Kindergarten Science Curriculum

**Course Description:** In kindergarten, instructional time will focus on three disciplinary core ideas: physical science, earth and space science, and life science. In the physical science unit, students will explore pushes and pulls, speed and direction, and learn about the sun’s energy. For the earth and space unit, students will study weather conditions, learn about the measurement of weather, and learn how living things impact the environment. Students will learn how plants and animals can change the environment to meet their needs. Students will also be able to communicate how humans can reduce their impact on the land, water, and air in our local environment. Learning about the relationship between plants’ and animals’ needs and their environment will also be explored. Within the life science unit, students will describe what plans and animals need to survive.

**Scope and Sequence:**

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<tr>
<th>Unit</th>
<th>Timeframe</th>
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<tbody>
<tr>
<td>1. Physical Science Part 1</td>
<td>4 weeks</td>
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<tr>
<td>• Topic 1: Pushes and Pulls</td>
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<td>• Topic 2: Speed and Direction</td>
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<tr>
<td>2. Physical Science Part 2</td>
<td>2 weeks</td>
</tr>
<tr>
<td>• Topic 1: Energy from the Sun</td>
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<tr>
<td>3. Earth and Space Science Part 1</td>
<td>4 weeks</td>
</tr>
<tr>
<td>• Topic 1: Weather Conditions</td>
<td></td>
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<tr>
<td>• Topic 2: Measurement of Weather</td>
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<tr>
<td>4. Life Science</td>
<td>3-4 weeks</td>
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<tr>
<td>• Topic 1: Animal Needs</td>
<td></td>
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<tr>
<td>• Topic 2: Plant Needs</td>
<td></td>
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<tr>
<td>5. Earth and Space Science Part 2</td>
<td>6 weeks</td>
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<tr>
<td>• Topic 1: Organisms Impact on Environments</td>
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<tr>
<td>6. Earth and Space Science Part 3</td>
<td>6 weeks</td>
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<tr>
<td>• Topic 1: Reducing Human Impact</td>
<td></td>
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<td>• Topic 2: Habitats</td>
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<td>• Topic 3: Uses of Natural Resources</td>
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</tbody>
</table>
Unit 1: Physical Science Part 1

Subject: Science
Grade: Kindergarten
Name of Unit: Physical Science Part 1
Length of Unit: 15-19 days

The Verbs: What should students be doing?
- "Plan and conduct investigations": Think and do a project to answer questions.
- "Compare effects": What is the same? What is different?
- "Analyze data": Find patterns.
- Touch: To be in contact with something, to feel something
  - Collide: To come together, to hit or crash together
  - Solve: Find an answer to a problem
  - Design: Draw or write a plan for something

The Nouns: What key terms are found in the standard?
- Push: Use force to move away
- Pull: Use force to move towards
- Speed: How fast something is moving
- Direction: The path of the object
  - Motion: How an object moves from one place to another
  - Engineering: Using science to solve a problem for people
  - Problem: Something people want changed
  - Solution: An answer to a problem
  - Situation: What something is like
- "Strength": How strong something is

Purchase and be ready to install weather tools for Weather Scopes: outdoor thermometer, rain gauge, wind sock, anemometer before starting Unit 2.
Topic: Pushes and Pulls

Suggested Length of Time: 7-9 Days

Essential Questions (Student Wondering):
- Would it be easier to push or pull a wagon uphill? Why?

Enduring Understanding (Learning Objectives):
- The student is expected to 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.
- The student is expected to 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.
- The student is expected to 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.

Standards Addressed

<table>
<thead>
<tr>
<th>Priority</th>
<th>Standard</th>
<th>5E</th>
<th>Suggested # of Days</th>
<th>Notes</th>
</tr>
</thead>
</table>
|          | K-PS2.A.1      | ENGAGE APK And Hook | 2 | Materials:  
| Priority |                |       |                     | Copy related files  
|          |                |       |                     | one pencil, spoon, straw and paper per student  
| Supporting | Simple tests: can be designed to gather evidence to support or refute student ideas about causes. 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. 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. 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. | |

Detailed Description/Instructions:

<table>
<thead>
<tr>
<th>Standard</th>
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<th>Notes</th>
</tr>
</thead>
</table>
| K-PS2.A.1 | ENGAGE APK And Hook | 2 | Materials:  
|          |                |       | Copy related files  
|          |                |       | one pencil, spoon, straw and paper per student  
|          |                |       | By the end of this lesson students should: move the paper using one or more of their tools with different pushes or pulls. |

<table>
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</thead>
</table>
| K-PS2.A.1 | EXPLORE D1: Scientific Investigation Wrap Up Teaching Point: *(share at the end of investigation) | 1 | Materials:  
|          |                |       | Per Student: paper clip, wooden block (per pair), one straw, copy related materials  
|          |                |       | By the end of this lesson students should: understand different objects require |
| K-PS2.A.1 | EXPLORE D2: Activity Wrap Up Teaching Point: (share at the end of investigation) Today we will learn about how force can move objects closer to you. We will also learn why some objects require more force to move. (hard pull, soft pull) | 1 | Materials:  
- Copy related files  
- Per group: 6 shoe boxes with lids, string, 3 light objects (coin, feather, cotton), 3 heavy objects (book, brick, bag of rocks), tape. *plastic shoe size boxes will work or any box with lid that you CAN’T see through.  
By the end of this lesson students should: understand different objects require different FORCE. Which objects require more force or less force to pull? |
| K-PS2.A.1 | | 2-4 | Pick 2-3 activities to extend concepts, consider adding voice and choice for students. **Must do STEMscopedia and Picture Vocabulary.** |
| K-PS2.A.1 | EVALUATE | 1 | Under the ASSES tab choose an assessment that meets the needs of your class.  
Performance Expectation Assessment Task (PEAT) requires both Pushes and Pulls AND Speed and Direction Scopes. |
Topic: Speed and Direction

Suggested Length of Time: 8-10 Days

Essential Questions (Student Wondering):
- What happens if two toy cars crash on a race track?

Enduring Understanding (Learning Objectives):
- The student is expected to 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.
- The student is expected to 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.

Standards Addressed

Priority:
- K-PS2.B.1 Types of Interactions: When objects touch or collide, they push on one another and can change motion.
- K-PS2.A.2 Forces and Motion: Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it
- 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. 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.
- K-PS3.C.1 Relationship between Energy and Forces: A bigger push or pull makes things speed up or slow down more quickly.

Supporting:
- K-2-ETS1.A.3 Defining and Delimiting Engineering Problems: Before beginning to design a solution, it is important to clearly understand the problem.
- K-2-ETS1.A.1 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
- Simple Tests: Simple tests can be designed to gather evidence to support or refute student ideas about causes.

Detailed Description/Instructions:

<table>
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<tr>
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</table>
| K-PS3.C.1 K-PS2.B.1 K-PS2A.2 | ENGAGE Prior Knowledge and Hook | 2 | Materials:  
  - Beach ball blown up per group of 5-6, masking tape, sticky notes 1 per kid  
  By the end of this lesson students should:  
  Explore speed and force by moving the ball. Soft kick/hard kick |
| K-PS3.C.1 K-PS2.B.1 | EXPLORE | 1 | Materials |
| K-PS2.A.2 | DO1: Scientific Investigation  
Wrap Up Teaching Point: *(share at the end of investigation)  
Today we learned that a moving object can change direction and the direction of other objects. | • Copy related files.  
• Tennis balls (4 per group)  
*STEMScopes has substituted with red rubber balls-use tennis instead if you have access to them.  
By the end of this lesson students should:  
Moving objects can change direction when it collides with another object. |
| --- | --- | --- |
| K-PS3.C.1  
K-2-ETS1.A.3  
K-2ETS1.A.1 | EXPLORE  
D2: Engineering Solutions  
Wrap Up Teaching Point: *(share at the end of investigation)  
Today we learned that an incline (hill/ramp) can change the speed of an object. (speed up going down/slow down going up) | 1  
Materials  
• Copy related files.  
• Rulers, 3 blocks, toy car, cardboard square, masking tape (per group) |
| K-2-ETS1.A.3  
K-2ETS1.A.1 | EXPLAIN & ELABORATE | 2-4  
Pick 2-3 activities to extend concepts, consider adding voice and choice for students. Must do STEMscopedia and Picture Vocabulary. |
| K-PS3.C.1  
K-2-ETS1.A.3  
K-PS2.B.1  
K-PS2A.2  
K-PS2-1  
K-PS2-2 | EVALUATE | 2  
Under the ASSES tab choose an assessment that meets the needs of your class.  
Performance Expectation Assessment Task (PEAT)  
Materials:  
• Ping pong ball, golf ball, tennis balls, marbles, pennies, washers, 1 set of ramp materials, box cutter, tape |
Engaging Scenario

In this task the students will investigate how mass affects speed and design a way to increase the speed of a tennis ball.

Rubric for Engaging Scenario:

### Using Force to Change Motion

**Part I: Rolling Ball Test**
The student follows the plan for testing the golf and ping pong balls. The student uses the data to conclude that the ball with more mass crossed the finish line first.

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<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>The materials and procedures carried out by the student show little or no relationship to the plan.</td>
<td>The materials and procedures carried out by the student are related to the stated plan, with several deviations (not improvements).</td>
<td>The student implements the stated plan with only minor deviations.</td>
<td>The student follows the plan well, using all the correct materials in the correct manner and following all steps faithfully.</td>
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</table>

**Part II: Tennis Ball Speed**
The student analyzes the data to support the conclusion that the heavier tennis ball is faster.

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<th>1</th>
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</thead>
<tbody>
<tr>
<td>The student does not analyze the data, or the analysis is seriously flawed.</td>
<td>The student analyzes the data. Some parts of the analysis are flawed.</td>
<td>The student accurately analyzes the data. If errors occurred, they are minor.</td>
<td>The student generates an accurate analysis of the data without errors.</td>
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</tbody>
</table>
Unit 2: Physical Science Part 2

Subject: Science  
Grade: Kindergarten  
Name of Unit: Physical Science Part 2  
Length of Unit: 6-11 days

The Verbs: What should students be doing?  
- Make observations to determine: Write down what you see to find things out.  
- Use tools and materials to design and build: Use items to create something.

The Nouns: What key terms are found in the standard?  
- Materials: Things needed for doing or making something  
- Structure: How something is arranged  
- Sunlight: The energy from the Sun that plants need to make food  
- Earth’s Surface: The part of Earth we can see

Topic: Energy From the Sun

Suggested Length of Time: 6-11 Days  
Essential Questions (Student Wondering):  
- Can we feel the Sun?  

Enduring Understanding (Learning Objectives):  
- The student is expected to make observations to determine the effect of sunlight on Earth’s surface.  
- The student is expected to use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

Standards Addressed  
Priority:  
- K-PS3-1 Make observations to determine the effect of sunlight on the Earth’s surface.  
- K-PS3-2 Use tools and materials to design and build a structure that will reduce the warming effect of sunlight on an area.

Supporting:  
- Events have causes that generate observable patterns.

Detailed Description/Instructions:
<table>
<thead>
<tr>
<th>Standard</th>
<th>5E</th>
<th>Suggested # of Days</th>
<th>Notes</th>
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</thead>
</table>
| PS3.B    | ENGAGE Prior Knowledge and Hook | 1-2 | Materials  
  ● Copy related files. |
| PS3.B    | EXPLORE D1: Scientific Investigation | 1 | Materials  
  ● Copy related files  
  ● 2 large ice blocks  

*By the end of this lesson students should:*  
Discover that the sun affects objects. Students should understand that the sun warms up objects and causes them to change. |
| PS3.B    | EXPLORE D2: Activity | 1 | Materials  
  ● Copy related files  

*By the end of this lesson students should:*  
Understand that sun and shade affect how we feel. Sun makes us feel warm. Shade makes us feel cool. |
  ● Lamp (75/100 watt bulb), straws, wax paper, chocolate squares, tape, light colored paper, rubber bands, paper plates, index cards  

*By the end of this lesson students should:*  
Work in groups to build a structure that keeps chocolate from melting. Build, test, and refine. |
| PS3.B    | EXPLAIN & ELABORATE | 2-4 | Pick 2-3 activities to extend concepts, consider adding voice and choice for students. Must do STEMscopedia and Picture Vocabulary. |
| PS3.B    | EVALUATE | 1-2 | Under the ASSES tab choose an assessment that meets the needs of your class. Performance Expectation Assessment Task |
Engaging Scenario

In this task students test and choose a material to build a doghouse that will keep a dog cool in the summer.
Rubric for Engaging Scenario:

Humans and the Needs of Living Things

Part I: Use Observations to Describe Patterns (K-LS1-1)
Using the camping scene and an anchor chart, the student makes and organizes observations about the food the animals eat. The student observes that all animals need water. The student observes that plants need sunlight and water. The student identifies relationships between all or some plants and animals. The student uses the scene as evidence of the things plants and animals need to live and grow.

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<tbody>
<tr>
<td>Student observations are not accurate and are not relevant to the purpose of the communication.</td>
<td>Student observations either lack accuracy or are not relevant to the purpose of the communication.</td>
<td>Student observations are mostly accurate. They are mostly relevant to the purpose of the communication.</td>
<td>Student observations are highly accurate. They are very relevant to the purpose of the communication.</td>
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</tbody>
</table>

Part II: Communicate Solutions (K-ESS3-3)
The student communicates ways that people make life easier. The student describes how these choices can hurt the environment. The student creates a poster to communicate how to minimize the effect on air, water, land, or living things.

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<th>1</th>
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<tbody>
<tr>
<td>The communication fails to address the purpose of the assignment.</td>
<td>The communication attempts to address the purpose of the assignment but is unsuccessful.</td>
<td>The communication does a decent job of addressing the purpose of the assignment.</td>
<td>The communication does a very good job of addressing the purpose of the assignment.</td>
</tr>
</tbody>
</table>
Unit 3: Earth and Space Science Part 1

Subject: Science
Grade: Kindergarten
Name of Unit: Earth and Space Science Part 1
Length of Unit: 13-19 days

The Verbs: What should students be doing?

- Use and share observations: Talk about what you see with others.
- Describe patterns over time: What has changed over the years?
- Measure: Find out the size or amount of something
- Record: Write down
- Notice patterns over time: Be aware of things that happen again and again.

The Nouns: What key terms are found in the standard?

- Weather: How it is outside
- Sunlight: The energy from the Sun that plants need to make food
- Wind: Moving air
- Snow: Frozen water falling from the sky
- Rain: Water falling from the sky
- Temperature: How hot or cold something is
- Combination: Two or more things put together
- Particular region: One named area
- Particular time: One named time
- Weather: How it is outside
- Patterns: Something that repeats
- Local: In and around where you live
- Condition: What something is like

Install weather tools prior to unit.
### Topic: Weather Conditions

**Suggested Length of Time:** 7-10 Days  
**Essential Questions (Student Wondering):**  
- How does the weather help me know what I can wear or do?

**Enduring Understanding (Learning Objectives):**  
- The student is expected to use and share observations of local weather conditions to describe patterns over time.

**Standards Addressed**

**Priority:**  
- K-ESS2.D.2 Weather and Climate: People measure these conditions to describe and record the weather and to notice patterns over time.

**Supporting:**  
- Patterns in the World: Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.
- K-ESS3-2: Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.

**Detailed Description/Instructions:**

| Standard   | 5E             | Suggested 
# of Days | Notes |
|------------|----------------|------------|-------|
| K-ESS2.D.2 | ENGAGE APK and Hook: | 1-2 | Materials  
- Copy related files.  
- Variety of shoes (flip flops, snow boots, rain boots) Although pictures cards are provided within scope, real world shoes provides the authentic experience  
- Chart paper  
*By the end of this lesson students should:* Understand that different types of weather require different kinds of clothing/shoes. |
| K-ESS2.D.2 | EXPLORE D1: Activity | 1 | Materials  
- Copy related files  
- Sunscreen, rain coat, boots, scarf, sandals, winter jacket, mittens, baseball cap, paper bags, tape  
*By the end of this lesson students should:* Understand that different types of weather require different types of clothing and cause us to participate in different kinds of activities/hobbies. |
**K-ESS2.D.2**

**EXPLORE**

**D2: Activity**

1

**Materials**

- Copy related files
- Hat or a bowl
- 9 bingo counters per student

*By the end of this lesson students should:*

Identify and practice weather words/weather pictures.

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**K-ESS2.D.2**

**EXPLORE**

**D3: Activity**

1

**Materials**

- Copy related files
- Paper plates, brads

*By the end of this lesson students should:*

Illustrate various weather conditions.

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**EXPLAIN & ELABORATE**

2-4

Pick 2-3 activities to extend concepts, consider adding voice and choice for students. **Must do STEMscopedia and Picture Vocabulary.**

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**K-ESS2.D.2**

**EVALUATE**

1

Under the ASSES tab choose an assessment that meets the needs of your class.

*Performance Expectation Assessment Task (PEAT) requires Weather Conditions, Measurement of Weather AND Weather Hazards.*

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**Topic: Measurement of Weather**

**Suggested Length of Time:** 8-11 days

**Essential Questions (Student Wondering):**

- How do we know it will be cold every winter?

**Enduring Understanding (Learning Objectives):**

- The student is expected to use and share observations of local weather conditions to describe patterns over time.

**Standards Addressed**

**Priority:**

- K-ESS2.D.2 Weather and Climate: People measure these conditions to describe and record the weather and to notice patterns over time.

**Supporting:**

- Patterns in the World: Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.
- K-ESS3-2: Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather
**Detailed Description/Instructions:**

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<tbody>
<tr>
<td>K-ESS2.D.2</td>
<td>ENGAGE Prior Knowledge and Hook</td>
<td>1-2</td>
<td>Materials</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>● Copy related files. (Keep weather recording chart for next scope)</td>
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<td>● Weather Tools, butcher paper</td>
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<td><em>By the end of this lesson students should:</em></td>
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<td>Explore weather tools and learn about what each tool measures.</td>
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<td>Students will also measure weather and record their data every day.</td>
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<td>Students will begin to understand that weather occurs in patterns.</td>
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<td>And should be able to answer questions like: How do we know it will</td>
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<td>be cold every Winter? How do we know it will be hot every Summer?</td>
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<td>I need my coat and gloves today, how do I know I will not be able to</td>
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<td>go swimming tomorrow?</td>
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<tr>
<td>K-ESS2.D.2</td>
<td>EXPLORE D1: Scientific Investigation</td>
<td>1</td>
<td>Materials</td>
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<td></td>
<td></td>
<td></td>
<td>● Copy related files</td>
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<td>● Safety goggles, clear plastic bottles, rubbing alcohol, red food</td>
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<td>coloring, clear plastic drinking straws, modeling clay, ice</td>
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<td><em>By the end of this lesson students should:</em></td>
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<td>understand what a thermometer is used for (to tell temperature) and</td>
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<td>how it works (mercury rises for hot and drops for cold)</td>
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<tr>
<td>K-ESS2.D.2</td>
<td>EXPLORE D2: PBL</td>
<td>1</td>
<td>Materials</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>● Copy related files</td>
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<td></td>
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<td>● Chart paper, tape</td>
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<td><em>By the end of this lesson students should:</em></td>
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<td>students should use their knowledge about weather to prepare a</td>
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<td>forecast for a given scenario and include suggested weather and</td>
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<td>clothing for the scenario. Students should also practice and prepare</td>
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<td>to present their forecast to the class.</td>
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<td>*Real thermometers will be provided for use</td>
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</tbody>
</table>
with this “DO” in the event that the kid created thermometers fail.

<table>
<thead>
<tr>
<th>Standard</th>
<th>Activity</th>
<th>Activity Level</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>K-ESS2.D.2</td>
<td>EXPLAIN &amp; ELABORATE</td>
<td>2-4</td>
<td>Pick 2-3 activities to extend concepts, consider adding voice and choice for students. <strong>Must do STEMscopedia and Picture Vocabulary.</strong></td>
</tr>
<tr>
<td>K-ESS2.D.2</td>
<td>EVALUATE</td>
<td>1</td>
<td>Under the ASSES tab choose an assessment that meets the needs of your class. <em>Performance Expectation Assessment Task (PEAT) requires Weather Conditions, Measurement of Weather AND Weather Hazards.</em></td>
</tr>
</tbody>
</table>

**Engaging Scenario**

In this task students make daily weather observations and then play a severe weather guessing game. **NOTE DUE TO WEATHER HAZARDS NOT BEING TAUGHT:** Change severe weather words to common weather words (rainy, sunny, snowy, windy) to complete the PEAT.
Unit 4: Life Science

Subject: Science
Grade: Kindergarten
Name of Unit: Life Science
Length of Unit: 12-18 days

Overview of Unit:

The Verbs: What should students be doing?
- Use observations to describe: Write down what you see.
  - Survive: Stay alive
  - Grow: Get larger or taller
  - Obtain: Get something

The Nouns: What key terms are found in the standard?
- Animals: A living thing that can move
- Food: What plants and animals use for energy
- Plant: A type of living thing that gets its energy from the Sun and is unable to move from place to place.
- Water: The liquid that living things need to survive
- Light: Energy from the Sun or a lamp that you can see

Topic: Animal Needs

Suggested Length of Time: 6-9 Days
Essential Questions (Student Wondering):
- Why do I need to eat my vegetables?

Enduring Understanding (Learning Objectives):
- The student is expected to use observations to describe patterns of what plants and animals (including humans) need to survive.

Standards Addressed

Priority:
- K-LS1.C.1 Organization for Matter and Energy Flow in Organisms: All animals need food in order to live and grow. They obtain their food from plants or from other animals

Supporting:
- Patterns in the World: Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence
- K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.
KEEP ALL ANCHOR CHARTS FROM THIS SCOPE FOR FUTURE HABITAT SCOPE.

Detailed Description/Instructions:

<table>
<thead>
<tr>
<th>Standard</th>
<th>5E</th>
<th>Suggested # of Days</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-LS1.C.1</td>
<td>ENGAGE Prior Knowledge and Hook</td>
<td>1-2</td>
<td>Materials</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Copy related files.</td>
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<td></td>
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<td>● Sticky notes, 6 pictures of teacher</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(copies for each group)</td>
</tr>
<tr>
<td>K-LS1.C.1</td>
<td>EXPLORE D1: Scientific Investigation</td>
<td>1</td>
<td>Materials</td>
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<td></td>
<td></td>
<td></td>
<td>● Copy related files</td>
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<td></td>
<td>● Clear tape</td>
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<td></td>
<td>By the end of this lesson students should: understand that all</td>
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<td>animals are picky eater and only eat thing they need to grow and</td>
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<td></td>
<td>change. Understand that some animals are herbivore, carnivore, or</td>
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<td></td>
<td></td>
<td></td>
<td>omnivore.</td>
</tr>
<tr>
<td>K-LS1.C.1</td>
<td>EXPLORE D2: Engineering Solutions</td>
<td>1</td>
<td>Materials</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>● Copy related files</td>
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<td>● 81/2 x 11 Cardstock, clear tape</td>
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<td>By the end of this lesson students should: be able to identify their</td>
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<td></td>
<td></td>
<td></td>
<td>animal, what kind of eater it is, and plan then shop for the</td>
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<td></td>
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<td>correct diet to care for their animal.</td>
</tr>
<tr>
<td>K-LS1.C.1</td>
<td>EXPLAIN &amp; ELABORATE</td>
<td>2-4</td>
<td>Pick 2-3 activities to extend concepts, consider adding voice and</td>
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<td></td>
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<td>choice for students.</td>
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<td></td>
<td>Must do STEMscopededia and Picture Vocabulary.</td>
</tr>
<tr>
<td>K-LS1.C.1</td>
<td>EVALUATE</td>
<td>1</td>
<td>Under the ASSES tab choose an assessment that meets the needs of</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>your class.</td>
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<td></td>
<td>Performance Expectation Assessment Task (PEAT) requires Animal Needs,</td>
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<tr>
<td></td>
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<td></td>
<td>Plant Needs and Reducing Human Impact.</td>
</tr>
</tbody>
</table>
Topic: Plant Needs

Suggested Length of Time: 6-9 Days

Essential Questions (Student Wondering):
- Where is a place that has no living things at all? Why can’t anything live there?

Enduring Understanding (Learning Objectives):
- The student is expected to use observations to describe patterns of what plants and animals (including humans) need to survive.

Standards Addressed

Priority:
- K-LS1.C.2 Organization for Matter and Energy Flow in Organisms: Plants need water and light to live and grow

Supporting:
- Patterns in the World: Patterns in the natural and human designed world can be observed, used to describe phenomena, and used as evidence.
- K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.

KEEP ALL ANCHOR CHARTS FROM THIS SCOPE FOR FUTURE HABITAT SCOPE.

Detailed Description/Instructions:

<table>
<thead>
<tr>
<th>Standard</th>
<th>5E</th>
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</thead>
<tbody>
<tr>
<td>K-LS1.C.2</td>
<td>ENGAGE</td>
<td>1-2</td>
<td>Materials</td>
</tr>
<tr>
<td></td>
<td>Prior Knowledge and Hook</td>
<td></td>
<td>● Copy related files.</td>
</tr>
<tr>
<td>EXPLORE D1: Scientific Investigation</td>
<td>10 (journal once a week)</td>
<td>Materials</td>
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<td></td>
<td></td>
<td></td>
<td>● Copy related files</td>
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<td></td>
<td></td>
<td></td>
<td>● Potting soil, cups, linking cubes,</td>
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<td></td>
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<td>graduated cylinder, lima beans</td>
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<td>By the end of this lesson students should:</td>
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<td></td>
<td></td>
<td></td>
<td>understand that plants have basic needs</td>
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<td></td>
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<td>and discover (over time) what happens</td>
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<td></td>
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<td>when the basic need of water is restricted.</td>
</tr>
<tr>
<td>EXPLORE D2: Scientific Investigation</td>
<td>10 (journal once a week)</td>
<td>Materials</td>
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<td></td>
<td></td>
<td></td>
<td>● Copy related files</td>
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<td></td>
<td></td>
<td></td>
<td>● Desk lamp, graduated cylinder,</td>
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<td></td>
<td></td>
<td></td>
<td>linking cubes, lima beans</td>
</tr>
</tbody>
</table>
By the end of this lesson students should:
understand that plants have basic needs and
discover (over time) what happens when
the basic need of light is restricted.

| K-LS1.C.2 | EXPLORE D3: Activity | 1 | Materials
● None

By the end of this lesson students should:
work together to reword the song Head, Shoulders, Knees, and Toes to name the
plant parts and needs.
Flowers, stems, and leaves, and roots
Leaves and roots
Flowers, stems, and leaves, and roots
Leaves and roots
Water, sunlight, soil and room to grow
Flowers, stems, and leaves, and roots!

EXPLAIN & ELABORATE 2-4
Pick 2-3 activities to extend concepts, consider adding voice and choice for
students. **Must do STEMscopedia and Picture Vocabulary.**

| K-LS1.C.2 | EVALUATE | 1 | Under the ASSES tab choose an
assessment that meets the needs of your
class.

**Performance Expectation Assessment Task (PEAT) requires Animal Needs, Plant
Needs and Reducing Human Impact.**
Unit 5: Earth and Space Science Part 2

Subject: Science  
Grade: Kindergarten  
Name of Unit: Earth and Space Science Part 2  
Length of Unit: 6-9 days

The Verbs: What should students be doing?

- Construct an argument supported by evidence: Say what you think and why.

The Nouns: What key terms are found in the standard?

- Plant: A living thing that cannot move
- Animal: A living thing that cannot produce its own food
- Environment: Everything that is around a living thing
- People: A group of humans
- Needs: What a living thing must have to stay alive
- Humans: People

Topic: Organisms Impact on Environments

Suggested Length of Time: 6-9 Days

Essential Questions (Student Wondering):

- How do living things change the world around them?

Enduring Understanding (Learning Objectives):

- The student is expected to construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.

Standards Addressed

Priority:

- K-ESS2.E.1 Bio geology: Plants and animals can change their environment.
- K-ESS3.C.1 Human Impacts on Earth Systems: Things that people do to live comfortably can affect the world around them.

Supporting:

- Systems: Systems in the natural and designed world have parts that work together.
- K-ESS2-2 Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
### Detailed Description/Instructions:

<table>
<thead>
<tr>
<th>Standard</th>
<th>5E</th>
<th>Suggested # of Days</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-ESS2.E.1</td>
<td>ENGAGE</td>
<td>1-2</td>
<td>Materials</td>
</tr>
<tr>
<td>K-ESS2.C.1</td>
<td>Prior Knowledge and</td>
<td></td>
<td>• Copy related files.</td>
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<tr>
<td></td>
<td>Hook</td>
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<td></td>
<td>EXPLORE</td>
<td>1</td>
<td>Materials</td>
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<td></td>
<td>D1: Activity</td>
<td></td>
<td>• Copy/cut related files</td>
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<td><em>By the end of this lesson students should:</em></td>
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<td>understand that animals and plants change</td>
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<td>their environment.</td>
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<td>EXPLORE</td>
<td>1-2</td>
<td>Materials</td>
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<tr>
<td></td>
<td>D2: Engineering</td>
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<td>• Copy related files</td>
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<tr>
<td></td>
<td>Solutions</td>
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<td>• Bucket, sand, red clay, aluminum</td>
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<td>container, rocks, modeling clay, craft</td>
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<td>sticks, green construction paper</td>
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<td><em>By the end of this lesson students should:</em></td>
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<td>work together to plan and build a beaver</td>
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<td>dam. Plan, test, and revise.</td>
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<td></td>
<td>EXPLAIN &amp;</td>
<td>2-4</td>
<td>Pick 2-3 activities to extend concepts,</td>
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<td></td>
<td>ELABORATE</td>
<td></td>
<td>consider adding voice and choice for</td>
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<td>students.  **Must do STEMscopedia and</td>
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<td>Picture Vocabulary.**</td>
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<td></td>
<td>EVALUATE</td>
<td>1</td>
<td>Under the ASSES tab choose an assessment</td>
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<td>that meets the needs of your class.</td>
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<td>*Performance Expectation Assessment Task</td>
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<td>*(PEAT) requires Habitats, Organisms’</td>
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<td></td>
<td>Impact on Environments, Uses of Natural</td>
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<td></td>
<td></td>
<td></td>
<td>Resources.*</td>
</tr>
</tbody>
</table>
Unit 6: Earth and Space Science Part 3

Subject: Science
Grade: Kindergarten
Name of Unit: Earth and Space Science Part 3
Length of Unit: 18-27 days

The Verbs: What should students be doing?

- Construct an argument: Say what you think and why.
- Communicate solutions: Talk about answers to problems.
- Reduce the impact of humans: Keep things the same.
- Change the environment: Make things different.
  - Affect: How something makes something else change
  - Reduce: Become smaller or less
- Use a model: Look at a copy.

The Nouns: What key terms are found in the standard?

- World: the Earth
- Designs: A plan or drawing made to show how something should work or be made
- Physical Models: A representation of something found in real life
- Ideas: A thought about what could be done
- Problem: Something that needs to be solved
- Solution: An answer to a problem
- Impact: How something is changed
- Land: The part of Earth you can stand on
- Water: The liquid that living things need to survive
- Air: The stuff we breathe
- Resources: Something that is valuable and we can use
- Humans: People
- Relationship: How one thing is linked to another thing
- Natural: Comes from Earth
Topic: Reducing Human Impact

Suggested Length of Time: 6-9 Days

Essential Questions (Student Wondering):
- How can we take care of our Earth?

Enduring Understanding (Learning Objectives):
- The student is expected to construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs.
- The student is expected to communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.

Standards Addressed

Priority:
- K-ESS3.C.1 Human Impacts on Earth Systems: Things that people do to live comfortably can affect the world around them.
- K-2-ETS1.B.1 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-ESS3.C.2 Human Impacts on Earth Systems: People can make choices that reduce their impacts on the land, water, air, and other living things.
- K-ESS2-2: Construct an argument supported by evidence for how plants and animals (including humans) can change the environment to meet their needs. 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.

Supporting:
- None

Detailed Description/Instructions:

<table>
<thead>
<tr>
<th>Standard</th>
<th>5E</th>
<th>Suggested # of Days</th>
<th>Notes</th>
</tr>
</thead>
</table>
| K-ESS3.C.1     | ENGAGE I: Prior Knowledge and Hook | 1-2                | Materials<br>● Copy related files.  
● 5 boxes, video clip of recycle center, recyclable items per student                  |
| K-ESS3.C.2     | EXPLORE D1: Scientific Investigation | 1                  | Materials<br>● Copy/cut/laminate related files                                              |
|                | By the end of this lesson students should: understand how pollution affects different parts of the environment. |
| K-ESS3.C.1     | EXPLORE D2: Engineering Solutions | 1-2                | Materials<br>● Copy related files  
● Tray, toothpicks (green, orange, blue), soil                                           |
### By the end of this lesson students should:

Work together to plan and build a road to get to the new house that you are building. The plan should try to have the least impact on the environment (not cutting down trees or animal habitats).

<table>
<thead>
<tr>
<th>Standard</th>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-ESS3.C.1</td>
<td>EXPLAIN &amp; ELABORATE</td>
<td>2-4 Pick 2-3 activities to extend concepts, consider adding voice and choice for students. Must do STEMscopedia and Picture Vocabulary.</td>
</tr>
<tr>
<td>K-ESS3.C.2</td>
<td>EVALUATE</td>
<td>1 Under the ASSES tab choose an assessment that meets the needs of your class. Performance Expectation Assessment Task (PEAT) Materials: ● White paper, chart paper</td>
</tr>
</tbody>
</table>

### Engaging Scenario

**Engaging Scenario**

In this task students observe a camping scene to identify what plants and animals need to live and grow students complete a poster to show how they can help Earth by taking care of land, water, air or living things.
Rubric for Engaging Scenario:

Dealing with Weather

Part I: Use Observations of Weather (K-ESS2-1)
Students identify the number of days in a calendar month with a certain type of weather and contrast the temperature of the morning with the afternoon. Students identify the type of weather that is more observable in the current month and discuss how other months differ. Students explain why the weather changes as the day progresses.

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<tr>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td></td>
<td>The student is not able to analyze the data, or the analysis is seriously flawed.</td>
<td>The student is able to analyze the data. Some parts of the analysis are flawed.</td>
<td>The student accurately analyzes the data. If errors occur, they are minor.</td>
<td>The student is able to generate an accurate analysis of the data without errors.</td>
</tr>
</tbody>
</table>

Part II: Ask Questions About Weather Forecasting (K-ESS3-2)
Students ask questions about a forecasted severe weather event. Students base their questions on the information gathered from classmates. Students relate how they get weather information and how they would prepare for severe weather typical for their area.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td></td>
<td>The question fails to effectively achieve its purpose.</td>
<td>The question somewhat effectively achieves its purpose.</td>
<td>The question is mostly successful at achieving its purpose.</td>
<td>The question is very successful at achieving its purpose.</td>
</tr>
</tbody>
</table>
Topic: Habitats

Suggested Length of Time: 6-9 Days

Essential Questions (Student Wondering):
- Why can’t a polar bear live in the desert?

Enduring Understanding (Learning Objectives):
- The student is expected to use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

Standards Addressed

Priority:
- K-ESS3.A.1 Natural Resources: Living things need water, air, and resources from the land, and they live in places that have the things they need.

Supporting:
- Systems: Systems in the natural and designed world have parts that work together.
- 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.

REDEEM COUPONS FOR LIVE MATERIALS 2-3 WEEKS PRIOR TO BEGINNING THIS TOPIC.

Detailed Description/Instruction:

<table>
<thead>
<tr>
<th>Standard</th>
<th>5E</th>
<th>Suggested # of Days</th>
<th>Notes</th>
</tr>
</thead>
</table>
| K-ESS3.A.1 | ENGAGE I: Prior Knowledge and Hook | 1-2 | Materials  
  - Copy related files.  
  - Chart paper |
| K-ESS3.A.1 | EXPLORE D1: Activity | 1 | Materials  
  - Copy related files  
  - Manila construction paper |

By the end of this lesson students should be able to draw the habitat of a chosen animal and label how its basic needs are met in the habitat.

Model Development
K-ESS3.A.1

| EXPLORE D2: Activity | 2-3 | Materials depending on if teacher chooses to build a terrarium or aquarium  
  - Copy related files  
  - Redeem coupon for live animal, clear containers with lid, small net, aquarium gravel, fish food, water plants, spray bottle, potting soil, sand gravel, lima beans, radish seeds, leaves, sticks, rocks, bugs or |
By the end of this lesson students should: work together to build a class terrarium or aquarium to observe how animal/plant needs are met.

<table>
<thead>
<tr>
<th>Model development</th>
<th>EXPLAIN &amp; ELABORATE</th>
<th>2-4</th>
<th>Pick 2-3 activities to extend concepts, consider adding voice and choice for students. Must do STEMscopedia and Picture Vocabulary.</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-ESS3.A.1</td>
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<tr>
<td>SL.K.5</td>
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</tr>
<tr>
<td>K-ESS3.A.1</td>
<td>EVALUATE</td>
<td>1</td>
<td>Under the ASSES tab choose an assessment that meets the needs of your class. Performance Expectation Assessment Task (PEAT) requires Organisms’ Impact on Environments, Habitats and Uses of Natural Resources.</td>
</tr>
</tbody>
</table>

**Topic: Uses of Natural Resources**

**Suggested Length of Time:** 6-9 Days

**Essential Questions (Student Wondering):**
- How and where do we get the things we need?

**Enduring Understanding (Learning Objectives):**
- The student is expected to use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

**Standards Addressed**

**Priority:**
- 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.

**Supporting:**
- Systems: Systems in the natural and designed world have parts that work together.
**Detailed Description/Instructions:**

<table>
<thead>
<tr>
<th>Standard</th>
<th>5E</th>
<th>Suggested # of Days</th>
<th>Notes</th>
</tr>
</thead>
</table>
| K-ESS3.A.2 | ENGAGE I: Prior Knowledge and Hook | 1-2 | Materials  
  ● Copy related files. |
| K-ESS3.A.2 | EXPLORE D1: Scientific Investigation | 1 | Materials  
  ● Copy related files.  
  ● Green/yellow construction paper, masking tape,  
  
  *By the end of this lesson students should:*  
  understand how humans use natural resources to meet their needs. |
| K-ESS3.A.2 | EXPLORE D2: Activity | 1 | Materials  
  ● Copy/cut/laminate related files.  
  ● Clear tape  
  
  *By the end of this lesson students should:*  
  be able to sort natural resources by what they are made of- plants, animals, and rocks. |
  ● Copy related files.  
  ● Poster paper, letter stickers, die cut letters  
  
  *By the end of this lesson students should:*  
  work with a group to create a plan to reduce the amount of materials we use in our classrooms so that we don’t run out before the school year is over. |
| K-ESS3.A.2 | EXPLAIN & ELABORATE | 2-4 | Pick 2-3 activities to extend concepts, consider adding voice and choice for students.  
  **Must do STEMscopedia and Picture Vocabulary.** |
| K-ESS3.A.2 | EVALUATE | 1 | Under the ASSES tab choose an assessment that meets the needs of your class. |
### Performance Expectation Assessment Task (PEAT)

**Materials:**
- Copy related files
- Magazines

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**Engaging Scenario**

**Engaging Scenario**
In this task students illustrate the habitat of a living organism, the natural resources that it needs and uses, and how it changes the environment.
Rubric for Engaging Scenario:

### Living Things and Their Habitats

**Part I: Use a Model (K-ESS3-1)**
The student draws a model of an organism in its habitat and describes its components, including the organism, its habitat, and its needs. The student circles, in red, the natural resources needed by the organism. The student explains how the organism uses the resources in that particular habitat to meet its needs. The student identifies how the parts of the habitat work together to help living things survive.

<table>
<thead>
<tr>
<th>1</th>
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<th>4</th>
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</thead>
<tbody>
<tr>
<td>The communication fails to address the purpose of the assignment.</td>
<td>The communication attempts to address the purpose of the assignment, but is unsuccessful.</td>
<td>The communication does a decent job of addressing the purpose of the assignment.</td>
<td>The communication does a very good job of addressing the purpose of the assignment.</td>
</tr>
</tbody>
</table>

**Part II: Construct an Argument (K-ESS2-2)**
The student claims that the plant or animal changes its habitat by circling the new habitat in green. The student describes how the organism changes the habitat and why the animal must change the environment to meet its needs.

<table>
<thead>
<tr>
<th>1</th>
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<tbody>
<tr>
<td>The argument is not valid, clear, or logical.</td>
<td>The argument is not, or is only partially, valid, clear, or logical.</td>
<td>The argument lacks only a little in terms of validity, clarity, or logic.</td>
<td>The argument is valid, clear, and logical.</td>
</tr>
</tbody>
</table>