. [Clarification Statement: Examples of pieces could include blocks, building bricks, or other assorted small objects.] | Supporting | |
| 2.PS.7 | Identify common uses (e.g., construction, decoration) of basic Earth materials (e.g., rocks, water, soil). Formerly 1.S6.C1.DPO3. | Priority | |
| 2.PS.8 | Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot. [Clarification Statement: Examples of reversible changes could include materials such as water and butter at different temperatures. Examples of irreversible changes could include cooking an egg, freezing a plant leaf, and heating paper.] | Priority | |
| 2.PS.9 | Classify materials solids, liquids, or gasses. Formerly 2.S5.C1.DPO2. | Priority | |
| 2.PS.10 | Know that water can be a liquid or a solid and can be made to change from one form to the other, but the amount of water stays the same. Formerly 2.S5.C1.DPO3 | Priority | |
| 2.PS.11 | Demonstrate that water can exist as a: gas-vapor, liquid-water, solid-ice. Formerly 2.S5.C1.DPO4. | Priority | |
| 2.PS.12 | Demonstrate that solids have a definite shape and that liquids and gases take the shape of their containers. Formerly 2.S5.C1.DPO5. | Priority | |

## Catholic Identity

- Listen respectfully to others when they present their findings. Ask appropriate questions. Be respectful. Treat others as you would like to be treated.
- Reference the omnipotence and power of God in the multiplying loaves and fishes, the parting of the Red Sea, and water to wine at the wedding at Cana stories (and others). Compare the reality of physical properties, such as melting, freezing, and evaporating, and compare how God's intervention, miracles, can defy natural order.
- In preparation for receiving the Eucharist, reference the concept of Transubstantiation as a miracle that happens at mass. Man cannot change a physical property without changing its components, but God can and does when the body and blood change into Jesus.

## Science and Engineering Practices

**Planning and Carrying Out Investigations**

- 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.
- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question.(2.PS1.1)

**Analyzing and Interpreting Data**

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

- Analyze data from tests of an object or tool to determine if it works as intended. (2.PS1.2)

**Constructing Explanations and Designing Solutions**

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.

- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (2.PS1.3)

**Engaging in Argument from Evidence**

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).

- Construct an argument with evidence to support a claim. (2.PS1.4)

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***Connections to Nature of Science***

**Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena**

- Science searches for cause and effect relationships to explain natural events. (2.PS1.4)

## Disciplinary Ideas

**PS1.A: Structure and Properties of Matter**

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. (2.PS1.1)

**PS1.A: Structure and Properties of Matter**

- Different properties are suited to different purposes. (2.PS1.2),(2.PS1.3)
- A great variety of objects can be built up from a small set of pieces. (2.PS1.3)

**PS1.B: Chemical Reactions**

- Heating or cooling a substance may cause changes that can be observed. Sometimes these changes are reversible, and sometimes they are not. (2.PS1.4)

| Domain: Interdependent Relationships in Ecosystems | | | |
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| **Code:** | **Strand:** | **Rating** | **Completed** |
| 2.LS2.1 | Plan and conduct an investigation to determine if plants need sunlight and water to grow. [Assessment Boundary: Assessment is limited to testing one variable at a time.] | Priority | |
| 2.LS2 | Develop a simple model that mimics the function of an animal in dispersing seeds or Pollinating plants.* | Priority | |
| 2.LS3 | Make observations of plants and animals to compare the diversity of life in different habitats. [Clarification Statement: Emphasis is on the diversity of living things in each of a variety of different habitats.] [Assessment Boundary: Assessment does not include specific animal and plant names in specific habitats.] | Priority | |
| 2.LS4 | Identify some plants and animals that exist in the local environment. Formerly 1.S4.C3.DPO1. | Priority | |
| 2.LS5 | Compare the habitats (e.g., desert, forest, prairie, water, underground) in which plants and animals live. Formerly 1.S4.C3.DPO2. | Priority | |
| 2.LS6 | Describe how plants and animals within a habitat are dependent on each other. Formerly 1.S4.C3.DPO3. | Priority | |
| 2.LS7 | Compare life cycles of various plants (e.g., conifers, flowering plants, ferns). Formerly 3.S4.C2.DPO1 | Priority | |
| 2.LS8 | Explain how growth, death, and decay are part of the plant life cycle. Formerly 3.S4.C2.DPO2. | Priority | |

## Catholic Identity

- Listen respectfully to others when they present their findings. Ask appropriate questions. Be respectful. Treat others as you would like to be treated.
- Understand that plants are a part of God's creation and require us to care for them.
- Reference Genesis: In the Garden of Eden, everything was given to Adam and Eve. Once they were banished, they had to work the land. Make a connection to gardening, the cycle of life and death related to growth and decay.
- Compare the death and resurrection to the life cycle of a

## Science and Engineering Practices

**Developing and Using Models**
Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

- Develop a simple model based on evidence to represent a proposed object or tool. (2.LS2.2)

**Planning and Carrying Out Investigations** 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.

## Disciplinary Ideas

**LS2.A: Interdependent Relationships in Ecosystems**

- Plants depend on water and light to grow. (2.LS2.1)
- Plants depend on animals for Pollination or to move their seeds around. (2.LS2.2)

**LS4.D: Biodiversity and Humans**

- There are many different kinds of living things in any area, and they exist in different places on land and in water. (2.LS4.1)

**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. *(secondary to 2.LS2.2)*

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| perennial flower (i.e. tulip) or tree that dies and revives with the seasons. | • Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2.LS2.1)<br>• Make observations (firsthand or from media) to collect data which can be used to make comparisons. (2.LS4.1)<br><br>- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -<br><br>***Connections to Nature of Science***<br><br>**Scientific Knowledge is Based on Empirical Evidence**<br>• Scientists look for patterns and order when making observations about the world. (2.LS4.1) | |

| Domain: Earth's Systems: Processes that Shape the Earth | | | |
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| **Code:** | **Strand:** | **Rating** | **Completed** |
| 2.ESS.1 | Use information from several sources to provide evidence that Earth events can occur quickly or slowly. [Clarification Statement: Examples of events and timescales could include volcanic explosions and earthquakes, which happen quickly and erosion of rocks, which occurs slowly.] [Assessment Boundary: Assessment does not include quantitative measurements of timescales.] | Priority | |
| 2.ESS.1.2 | Classify objects by the following observable properties: shape, texture, size, color, weight. Formerly 1.S5.C1.DPO1. | Supporting | |
| 2.ESS.2 | Describe the following basic Earth materials: rocks, soil, water. Formerly 1.S6.C1.DPO1 | Priority | |
| 2.ESS2.1 | Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.*[Clarification Statement: Examples of solutions could include different designs of dikes and windbreaks to hold back wind and water, and different designs for using shrubs, grass, and trees to hold back the land.] | Supporting | |
| 2.ESS2.2 | Develop a model to represent the shapes and kinds of land and bodies of water in an area. [Assessment Boundary: Assessment does not include quantitative scaling in models.] | Supporting | |
| 2.ESS.3 | Obtain information to identify where water is found on Earth and that it can be solid or liquid. | Priority | |
| 2.ESS.4 | Classify materials as solids and liquids. Formerly 1.S5.C1.DPO2. | Priority | |

## Catholic Identity

- Listen respectfully to others when they present their findings. Ask appropriate questions. Be respectful. Treat others as you would like to be treated.
- Relate God's creation and design to current earth systems and structures.

## Science and Engineering Practices

**Developing and Using Models**
Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

- Develop a model to represent patterns in the natural world. (2.ESS2.2)

**Constructing Explanations and Designing Solutions**
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.

- Make observations from several

## Disciplinary Ideas

**ESS1.C: The History of Planet Earth**

- Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2.ESS1. 1)

**ESS2.A: Earth Materials and Systems**

- Wind and water can change the shape of the land. (2.ESS2.1)

**ESS2.B: Plate Tectonics and Large-Scale System Interactions**

- Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2.ESS2.2)

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

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

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| | sources to construct an evidence-based account for natural phenomena. (2.ESS1.1)<br>• Compare multiple solutions to a problem. (2.ESS2.1)<br>**Obtaining, Evaluating, and Communicating Information**<br>• Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.<br>• 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. (2.ESS2.3) | form. (2.ESS2.3)<br>**ETS1.C: Optimizing the Design Solution**<br>Because there is always more than one possible solution to a problem, it is useful to compare and test designs. *(secondary to 2.ESS2.1)* |

| Domain: K-2 Engineering Design | | | |
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| **Code:** | | **Rating** | **Completed** |
| 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 | Supporting | |
| 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. | Supporting | |
| 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. | Supporting | |

## Catholic Identity

- Share materials and work together in small groups, listen to the ideas of others. Be respectful. Treat others as you would like to be treated.
- Use simple tools to make tasks easier. Use God given intellect to approach the tasks.
- Consider Biblical stories that highlight building, moving structures, etc., such as the building of the pyramids. (Consider: Can a mountain be moved? A building? A brick? Demonstrate.)
- Compare engineering design and God's intellectual design of life forms.
- Compare designs of cathedral structures and their components. Use blocks to show complexity of design elements.

## Science and Engineering Practices

**Asking Questions and Defining Problems**

Asking questions and defining problems in K–2 builds on prior experiences and progresses to simple descriptive questions.

- Ask questions based on observations to find more information about the natural and/or designed world(s). (K-2.ETS1.1)
- Define a simple problem that can be solved through the development of a new or improved object or tool. (K-2.ETS1.1)

**Developing and Using Models**

Modeling in K–2 builds on prior experiences and progresses to include using and developing models (i.e., diagram, drawing, physical replica, diorama, dramatization, or storyboard) that represent concrete events or design solutions.

- Develop a simple model based on evidence to represent a proposed object or tool. (K-2.ETS1.2)

**Analyzing and Interpreting Data**

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

- Analyze data from tests of an object or tool to determine if it works as intended. (K-2.ETS1.3)

## Disciplinary Ideas

**ETS1.A: Defining and Delimiting Engineering Problems**

- A situation that people want to change or create can be approached as a problem to be solved through engineering. (K-2.ETS1.1)
- Asking questions, making observations, and gathering information are helpful in thinking about problems. (K-2.ETS1.1)
- Before beginning to design a solution, it is important to clearly understand the problem. (K-2.ETS1.1)

**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. (K-2.ETS1.2)

**ETS1.C: Optimizing the Design Solution**

- Because there is always more than one possible solution to a problem, it is useful to compare and test designs. (K- 2.ETS1.3)