

## DRAFT 2nd Grade Unit Guide

<p>How are materials similar and different from one another? How do the properties of the materials relate to their use?</p>	<p>What do plants need to grow? How many types of living things live in a place?</p>	<p>How does land change and what are some things that cause it to change? What are the different kinds of land and bodies of water?</p>
<p><b>2-PS1-1. Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</b> [Clarification Statement: Observations could include color, texture, hardness, and flexibility. Patterns could include the similar properties that different materials share.]</p> <p><b>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.*</b> [Clarification Statement: Examples of properties could include, strength, flexibility, hardness, texture, and absorbency.] [Assessment Boundary: Assessment of quantitative measurements is limited to length.]</p> <p><b>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.</b> [Clarification Statement: Examples of pieces could include blocks, building bricks, or other assorted small objects.]</p> <p><b>2-PS1-4.<sup>1</sup> Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.</b> [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.]</p>	<p><b>2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.</b> [Assessment Boundary: Assessment is limited to testing one variable at a time.]</p> <p><b>2-LS2-2. Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.*</b></p> <p><b>2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.</b> [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.]</p>	<p><b>2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.</b> [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.]</p> <p><b>2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.*</b> [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.]</p> <p><b>2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.</b> [Assessment Boundary: Assessment does not include quantitative scaling in models.]</p> <p><b>2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid.</b></p> <p><b>2-PS1-4.<sup>1</sup> Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.</b> [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.]</p>

<sup>1</sup> This content can be integrated into multiple units; mastery is expected at the end of the year.

Science and Engineering Practices	Disciplinary Core Ideas
<p><b>Developing and Using Models</b> 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.</p> <ul style="list-style-type: none"> <li>• Develop a simple model based on evidence to represent a proposed object or tool. (2-LS2-2)</li> <li>• Develop a model to represent patterns in the natural world. (2-ESS2-2)</li> </ul> <p><b>Planning and Carrying Out Investigations</b> 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.</p> <ul style="list-style-type: none"> <li>• Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence to answer a question. (2-PS1-1), (2-LS2-1)</li> <li>• Make observations ( firsthand or from media) to collect data which can be used to make comparisons. (2-LS4-1)</li> </ul> <p><b>Analyzing and Interpreting Data</b> Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations.</p> <ul style="list-style-type: none"> <li>• Analyze data from tests of an object or tool to determine if it works as intended. (2-PS1-2)</li> </ul> <p><b>Constructing Explanations and Designing Solutions</b> 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.</p> <ul style="list-style-type: none"> <li>• Make observations ( firsthand and/or from media) to construct an evidence-based account for natural phenomena. (2-PS1-3), (2-ESS1-1)</li> <li>• Compare multiple solutions to a problem. (2-ESS2-1)</li> </ul> <p><b>Engaging in Argument from Evidence</b> 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).</p> <ul style="list-style-type: none"> <li>• Construct an argument with evidence to support a claim. (2-PS1-4)</li> </ul> <p><b>Obtaining, Evaluating, and Communicating Information</b> Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.</p> <ul style="list-style-type: none"> <li>• 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)</li> </ul> <p style="text-align: center;"><b>Connections to Nature of Science</b></p> <p><b>Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena</b></p> <ul style="list-style-type: none"> <li>• Scientists search for cause and effect relationships to explain natural events. (2-PS1-4)</li> </ul> <p><b>Scientific Knowledge Is Based on Empirical Evidence</b></p> <ul style="list-style-type: none"> <li>• Scientists look for patterns and order when making observations about the world. (2-LS4-1)</li> </ul>	<p><b>PS1.A: Structure and Properties of Matter</b></p> <ul style="list-style-type: none"> <li>• 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)</li> <li>• Different properties are suited to different purposes. (2-PS1-2), (2-PS1-3)</li> <li>• A great variety of objects can be built up from a small set of pieces. (2-PS1-3)</li> </ul> <p><b>PS1.B: Chemical Reactions</b></p> <ul style="list-style-type: none"> <li>• 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)</li> </ul> <p><b>LS2.A: Interdependent Relationships in Ecosystems</b></p> <ul style="list-style-type: none"> <li>• Plants depend on water and light to grow. (2-LS2-1)</li> <li>• Plants depend on animals for pollination or to move their seeds around. (2-LS2-2)</li> </ul> <p><b>LS4.D: Biodiversity and Humans</b></p> <ul style="list-style-type: none"> <li>• 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)</li> </ul> <p><b>ESS1.C: The History of Planet Earth</b></p> <ul style="list-style-type: none"> <li>• Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe. (2-ESS1-1)</li> </ul> <p><b>ESS2.A: Earth Materials and Systems</b></p> <ul style="list-style-type: none"> <li>• Wind and water can change the shape of the land. (2-ESS2-1)</li> </ul> <p><b>ESS2.B: Plate Tectonics and Large-Scale System Interactions</b></p> <ul style="list-style-type: none"> <li>• Maps show where things are located. One can map the shapes and kinds of land and water in any area. (2-ESS2-2)</li> </ul> <p><b>ESS2.C: The Roles of Water in Earth’s Surface Processes</b></p> <ul style="list-style-type: none"> <li>• Water is found in the ocean, rivers, lakes, and ponds. Water exists as solid ice and in liquid form. (2-ESS2-3)</li> </ul> <p><b>ETS1.B: Developing Possible Solutions</b></p> <ul style="list-style-type: none"> <li>• 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)</li> </ul> <p><b>ETS1.C: Optimizing the Design Solution</b></p> <ul style="list-style-type: none"> <li>• 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)</li> </ul> <p style="text-align: center;"><b>Crosscutting Concepts</b></p> <p><b>Patterns</b></p> <ul style="list-style-type: none"> <li>• Patterns in the natural and human designed world can be observed. (2-PS1-1), (2-ESS2-2), (2-ESS2-3)</li> </ul> <p><b>Cause and Effect</b></p> <ul style="list-style-type: none"> <li>• Events have causes that generate observable patterns. (2-PS1-4), (2-LS2-1)</li> <li>• Simple tests can be designed to gather evidence to support or refute student ideas about causes. (2-PS1-2)</li> </ul> <p><b>Energy and Matter</b></p> <ul style="list-style-type: none"> <li>• Objects may break into smaller pieces and be put together into larger pieces, or change shapes. (2-PS1-3)</li> </ul> <p><b>Structure and Function</b></p> <ul style="list-style-type: none"> <li>• The shape and stability of structures of natural and designed objects are related to their function(s). (2-LS2-2)</li> </ul> <p><b>Stability and Change</b></p> <ul style="list-style-type: none"> <li>• Things may change slowly or rapidly. (2-ESS1-1), (2-ESS2-1)</li> </ul> <p style="text-align: center;"><b>Connections to Nature of Science</b></p> <p><b>Science Addresses Questions About the Natural and Material World</b></p> <ul style="list-style-type: none"> <li>• Scientists study the natural and material world. (2-ESS2-1)</li> </ul> <p style="text-align: center;"><b>Connections to Engineering, Technology, and Applications of Science</b></p> <p><b>Influence of Engineering, Technology, and Science on Society and the Natural World</b></p> <ul style="list-style-type: none"> <li>• Every human-made product is designed by applying some knowledge of the natural world and is built using materials derived from the natural world. (2-PS1-2)</li> </ul>

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