

# Kindergarten Science

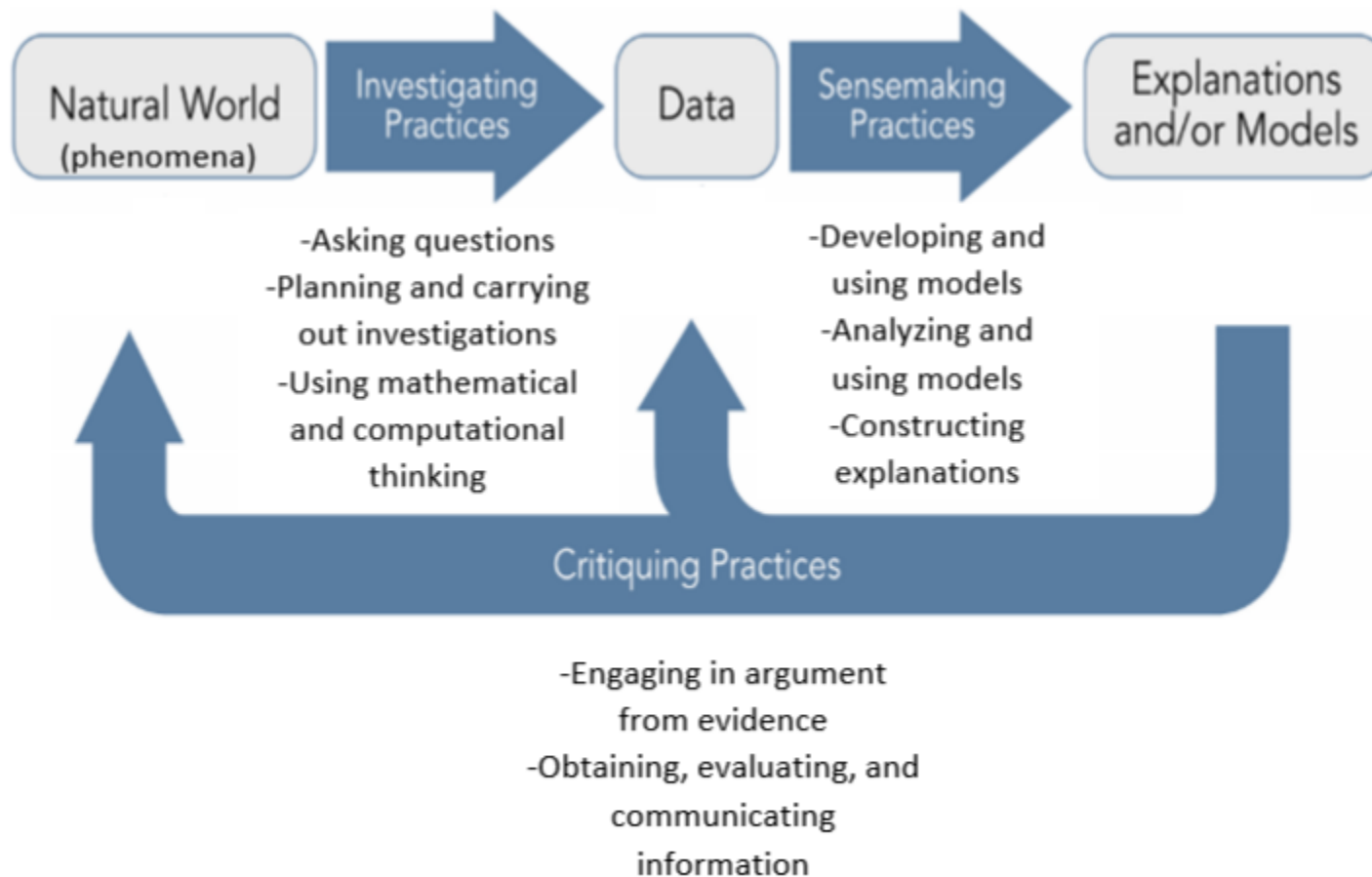


## Prioritized Standards and Instructional Units 2023-2024

## Kindergarten Science

<b>UNIT 1:</b> <b>Weather and Climate</b> 20 Days	<b>UNIT 2:</b> <b>Forces: Pushes and Pulls</b> 10 Days	<b>UNIT 3:</b> <b>Interdependent Relationships</b> 15 Days
<p style="text-align: center;"><b><u>PRIORITY</u></b></p> <p><b><u>Science and Engineering Practices</u></b></p> <p><b>Asking Questions and Defining Problems</b></p> <ul style="list-style-type: none"> <li>Ask questions based on observations to find more information about the designed world. (K-ESS3-2)</li> </ul> <p><b>Planning and Carrying Out Investigations</b></p> <ul style="list-style-type: none"> <li>Make observations (firsthand or from media) to collect data that can be used to make comparisons. (K-PS3-1)</li> </ul> <p><b>Analyzing and Interpreting Data</b></p> <ul style="list-style-type: none"> <li>Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-ESS2-1)</li> </ul> <p><b>Constructing Explanations and Designing Solutions</b></p> <ul style="list-style-type: none"> <li>Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem. (K-PS3-2)</li> </ul> <p><b>Obtaining, Evaluating, and Communicating Information</b></p> <ul style="list-style-type: none"> <li>Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. (K-ESS3-2)</li> </ul> <p style="text-align: center;"><b><u>SUPPORTING</u></b></p> <p><b><u>Performance Expectations</u></b></p> <p><b>K-PS3-1.</b> Make observations to determine the effect of sunlight on Earth's surface.</p> <p><b>K-PS3-2.</b> Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.</p> <p><b>K-ESS2-1.</b> Use and share observations of local weather conditions to describe patterns over time.</p> <p><b>K-ESS3-2.</b> Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.</p>	<p style="text-align: center;"><b><u>PRIORITY</u></b></p> <p><b><u>Science and Engineering Practices</u></b></p> <p><b>Planning and Carrying Out Investigations</b></p> <ul style="list-style-type: none"> <li>With guidance, plan and conduct an investigation in collaboration with peers. (K-PS2-1)</li> </ul> <p><b>Analyzing and Interpreting Data</b></p> <ul style="list-style-type: none"> <li>Analyze data from tests of an object or tool to determine if it works as intended. (K-PS2-2)</li> </ul> <p style="text-align: center;"><b><u>SUPPORTING</u></b></p> <p><b><u>Performance Expectations</u></b></p> <p><b>K-PS2-1.</b> Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.</p> <p><b>K-PS2-2.</b> Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.</p>	<p style="text-align: center;"><b><u>PRIORITY</u></b></p> <p><b><u>Science and Engineering Practices</u></b></p> <p><b>Developing and Using Models</b></p> <ul style="list-style-type: none"> <li>Use a model to represent relationships in the natural world. (K-ESS3-1)</li> </ul> <p><b>Analyzing and Interpreting Data</b></p> <ul style="list-style-type: none"> <li>Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (KLS1-1)</li> </ul> <p><b>Engaging in Argument from Evidence</b></p> <ul style="list-style-type: none"> <li>Construct an argument with evidence to support a claim. (K-ESS2-2)</li> </ul> <p><b>Obtaining, Evaluating, and Communicating Information</b></p> <ul style="list-style-type: none"> <li>Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. (K-ESS3-3)</li> </ul> <p style="text-align: center;"><b><u>SUPPORTING</u></b></p> <p><b><u>Performance Expectations</u></b></p> <p><b>K-ESS2-2.</b> Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.</p> <p><b>K-ESS3-1.</b> Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live</p> <p><b>K-ESS3-3.</b> Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</p> <p><b>K-LS1-1.</b> Use observations to describe patterns of what plants and animals (including humans) need to survive.</p>

# Science and Engineering Practices Grouping



# Unit 1

## Unit/Core Idea: Weather and Climate

Pacing: 20 days

(10 days in Sept./Oct. 5 days in Jan. and 5 days in April)

Unit/Core Idea: Weather and Climate	
Essential Question: What is the weather like today and how is it different from yesterday?	
<b>Supporting Questions:</b> -What is energy? -How is energy transferred between objects or systems? -What regulates weather and climate?	<b>Sample Phenomena:</b> “How can you get ready for a big storm?” <a href="https://mysteryscience.com/storms/mystery-1/severe-weather-preparation/717">https://mysteryscience.com/storms/mystery-1/severe-weather-preparation/717</a>  Have you ever watched a storm? <a href="https://mysteryscience.com/storms/mystery-2/wind-storms/713">https://mysteryscience.com/storms/mystery-2/wind-storms/713</a>  How many different types of weather are there? <a href="https://mysteryscience.com/storms/mystery-3/weather-conditions/704">https://mysteryscience.com/storms/mystery-3/weather-conditions/704</a>

Science and Engineering Practices (Priority)	Performance Expectations (Supporting)
<b>Asking Questions and Defining Problems</b> Asking questions and defining problems in grades K–2 builds on prior experiences and progresses to simple descriptive questions that can be tested. <ul style="list-style-type: none"> <li>Ask questions based on observations to find more information about the designed world. (K-ESS3-2)</li> </ul> <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. <ul style="list-style-type: none"> <li>Make observations (firsthand or from media) to collect data that can be used to make comparisons. (K-PS3-1)</li> </ul> <b>Analyzing and Interpreting Data</b> Analyzing data in K–2 builds on prior experiences and progresses to collecting, recording, and sharing observations. <ul style="list-style-type: none"> <li>Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (K-ESS2-1)</li> </ul>	<b>K-PS3-1. Make observations to determine the effect of sunlight on Earth’s surface.</b> [Clarification Statement: Examples of Earth’s surface could include sand, soil, rocks, and water] [Assessment Boundary: Assessment of temperature is limited to relative measures such as warmer/cooler.] <b>K-PS3-2. Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.</b> [Clarification Statement: Examples of structures could include umbrellas, canopies, and tents that minimize the warming effect of the sun.] <b>K-ESS2-1. Use and share observations of local weather conditions to describe patterns over time.</b> [Clarification Statement: Examples of qualitative observations could include descriptions of the weather (such as sunny, cloudy, rainy, and warm); examples of quantitative observations could include numbers of sunny, windy, and rainy days in a month. Examples of patterns could include that it is usually cooler in the morning than in the afternoon and the number of sunny days versus cloudy days in different months.] [Assessment Boundary: Assessment of quantitative observations limited to whole numbers and relative measures such as warmer/cooler.] <b>K-ESS3-2. Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.*</b> [Clarification Statement: Emphasis is on local forms of severe weather.]

**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.

- Use tools and materials provided to design and build a device that solves a specific problem or a solution to a specific problem. (K-PS3-2)

**Obtaining, Evaluating, and Communicating Information**

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

- Read grade-appropriate texts and/or use media to obtain scientific information to describe patterns in the natural world. (K-ESS3-2)

**Kentucky Academic Standards Connections****ELA/Literacy –**

RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS3-2)

W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS3-1),(K-PS3-2),(K-ESS2-1)

SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-ESS3-2)

**Mathematics –**

MP.2 Reason abstractly and quantitatively. (K-ESS2-1)

MP.4 Model with mathematics. (K-ESS2-1),(K-ESS3-2)

K.CC Counting and Cardinality (K-ESS3-2)

K.CC.A Know number names and the count sequence. (K-ESS2-1)

K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-ESS2-1)

K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. (K-PS3-1), (K-PS3-2)

K.MD.B.3 Classify objects into given categories; count the number of objects in each category and sort the categories by count. (K-ESS2-1)

# Unit 2

**Unit/Core Idea: Forces and Interactions: Pushes and Pulls**

**Pacing: 10 days**

**Unit/Core Idea: Forces and Interactions: Pushes and Pulls**  
**Essential Question: What happens if you push or pull an object harder?**

**Supporting Questions:**

- How can one predict an object's continued motion, changes in motion, or stability?
- What underlying forces explain the variety of interactions observed?

**Sample Phenomena:**

- Continued motion/changes in motion: rock rolling down hill  
<https://www.youtube.com/watch?v=JCAKhasuoay>



**-Forces/Interactions:**

**-Forces/interactions: Pushes and pulls:**

<https://www.generationgenius.com/videolessons/pushes-and-pulls/>

**-Forces/interactions: Pushes and pulls:**

<https://www.generationgenius.com/videolessons/pushes-and-pulls/>

Science and Engineering Practices (Priority)	Performance Expectations (Supporting)
<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>With guidance, plan and conduct an investigation in collaboration with peers. (K-PS2-1)</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. (K-PS2-2)</li> </ul>	<p><b>K-PS2-1. Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.</b> [Clarification Statement: Examples of pushes or pulls could include a string attached to an object being pulled, a person pushing an object, a person stopping a rolling ball, and two objects colliding and pushing on each other.] [Assessment Boundary: Assessment is limited to different relative strengths or different directions, but not both at the same time. Assessment does not include non-contact pushes or pulls such as those produced by magnets.]</p> <p><b>K-PS2-2. Analyze data to determine if a design solution works as intended to change the speed or direction of an object with a push or a pull.</b> [Clarification Statement: Examples of problems requiring a solution could include having a marble or other object move a certain distance, follow a particular path, and knock down other objects. Examples of solutions could include tools such as a ramp to increase the speed of the object and a structure that would cause an object such as a marble or ball to turn.] [Assessment Boundary: Assessment does not include friction as a mechanism for change in speed.]</p>

<p><b>Kentucky Academic Standards Connections</b></p>	<p><b>ELA/Literacy –</b>  RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-PS2-2)  W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-PS2-1)  SL.K.3 Ask and answer questions in order to seek help, get information, or clarify something that is not understood. (K-PS2-2)</p> <p><b>Mathematics –</b>  MP.2 Reason abstractly and quantitatively. (K-PS2-1) K.MD.A.1 Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object. (K-PS2-1)  K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. (K-PS2-1)</p>
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# Unit 3

**Unit/Core Idea: Interdependent Relationships in Ecosystems: Animals, Plants and Their Environment**

**Pacing: 15 days**

**Unit/Core Idea: Interdependent Relationships**

**Essential Question: How do Earth's surface processes and human activities affect each other?**

**Supporting Questions:**

- How do living organisms alter Earth's processes and structures?
- How do humans depend on Earth's resources?
- How do humans change the planet?

**Sample Phenomena:**

**-ant hill mound**



**-depending on Earth's resources**



**-change the planet**





## Science and Engineering Practices (Priority)

### 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.

- Use a model to represent relationships in the natural world. (K-ESS3-1)

### Analyzing and Interpreting Data

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

- Use observations (firsthand or from media) to describe patterns in the natural world in order to answer scientific questions. (KLS1-1)

### 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. (K-ESS2-2)

### Obtaining, Evaluating, and Communicating Information

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

- Communicate solutions with others in oral and/or written forms using models and/or drawings that provide detail about scientific ideas. (KESS3-3)

## Performance Expectations (Supporting)

**K-ESS2-2. Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.** [Clarification Statement: Examples of plants and animals changing their environment could include a squirrel digs in the ground to hide its food and tree roots can break concrete.]

**K-ESS3-1. Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.** [Clarification Statement: Examples of relationships could include that deer eat buds and leaves, therefore, they usually live in forested areas; and, grasses need sunlight so they often grow in meadows. Plants, animals, and their surroundings make up a system.]

**K-ESS3-3. Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.\*** [Clarification Statement: Examples of human impact on the land could include cutting trees to produce paper and using resources to produce bottles. Examples of solutions could include reusing paper and recycling cans and bottles.]

**K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.** Clarification Statement: Examples of patterns could include that animals need to take in food but plants make their food, the different kinds of food needed by different types of animals, the requirement of plants to have light, and that all living things need water.

**Kentucky Academic  
Standards Connections**

**ELA/Literacy –**

RI.K.1 With prompting and support, ask and answer questions about key details in a text. (K-ESS2-2)

W.K.1 Use a combination of drawing, dictating, and writing to compose opinion pieces in which they tell a reader the topic or the name of the book they are writing about and state an opinion or preference about the topic or book. (K-ESS2-2)

W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. (K-ESS2-2),(K-ESS3-3)

W.K.7 Participate in shared research and writing projects (e.g., explore a number of books by a favorite author and express opinions about them). (K-LS1-1)

SL.K.5 Add drawings or other visual displays to descriptions as desired to provide additional detail. (K-ESS3-1)

**Mathematics –**

MP.2 Reason abstractly and quantitatively. (K-ESS3-1)

MP.4 Model with mathematics. (K-ESS3-1) K.CC Counting and Cardinality (K-ESS3-1)

K.MD.A.2 Directly compare two objects with a measurable attribute in common, to see which object has “more of”/“less of” the attribute, and describe the difference. (K-LS1- 1)