

Unit: Matter and Its Interactions	Grade Level: 5	Time Frame: Quarter 1(a)
<p><b>Standards:</b></p> <p><b>5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen.</b> <i>[Clarification Statement: Examples of evidence could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.]</i></p> <p><b>5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.</b> <i>[Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that forms new substances.] [Assessment Boundary: Assessment does not include distinguishing mass and weight.]</i></p> <p><b>5-PS1-3. Make observations and measurements to identify materials based on their properties.</b> <b>[Clarification Statement: Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.]</b> <i>[Assessment Boundary: Assessment does not include density or distinguishing mass and weight.]</i></p> <p><b>5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.</b></p> <p><i>ELA/Literacy -</i>  <b><u>RctionL.5.7</u></b> Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. <i>(5-PS1-1)</i></p> <p><i>Mathematics -</i>  <b><u>MP.2</u></b> Reason abstractly and quantitatively. <i>(5-PS1-1)</i>  <b><u>MP.4</u></b> Model with mathematics. <i>(5-PS1-1)</i>  <b><u>5.NBT.A.1</u></b> Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. <i>(5-PS1-1)</i>  <b><u>5.NF.B.7</u></b> Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. <i>(5-PS1-1)</i>  <b><u>5.MD.C.3</u></b> Recognize volume as an attribute of solid figures and understand concepts of volume measurement. <i>(5-PS1-1)</i>  <b><u>5.MD.C.4</u></b> Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. <i>(5-PS1-1)</i></p>		
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• What is matter?</li> <li>• When matter changes, does its weight change?</li> <li>• Can new substances be created by combining other substances?</li> <li>• How does matter cycle through ecosystems?</li> </ul>	<p><b>Unit Goals:</b></p> <ul style="list-style-type: none"> <li>• Students are able to describe that matter is made of particles too small to be seen through the development of a model.</li> <li>• Students develop an understanding of the idea that regardless of the type of change that matter undergoes, the total weight of matter is conserved.</li> <li>• Students determine whether the mixing of two or more substances result in new substances.</li> </ul>	
<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>❖ Create a model</li> <li>❖ Measuring and graphing</li> <li>❖ Record observations</li> <li>❖ Conduct an investigation</li> <li>❖ Identify cause and effect relationships</li> </ul>	<p><b>Vocabulary:</b>  boiling point , melting point, chemical change, mixture, conservation of matter, physical change, freezing point, physical properties, matter, solution, liquid, volume, solid, gas, conductivity, conductors,</p>	
<p><b>Demonstration of Learning/Assessments:</b></p> <ol style="list-style-type: none"> <li>1. Students will draw on information from multiple sources relating to matter, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.</li> <li>2. Students will conduct short research projects that use several sources to build knowledge through investigation of different aspects of matter.</li> <li>3. Students will draw evidence from literary or informational texts to support analysis, reflection, and research.</li> <li>4. Students will recall relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.</li> <li>5. Students will test, identify and explain cause and effect relationships.</li> <li>6. Students will be able to model with mathematics.</li> <li>7. Students will be able to use appropriate tools strategically.</li> <li>8. Students will be able to reason abstractly and quantitatively.</li> </ol>	<p><b>21<sup>st</sup> Century Themes:</b></p> <p><b>Global Awareness:</b> Understanding how the melting of the ice caps affects the environment</p> <p><b>Health Literacy:</b> Understand how preventative physical measures affect the body</p> <p><b>Environmental Literacy:</b> Demonstrates knowledge and understanding of the environment and the circumstances and conditions affecting it</p> <p><b>Communication and Collaboration:</b> Use communication for a range of purposes</p>	

<p><b>Resources: Additional Supplementary Resources:</b></p> <p><b>Books:</b></p> <ul style="list-style-type: none"> <li>• <i>Matter and Interactions 4<sup>th</sup> Edition</i> by Ruth W. Chabay</li> <li>• <i>Matter: Physical Science for Kids</i> by Andi Diehn, Hui Li</li> <li>• <i>Different States of Matter (Ultimate Science: Physical Science)</i> by Charlotte Deschermeier</li> <li>• <i>Joe-Joe the Wizard Brews Up Solids, Liquids, and Gases (In the Science Lab)</i> by Eric Braun</li> <li>• <i>Change It!: Solids, Liquids, Gases and You</i> by Adrienne Mason</li> </ul> <p><b>Online Websites:</b></p> <ol style="list-style-type: none"> <li>1. BrainPOP video <a href="http://www.brainpop.com/science/matterandchemistry/statesofmatter/">http://www.brainpop.com/science/matterandchemistry/statesofmatter/</a></li> <li>2. <a href="https://rjohnsonwbi.weebly.com/teachers-guide.html">https://rjohnsonwbi.weebly.com/teachers-guide.html</a></li> <li>3. <a href="https://betterlesson.com/next_gen_science/browse/2161/ngss-5-ps1-1-develop-a-model-to-describe-that-matter-is-made-of-particles-too-small-to-be-seen">https://betterlesson.com/next_gen_science/browse/2161/ngss-5-ps1-1-develop-a-model-to-describe-that-matter-is-made-of-particles-too-small-to-be-seen</a></li> <li>4. <a href="https://www.nextgenscience.org/.../5-ps1-matter-and-its-interactions">https://www.nextgenscience.org/.../5-ps1-matter-and-its-interactions</a></li> <li>5. <a href="https://www.exploringnature.org/db/view/Grade-5-5-PS1-Matter-and-Its-Interactions">https://www.exploringnature.org/db/view/Grade-5-5-PS1-Matter-and-Its-Interactions</a></li> <li>6. <a href="https://ngss.nsta.org/DisplayStandard.aspx?view=pe&amp;id=99">https://ngss.nsta.org/DisplayStandard.aspx?view=pe&amp;id=99</a></li> <li>7. <a href="http://www.scholastic.com/Animalsareeverywhere">www.scholastic.com/Animalsareeverywhere</a></li> <li>8. Youtube.com- animal structures and what they mean</li> </ol>	<p><b>Performance Tasks (Labs)</b> <i>Listed below are the suggested material that can be used to perform the labs. Teachers will be given the autonomy to change the materials to make the proper adjustments needed in order to perform lab task.</i></p> <p><b>5- PS1-1.</b> The students will create evidence using models that include adding air to expanding a basketball, compressing air in a syringe, dissolving sugar in water and evaporating salt water.</p> <p><b>5-PS1-2.</b> The students will create examples of reactions or changes that could include phase changes, dissolving, and mixing that form new substances.</p> <p><b>5-PS1-3.</b> The students will identify baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility.</p> <p><b>5-PS1-4</b> The students will conduct an investigation to determine whether the mixing of two or more substances results in new substances.</p>
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<b>Unit: Motion and Stability: Forces and Interactions</b>		<b>Grade Level: 5</b>	<b>Time Frame: Quarter 1(b)</b>
<p><b>Standards:</b></p> <p><b>5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down.</b> [Clarification Statement: “Down” is a local description of the direction that points toward the center of the spherical Earth.] [Assessment Boundary: Assessment does not include mathematical representation of gravitational force.]</p> <p><b>Common Core State Standards Connections:</b></p> <p><i>ELA/Literacy</i></p> <p><b>RI.5.1</b> Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-PS2-1)</p> <p><b>RI.5.9</b> Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-PS2-1)</p> <p><b>W.5.1</b> Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (5-PS2-1)</p>			
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• What is gravity and how does it impact the directions an object falls?</li> <li>• How does distance in space influence brightness?</li> <li>• How does the time of day influence shadows?</li> <li>• Do the seasons impact the number of stars that can be seen at night?</li> <li>• How do the spheres interact?</li> <li>• How much water can be found in different places on Earth?</li> </ul>		<p><b>Unit Goals:</b></p> <ul style="list-style-type: none"> <li>• Students will learn that Earth has its own gravitational force that affect the direction in which objects fall.</li> <li>• Students will develop an understanding of patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</li> <li>• Students will learn about Earth’s Systems and are able to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</li> <li>• Students will describe and graph data to provide evidence about the distribution of water on Earth.</li> </ul>	
<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Identify cause and effect relationship</li> <li>• Defend and support an argument</li> <li>• Construct a model to represent and explain phenomena</li> <li>• Represent data</li> <li>• Draw a Conclusion based on data</li> <li>• Make inferences based on a model and data</li> <li>• Quote accurately from a text</li> <li>• Compare the similarities and differences of Earth’s spheres</li> </ul>		<p><b>Vocabulary:</b></p> <p>Gravity Force Gravitational force Spherical Core Brightness Distance Relative distance</p>	<p>Pattern Length Direction Cardinal directions Geosphere Biosphere landforms Hydrosphere Atmosphere</p> <p>Ecosystem Weather Climate Fresh Water Salt Water Reservoirs Glaciers Polar Ice Caps</p>
<p><b>Demonstration of Learning/Assessments:</b></p> <ul style="list-style-type: none"> <li>• Students will be able to determine the gravitational pull of the earth by investigating gravitational pull and force.</li> <li>• Students will be able to defend an argument that the brightness of the sun and stars are related to their distance from the Earth.</li> <li>• Students will be able to display the daily change in the length and direction of shadows, day and night.</li> <li>• Student will be able to display the seasonal appearance of stars in the sky.</li> <li>• Students will be able to construct a model that represent how the geosphere, biosphere, hydrosphere and atmosphere interact.</li> <li>• Students will be able to describe and graph the amount of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.</li> </ul>		<p><b>Performance Tasks (Labs)</b> Listed below are the suggested activities that can be used to perform the labs. Teachers will have the autonomy to change the materials to make the proper adjustments needed in order to perform lab task.</p> <ol style="list-style-type: none"> <li>1. Students will create a model of the layers of the atmosphere, plot the altitude of each layer on a graph, and write and/or draw features of each layer on a graph.</li> <li>2. Students work in groups to create a diorama with representations from all of Earth’s systems that demonstrates at least one way they all interact.</li> <li>3. Students create a foldable defining the common forces of buoyancy, gravity, magnetism, friction, applied force, and air resistance, and do an activity to experience each force first hand.</li> <li>4. Students will create a model of a specific type of water source on earth and its location and draw conclusions about water usage and environmental issues.</li> </ol>	

<p><b>Resources: Additional/Supplementary</b></p> <p><b>Books:</b></p> <ul style="list-style-type: none"> <li>Prasad, K. (2004). Why can't I jump very high? A book about gravity. <i>A simple question asked on a basketball field sparks a discussion on gravity that carries on into the classroom. Coupled with demonstrations, which can be easily duplicated at home or in the classroom.</i></li> <li>Chin, J. (2014). Gravity. How do we stay put on our planet and not float away into outer space? What makes things fall to the ground from high places? <i>Introduces readers to the concept of gravity, presenting the information in highly understandable language and captivating paintings.</i></li> <li>Floca, B. (2009). Moonshot: The flight of Apollo 11. <i>Describes the adventure and discovery of the Apollo 11 mission. Could be used to jumpstart conversation about the role of gravity.</i></li> <li>Walliman, D. (2013). Professor Astrocat's frontiers of space. <i>Characters such as Professor Astro Cat and his assistant Astro Mouse give a humorous, conversational tone to this nonfiction book's information about space, our solar system, gravity, and changing space exploration technology.</i></li> <li><i>Galileo's Leaning Tower Experiment</i> by Wendy MacDonald</li> <li><i>Jake Drake Know it All</i> by Andrew Clements.</li> </ul> <p><b>Online tools:</b>  <a href="http://NGSS@NSTA.org">NGSS@NSTA.org</a>  <a href="http://www.lpi.usra.edu">www.lpi.usra.edu</a>  <a href="http://Brainpopjr.com">Brainpopjr.com</a>  <a href="http://Brainpopespanol.com">Brainpopespanol.com</a>  <a href="http://Jonesvilleschools.org">Jonesvilleschools.org</a></p> <p>Youtube Video:  Four Spheres Part 1 (Geo and Bio): Crash Course Kids #6:</p>	<p><b>21<sup>st</sup> Century Themes</b></p> <p>Global Awareness:</p> <ul style="list-style-type: none"> <li>Using 21<sup>st</sup> century skills to understand and address global issues</li> <li>Learning from and working collaboratively with individuals representing diverse cultures, religions and lifestyles in a spirit of mutual respect and open dialogue in personal, work and community contexts</li> </ul> <p>Environmental Literacy:</p> <ul style="list-style-type: none"> <li>Demonstrate knowledge and understanding of the environment and the air circumstances and conditions affecting it, particularly as relates to air, climate, land, food, energy, water and ecosystems.</li> <li>Investigate and analyze environmental issues and make accurate conclusions about effective solutions.</li> </ul> <p>Communicate Clearly:</p> <ul style="list-style-type: none"> <li>Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts.</li> <li>Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions.</li> </ul> <p>Manage Projects:</p> <ul style="list-style-type: none"> <li>Set and meet goals, even in the face of obstacles and competing pressures</li> <li>Prioritize, plan and manage work to achieve the intended result</li> </ul>
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<p><b>Unit: From Molecules to Organisms: Structures and Processes</b></p>	<p><b>Grade Level: 5</b></p>	<p><b>Time Frame: Quarter 2(a)</b></p>
<p><b>Standards:</b>  <b>5-LS1-1</b>                  Support an argument that plants get the materials they need for growth chiefly from air and water. [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.]</p> <p><b>Common Core State Standards</b>  <b>ELA/Literacy</b>  <b>RI.5.1</b> Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-LS1-1)  <b>RI.5.9</b> Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-LS1-1)  <b>W.5.1</b> Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (5-LS1-1) <b>Mathematics –</b></p> <p><b>Mathematics</b>  <b>MP.2</b> Reason abstractly and quantitatively. (5-LS1-1)  <b>MP.4</b> Model with mathematics. (5-LS1-1)  <b>MP.5</b> Use appropriate tools strategically. (5-LS1-1)  <b>5.MD.A.1</b> Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. (5-LS1-1)</p>		
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• How Does Energy Get Transformed by Plants?</li> <li>• How Do Organisms Use Matter and Energy?</li> <li>• How Do Organisms Interact?</li> <li>• How does light effect plants?</li> <li>• Why is it important to control variables in an investigation?</li> <li>• How is energy transferred?</li> </ul>	<p><b>Unit Goals:</b></p> <ol style="list-style-type: none"> <li>1. Students are able to develop and use models to support an argument that plants acquire material for growth mainly from air and water.</li> <li>2. Students develop an understanding that animals need food for the materials necessary for body growth and repair and they obtain gases and water from the environment and release waste matter (gas, liquid, or solid) back into the environment.</li> <li>3. Students develop and use models to explore how organisms interact and survive in environments where their needs are met.</li> </ol>	
<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>❖ Create a model</li> <li>❖ Record observations</li> <li>❖ Identify cause and effect relationships</li> <li>❖ Conduct an investigation</li> </ul>	<p><b>Vocabulary:</b>                  community, photosynthesis, consumer, population, ecosystem, predator, environment, prey, habitat, producer, niche</p>	
<p><b>Demonstration of Learning/Assessments:</b></p> <p>Students will be able to discover how plants store energy from the sun through a chemical process, using matter transported into and within parts of the plant.</p> <ul style="list-style-type: none"> <li>❖ Students model the plant parts involved in the photosynthesis process.</li> </ul> <p>Students will work in pairs to explore how plants get energy online.</p> <ul style="list-style-type: none"> <li>❖ Each pair will prepare a short TV interview: one student plays the interviewer, and the other a scientist who will explain photosynthesis to kids, as simply as possible.</li> <li>❖ Each pair will write a script and then act it out for the class.</li> </ul>	<p><b>21<sup>st</sup> Century Themes:</b></p> <p><b>Global Awareness</b> Effects of deforestation (Rainforests)  <b>Health Literacy</b> Understand how plants effect the human body (food, medicinal, environment)  <b>Environmental Literacy</b></p> <ul style="list-style-type: none"> <li>❖ Demonstrate knowledge and understanding of the environment and the circumstances and conditions affecting it, particularly, as relates to air, climate, land, food, energy, water, and ecosystems</li> <li>❖ Take individual and collective action towards addressing environmental challenges (e.g., participating in global actions, designing solutions that inspire action on environmental issues)</li> </ul> <p><b>Civic Literacy</b> Understanding the local and global implications of civic decisions</p>	

<p><b>Resources: Additional/Supplementary:</b></p> <p><b>Books</b></p> <ol style="list-style-type: none"> <li>1. <i>What Do Plants Need to Grow?</i> By NGSS Nerd</li> <li>2. <i>5<sup>th</sup> Grade Science NGSS 5-LS1-1 Aligned Photosynthesis</i> by Rushnok Scienc</li> <li>3. <i>Pass the Energy Please</i> by Barbara McKinney (5-PS3-1)</li> <li>4. <i>Ocean Sunlight: How Tiny Plants Feed the Seas</i> by Sallie W. Chisolm (5-PS3-1)</li> <li>5. <i>Be a Friend to Trees</i> by Patricia Lauber (5-LS1-1)</li> <li>6. <i>Living sunlight: How plants bring the Earth to Life</i> by Molly Bang (5-LS1-1)</li> <li>7. <i>Who Eats What?</i> by Patricia Lauber (5-LS1-2)</li> <li>8. <i>A Handful of Dirt</i> by Raymond Bial</li> </ol> <p><b>Online tools:</b></p> <p><a href="http://www.scholastic.com">www.scholastic.com</a> - <b>Endangered Ecosystems:</b> <a href="http://www.scholastic.com/teachers/lesson-plans/teaching-content/dirtmeister-science-lab-ecosystems/">www.scholastic.com/teachers/lesson-plans/teaching-content/dirtmeister-science-lab-ecosystems/</a></p> <p><b>How does nature clean our water?</b> <a href="http://www.scholastic.com/teachers/sponsored-content/njaw/17-18/how-does-nature-clean-our-water/">www.scholastic.com/teachers/sponsored-content/njaw/17-18/how-does-nature-clean-our-water/</a></p>	<p><b>Performance Tasks (Labs)</b> <i>Listed below are the suggested activities that can be used to perform the labs. Teachers will have the autonomy to change the materials to make the proper adjustments needed in order to perform lab task.</i></p> <p>Students will think about the things that plants need to grow and survive.</p> <p>What kind of environment is best for plants to grow in?</p> <ul style="list-style-type: none"> <li>❖ Students will work in teams to conduct an investigation to see how different kinds of light affects the growth of plants.</li> <li>❖ Students will model what happens when one key element of what plants need (energy from light) is restricted and how it affects plant growth and survival.</li> <li>❖ Students will collaborate to draw a model of an irrigation system that optimizes water use in a dry or wet area.</li> </ul> <p><b>Betterlessons.com:</b></p> <ol style="list-style-type: none"> <li>1. Where Do Plants Get the Materials They Need? (Day 1: Gathering Evidence to Support Your Claim)</li> <li>2. Where Do Plants Get the Materials They Need? (Day 2: Presenting your Findings)</li> <li>3. Parts of a Plant</li> <li>4. How Plants Reproduce (Transfer of Energy and Matter Through Organisms in an Ecosystem)</li> </ol>
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<p><b>Unit: Ecosystems: Interactions, Energy, and Dynamics</b></p>	<p><b>Grade Level: 5</b></p>	<p><b>Time Frame: Quarter 2 (b)</b></p>
<p><b>Standards:</b>  <b>5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</b> <i>[Clarification Statement: Emphasis is on the idea that matter that is not food (air, water, decomposed materials in soil) is changed by plants into matter that is food. Examples of systems could include organisms, ecosystems, and the Earth.] [Assessment Boundary: Assessment does not include molecular explanations.]</i></p> <p><b>Common Core State Standards Connections:</b>  <i>ELA/Literacy</i>  <b>RI.5.7</b> Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-LS2- 1)  <b>SL.5.5</b> Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5- LS2-1)  <i>Mathematics</i>  <b>MP.2</b> Reason abstractly and quantitatively. (5-LS2-1)  <b>MP.4</b> Model with mathematics. (5-LS2-1)</p>		
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• How does energy move in a food web?</li> <li>• Organisms in an ecosystem have different roles. How does each role affect the well-being of the various organisms?</li> <li>• How do the components of an ecosystem interact?</li> <li>• How are a food chain and food web different?</li> <li>• What are some ways an ecosystem can be disrupted?</li> </ul>	<p><b>Unit Goals:</b></p> <ul style="list-style-type: none"> <li>• Using models, students can describe the movement of matter among plants, animals, decomposers, and the environment and that energy in animals’ food was once energy from the sun.</li> <li>• Students are expected to demonstrate grade-appropriate proficiency in developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, engaging in argument from evidence, and obtaining, evaluating, and communicating information; and to use these practices to demonstrate understanding of the core ideas.</li> </ul>	
<p><b>Skills:</b>  The students will be able to ...</p> <ul style="list-style-type: none"> <li>• Compare &amp; contrast</li> <li>• Develop and use models</li> <li>• Understand cause and effect relationships</li> <li>• Plan and carry out investigations</li> <li>• Ask questions and define problems</li> </ul>	<p><b>Vocabulary:</b>  ecosystem, environment, food chain, scavenger, decomposer, food web, energy pyramid, consumer, producer, herbivore, carnivore, invasive species, native species, living and nonliving species</p>	
<p><b>Demonstration of Learning/Assessments:</b></p> <ol style="list-style-type: none"> <li>1. The students will utilize various graphic organizers to demonstrate their understanding of ecosystems.</li> <li>2. The students will develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.</li> <li>3. The students will describe the movement of matter in an ecosystem by providing evidence to support a claim.</li> <li>4. The students will refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.</li> <li>5. The students can explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.</li> <li>6. The students can write informative/explanatory text to examine a topic and convey ideas and information clearly.</li> <li>7. The students can recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.</li> </ol>		

<p><b>Resources: Additional/Supplementary</b></p> <p><b>Books</b></p> <p>Heinz, B. (2006). Butternut hollow pond. <i>In the course of a full day at Butternut Hollow Pond, readers meet water striders, snapping turtles, herons, woodchucks, and other animals that live in the pond. As each one is introduced, readers learn how that creature fits into the habitat's food chain.</i></p> <p>Lauber, P. (2016). Who eats what? <i>Food chains and food webs. Part of the Read-and-Find-Out series, this book explores food webs and why every link in a food chain is important.</i></p> <p>Slade, S. (2010). What if there were no gray wolves? <i>Deciduous forest ecosystems can be found on nearly every continent. Countless animals and plants live in them. So what difference could the loss of one animal species make? Follow the chain reaction, and discover how important gray wolves are.</i></p> <p>Bial, R. (2001). A handful of dirt. <i>Soil may not be alive, but amazingly, multitudes of microscopic creatures live there, battling it out in an eat-or-be-eaten world. These tiny creatures, invisible to our eyes, provide food for the insects that in turn feed the reptiles and mammals that live in and above the soil</i></p> <p><b>Online Tools:</b></p> <p>YouTube:</p> <ul style="list-style-type: none"> <li>• Learning About Ecosystems</li> <li>• Understanding Ecosystems for Kids: Producers, Consumers, Decomposers</li> <li>• Most Imperiled Ecosystem in North America – National Geographic</li> <li>• Life Science: Ecosystems &amp; Flow of Energy (13 videos)</li> </ul> <p><a href="http://www.Betterlessons.com">www.Betterlessons.com</a></p> <p><a href="http://www.brainpopjr.com">www.brainpopjr.com</a></p>	<p><b>21<sup>st</sup> Century Themes</b></p> <p><b>Global Awareness</b></p> <ul style="list-style-type: none"> <li>• Using 21<sup>st</sup> century skills to understand and address global issues as they relate to environmental changes and the effects on various ecosystems.</li> </ul> <p><b>Environmental Literacy</b></p> <ul style="list-style-type: none"> <li>• Demonstrate knowledge and understanding of the environment and the circumstances and conditions affecting it, particularly as relates to air, climate, land, food, energy, water, and ecosystems.</li> </ul> <p><b>Collaborate with Others</b></p> <ul style="list-style-type: none"> <li>• Assume shared responsibility for collaborative work, and value the individual contributions made by each team member.</li> </ul>	<p><b>Performance Tasks (Labs):</b> <i>Listed below are the suggested ideas that can be used to perform the labs. Teachers will be given the autonomy to change the materials to make the proper adjustment needed in order to perform lab task.</i></p> <p>5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water. [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.]</p> <ul style="list-style-type: none"> <li>• Create a big book on environmental issues by exploring water pollution through research. Students will research the problem, causes, impact, and the steps humans can take to protect the environment.</li> <li>• Develop a research-based model of a specific ecosystem and use it to explore ecosystem interactions.</li> <li>• Investigate how living and nonliving species interact within ecosystems.</li> <li>• Explore examples of the types of plants and animals that have caused unbalanced ecosystems.</li> </ul>
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<b>Unit: Energy</b>	<b>Grade Level: 5</b>	<b>Time Frame: Quarter 2 (c)</b>
<p><b>Standards:</b>                      5-PS3-1. Use models to describe that energy in animals’ food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.                      Common Core State Standards Connections:  <i>ELA/Literacy</i>                      RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-PS3- 1)                      SL.5.5 Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5- PS3-1)</p>		
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• Where do plants get their energy?</li> <li>• How does food support body growth and repair?</li> <li>• How does energy move in a ecosystem?</li> <li>• What are different ways you can obtain matter?</li> </ul>	<p><b>Unit Goals:</b></p> <ul style="list-style-type: none"> <li>• Investigate how living organisms get energy.</li> <li>• Explore how living organisms use energy and how they interact in their environments.</li> <li>• Develop an understanding of the idea that plants get the materials they need for growth chiefly from air and water. Using models, students can describe the movement of matter among plants, animals, decomposers, and the environment and that energy in animals’ food was once energy from the sun.</li> <li>• Demonstrate grade-appropriate proficiency in developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, engaging in argument from evidence, and obtaining, evaluating, and communicating information; and to use these practices to demonstrate understanding of the core ideas.</li> </ul>	
<p><b>Skills:</b>                      The students will be able to ...</p> <ul style="list-style-type: none"> <li>• Compare &amp; contrast</li> <li>• Develop and use models</li> <li>• Understand cause and effect relationships</li> <li>• Plan and carry out investigations</li> <li>• Ask questions and define problems</li> </ul>	<p><b>Vocabulary:</b>                      Community, consumer, ecosystem, environment, habitat, niche, photosynthesis, population, predator, prey, producer</p>	
<p><b>Demonstration of Learning/Assessments:</b></p> <ol style="list-style-type: none"> <li>8. The students will develop a model to illustrate how living organisms get energy.</li> <li>9. The students will create a model that shows the movement of matter among plants, animals, decomposers, and the environment.</li> <li>10. The students will describe how living organisms use energy and how they interact in their environments by providing evidence to support a claim.</li> <li>11. The students will refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.</li> <li>12. The students can explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.</li> <li>13. The students can write informative/explanatory text to examine a topic and convey ideas and information clearly.</li> <li>14. The students can recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.</li> </ol>		

<p><b>Resources: Additional/Supplementary</b></p> <p><b>Books</b></p> <p>McKinney, B. Pass the energy please (2000). <i>Each of nature's creatures "passes the energy" in its own unique way. In this upbeat rhyming story, the food chain connects herbivores, carnivores, decomposers, and plants together in a fascinating circle of players.</i></p> <p>Bang, M. (2012). Ocean sunlight: How tiny plants feed the seas. <i>Explains how energy from the sun moves from tiny phytoplankton up to the largest whale in the deep sea food web.</i></p> <p>Bradley, K. (2002). Energy makes things happen. <i>This book introduces the concept of energy and explains how it is used through examples such as kites flying in the wind, moving rocks, and sunlight helping plants make food.</i></p> <p>Bang, M. (2009). Living sunlight: How plants bring the earth to life. <i>Written from the point of view of the sun, this lyrical book teaches the basics of photosynthesis and the role the sun plays in keeping plant and animal life alive and thriving on earth.</i></p> <p><b>Online Tools:</b></p> <p>YouTube</p> <p>Energy &amp; Loving Things: Why Do Living Things Need Energy?</p> <p>Matter &amp;* Energy in Organisms (10 videos)</p> <p>Food Chain – Circle of Life</p> <p><a href="http://www.Betterlessons.com">www.Betterlessons.com</a></p> <p><a href="http://www.brainpopjr.com">www.brainpopjr.com</a></p>	<p><b>21<sup>st</sup> Century Themes</b></p> <p><b>Global Awareness</b></p> <ul style="list-style-type: none"> <li>Using 21<sup>st</sup> century skills to understand and address global issues as they relate to environmental changes and its effects on how organisms interact with each other.</li> </ul> <p><b>Environmental Literacy</b></p> <ul style="list-style-type: none"> <li>Demonstrate knowledge and understanding of the environment and the circumstances and conditions affecting it, particularly as relates to air, climate, land, food, energy, water, and ecosystems.</li> </ul> <p><b>Collaborate with Others</b></p> <ul style="list-style-type: none"> <li>Assume shared responsibility for collaborative work, and value the individual contributions made by each team member.</li> </ul>	<p><b>Performance Tasks (Labs):</b> <i>Listed below are the suggested ideas that can be used to perform the labs. Teachers will be given the autonomy to change the materials to make the proper adjustment needed in order to perform lab task.</i></p> <p>Lights Out!</p> <ul style="list-style-type: none"> <li>Students will model what happens when one key element in photosynthesis is restricted and how it affects plant growth and survival.</li> </ul> <p>What's the Interaction?</p> <ul style="list-style-type: none"> <li>Students will observe organisms in different environments to report on how the organisms interacted with each other.</li> </ul> <p>It's A Solar Thing</p> <ul style="list-style-type: none"> <li>Students will investigate how light energy from the sun can be transferred to thermal energy (heat)</li> </ul>
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<b>Unit: Earth’s Place in the Universe</b>		<b>Grade Level: 5</b>		<b>Time Frame: Quarter 3(a)</b>	
<p><b>Standards:</b></p> <p><b>5-ESS1-1. Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.</b> [Assessment Boundary: Assessment is limited to relative distances, not sizes, of stars. Assessment does not include other factors that affect apparent brightness (such as stellar masses, age, stage).]</p> <p><b>5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.</b> [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the sun and selected stars that are visible only in particular months.] [Assessment Boundary: Assessment does not include causes of seasons.]</p> <p><i>ELA/Literacy</i></p> <p><b>RI.5.1</b> Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-ESS1-1)</p> <p><b>RI.5.7</b> Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-ESS1-1)</p> <p><b>RI.5.8</b> Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s). (5-ESS1-1)</p> <p><b>RI.5.9</b> Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-ESS1-1)</p> <p><b>W.5.1</b> Write opinion pieces on topics or texts, supporting a point of view with reasons and information. (5-ESS1-1) <b>SL.5.5</b> Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-ESS1-2)</p> <p><i>Mathematics</i></p> <p><b>MP.2</b> Reason abstractly and quantitatively. (5-ESS1-1),(5-ESS1-2)</p> <p><b>MP.4</b> Model with mathematics. (5-ESS1-1), (5-ESS1-2) <b>5.NBT.A.2</b> Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10. (5-ESS1-1)</p> <p><b>5.G.A.2</b> Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5-ESS1-2)</p>					
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• What is gravity and how does it impact the directions an object falls?</li> <li>• How does distance in space influence brightness?</li> <li>• How does the time of day influence shadows?</li> <li>• Do the seasons impact the number of stars that can be seen at night?</li> <li>• How do the spheres interact?</li> <li>• How much water can be found in different places on Earth?</li> </ul>			<p><b>Unit Goals:</b></p> <ul style="list-style-type: none"> <li>• Students will learn that Earth has its own gravitational force that affect the direction in which objects fall.</li> <li>• Students will develop an understanding of patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky</li> <li>• Students will learn about Earth’s Systems and are able to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact</li> <li>• Students will describe and graph data to provide evidence about the distribution of water on Earth.</li> </ul>		
<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Identify cause and effect relationship</li> <li>• Defend and support an argument</li> <li>• Construct a model to represent and explain a phenomenon</li> <li>• Represent data</li> <li>• Draw a Conclusion based on data</li> <li>• Make inferences based on a model and data</li> <li>• Quote accurately from a text</li> <li>• Compare and Contrast similarities and differences</li> </ul>		<p><b>Vocabulary:</b></p> <p>Gravity Force Gravitational force Spherical Core Brightness Distance Relative distance</p>		<p>Pattern Length Direction Cardinal directions Geosphere Biosphere landforms Hydrosphere</p>	<p>Atmosphere Ecosystem Weather Climate Fresh Water Salt Water Reservoirs Glaciers Polar Ice Caps</p>
<p><b>Demonstration of Learning/Assessments:</b></p> <ul style="list-style-type: none"> <li>• Students will be able to determine the gravitational pull of the earth by conducting an investigation.</li> <li>• Students will be able to defend an argument that the brightness of the sun and stars are related to their distance from the Earth.</li> <li>• Students will be able to display the daily change in the length and direction of shadows, day and night.</li> <li>• Student will be able to display the seasonal appearance of stars in the sky.</li> <li>• Students will be able to construct a model that represent how the geosphere, biosphere, hydrosphere and atmosphere interact.</li> <li>• Students will be able to describe and graph the amount of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.</li> </ul>			<p><b>21<sup>st</sup> Century Themes</b></p> <p><b>Environmental Literacy</b></p> <ul style="list-style-type: none"> <li>• Demonstrate knowledge and understanding of the environment and the circumstances and conditions affecting it, particularly as relates to air, climate, land, food, energy, water and ecosystems.</li> </ul> <p><b>Communication and Collaboration</b></p> <ul style="list-style-type: none"> <li>• Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts.</li> </ul>		

<p><b>Resources: Additional/Supplementary</b></p> <p>Books:</p> <ul style="list-style-type: none"><li>• Gibbons, G. (1995) The reason for seasons. <i>How the position of Earth in relation to the sun causes seasons.</i></li><li>• Bailey, J. (2004). Sun up, sun down: The story of day and night. <i>Follows the sun from dawn to dusk to explain how light rays travel, how shadows are formed, how the moon lights up the night sky, and more.</i></li><li>• Zopfi, G. (2014). Shadowman. <i>This book of lights both small and tall follows Shadowman, a being who lives lost in the shadows without a guiding light to set him free. Struggling with being defined by others, Shadowman has to embrace his own blinding nature in order to explore the world outside.</i></li><li>• Galileo’s Leaning Tower Experiment. Wendy MacDonald</li><li>• Jake Drake Know It All. Andrew Clements.</li></ul> <p><b>Online tools:</b> <a href="mailto:NGSS@NSTA.org">NGSS@NSTA.org</a> <a href="http://www.lpi.usra.edu">www.lpi.usra.edu</a> <a href="http://Brainpopjr.com">Brainpopjr.com</a> <a href="http://Brainpopespanol.com">Brainpopespanol.com</a> <a href="http://Jonesvilleschools.org">Jonesvilleschools.org</a></p>	<p><b>Performance Tasks (Labs)</b> <i>Listed below are the suggested activities that can be used to perform the labs. Teachers will have the autonomy to change the materials to make the proper adjustments needed in order to perform lab task.</i></p> <ul style="list-style-type: none"><li>• Students will create a model of the layers of the atmosphere, plot the altitude of each layer on a graph, and write and/or draw features of each layer on a graph.</li><li>• Students work in groups to create a diorama with representations from all of Earth’s systems that demonstrates at least one way they all interact.</li><li>• Students create a foldable defining the common forces of buoyancy, gravity, magnetism, friction, applied force, and air resistance, and do an activity to experience each force first hand.</li></ul>
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<p><b>Unit: Earth’s Systems</b></p>	<p><b>Grade Level: 5</b></p>	<p><b>Time Frame: Quarter 3 (b)</b></p>
<p><b>Standards:</b></p> <p><b>5-ESS2-1</b>    <b>Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.</b></p> <p><b>5-ESS2-2</b>    <b>Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.</b></p> <p><i>ELA/Literacy</i></p> <p><b>RI.5.7</b>        Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. <i>(5-ESS2-1), (5-ESS2-2)</i></p> <p><b>W.5.8</b>        Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. <i>(5-ESS2-2)</i></p> <p><b>SL.5.5</b>        Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. <i>(5-ESS2-1), (5-ESS2-2)</i></p> <p><i>Mathematics</i></p> <p><b>MP.2</b>        Reason abstractly and quantitatively. <i>(5-ESS2-1), (5-ESS2-2)</i></p> <p><b>MP.4</b>        Model with mathematics. <i>(5-ESS2-1), (5-ESS2-2)</i></p> <p><b>5.G.A.2</b>       Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. <i>(5-ESS2-1)</i></p>		
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• What are Earth’s major systems?</li> <li>• How do Earth’s systems interact?</li> <li>• What is the role of the ocean in Earth’s systems?</li> <li>• How do phytoplankton affect the ocean and Earth systems?</li> </ul>	<p><b>Unit Goals:</b></p> <ol style="list-style-type: none"> <li>1. Students are able to develop and use models to investigate how Earth’s system interacts.</li> <li>2. Students are able to identify and describe each of Earth’s systems and the cycles that occur within.</li> <li>3. Students are able to observe and describe the distribution of water on Earth, and explore the effect of the oceans on landforms, climates, and ecosystems.</li> <li>4. Students will identify the ways Earth systems change in response to changes of each of the four major spheres.</li> <li>5. Student will predict changes in Earth Systems. Students will support their predictions with collected evidence.</li> </ol>	
<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Record observations</li> <li>• Identify cause and effect relationships</li> <li>• Create a model</li> <li>• Conduct an investigation</li> <li>• Compare and contrast</li> </ul>	<p><b>Vocabulary:</b></p> <p><b>atmosphere, geosphere, biosphere, hydrosphere, coastline, precipitation, condensation, system, evaporation, water cycle</b></p>	

<p><b>Demonstration of Learning/Assessments:</b></p> <p>Students will be able to distinguish the layers of the atmosphere and develop an understanding of where weather takes place.</p> <ul style="list-style-type: none"> <li>Students will identify the five main layers of Earth’s atmosphere and explain the differences between each layer.</li> </ul> <p>Students will develop a model to describe Earth’s four major systems.</p> <ul style="list-style-type: none"> <li>Students will use a diagram to describe Earth's major systems (spheres). Students will reflect upon this model to discuss how the systems interact with one another.</li> <li>Students will analyze how the four spheres are pictured in a photograph.</li> <li>Students will investigate Earth systems by making observations in nature and identifying systems in the natural world.</li> <li>Students will explain how the four spheres/systems on Earth (biosphere, hydrosphere, geosphere, and atmosphere) are interconnected.</li> </ul>	<p><b>21<sup>st</sup> Century Themes</b></p> <p><b>Global Awareness:</b></p> <ul style="list-style-type: none"> <li>Understanding major civilizations developed around a large source of water, with benefits such as agriculture and transport</li> </ul> <p><b>Health Literacy</b></p> <ul style="list-style-type: none"> <li>Understanding the role of water in Earth’s surface processes</li> </ul> <p><b>Environmental Literacy</b></p> <ul style="list-style-type: none"> <li>Demonstrate knowledge and understanding of the environment to address how humans can use science ideas to protect Earth’s resources and environment.</li> <li>Take individual and collective action towards addressing environmental challenges (e.g., participating in global actions, designing solutions that inspire action on environmental issues).</li> </ul> <p><b>Civic Literacy</b></p> <ul style="list-style-type: none"> <li>Understanding the local and global implications of civic decisions</li> </ul>
<p><b>Resources: Additional/Supplementary:</b></p> <p><b>Books</b></p> <ul style="list-style-type: none"> <li>Cole, J. The magic school bus and the climate challenge. (2010). <i>Ms. Frizzle takes her students soaring around the earth to study climate change, through the atmosphere to understand the greenhouse effect, above solar and wind power installations to see alternative energy sources, and above their town to observe carbon dioxide emissions. Back at school and at home, they start putting energy-saving practices into effect.</i></li> <li>Bang, M. &amp; Chisholm, P. (2014) Buried sunlight: How fossil fuels have changed the earth. What are fossil fuels, and how did they come to exist? <i>This engaging, stunning book explains how coal, oil, and gas are really "buried sunlight," trapped beneath the surface of our planet for millions and millions of years.</i></li> <li>Rockwell, A. (2006). Why are the ice caps melting? The dangers of global warming. <i>Explains in simple language the greenhouse effect, the sources of global warming, what the effects of warming have been so far and what they might be in the future.</i></li> <li>Chambers, C. (2016). Stickmen’s guide to Earth’s atmosphere in layers. <i>The Stickmen will take you on a tour of satellites in orbit, aircraft riding jet streams, and storms in the lowest layer of Earth's atmosphere.</i></li> </ul> <p><b>Online Tools:</b>  <a href="http://www.scholastic.com">www.scholastic.com</a></p> <p><b>NASA lessons -</b> <a href="https://pmm.nasa.gov/education/lesson-plans/connect-spheres-earth-systems-interactions">https://pmm.nasa.gov/education/lesson-plans/connect-spheres-earth-systems-interactions</a></p> <p><b>Spheres of the Earth Video-</b> <a href="https://www.youtube.com/watch?v=m4TnPv_b6WU">https://www.youtube.com/watch?v=m4TnPv_b6WU</a></p>	<p><b>Performance Tasks (Labs)</b>  <i>Listed below are the suggested material that can be used to perform the labs. Teachers will be given autonomy to change the materials to make the proper adjustment needs in order to perform lab task.</i></p> <p>Students will explore Earth’s major systems using models, and other strategies.</p> <ul style="list-style-type: none"> <li>Students compare and contrast characteristics of biosphere, atmosphere, geosphere and hydrosphere.</li> <li>Students will create a model of the layers of the atmosphere, plot the altitude of each layer on a graph, and write and/or draw features of each layer on this graph.</li> </ul> <p>Student will explain what a cycle is.</p> <ul style="list-style-type: none"> <li>Place students in small groups. Assign each group member a different Earth cycle to explore. Possibilities include the water cycle, rock cycle, carbon cycle, nitrogen cycle, and oxygen cycle. Give students reference materials, such as diagrams of their cycles. Encourage them to conduct further research. After students have investigated their cycles, have them share their expertise with other members of the group.</li> </ul>

<p><b>Unit: Earth and Human Activity</b></p>	<p><b>Grade Level: 5</b></p>	<p><b>Time Frame: Quarter 3 (c)</b></p>
<p><b>Standards:</b>  <b>5-ESS3-1</b> Obtain and combine information about ways individual communities use science ideas to protect to protect the Earth’s resources and environment.  <i>ELA/Literacy -</i>  <b>RI.5.1</b> Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. <i>(5-ESS3-1)</i>  <b>RI.5.7</b> Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. <i>(5-ESS3-1)</i>  <b>W.5.8</b> Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. <i>(5-ESS3-1)</i>  <b>W.5.9</b> Recall relevant information from multiple print and digital sources, demonstrating the ability to locate an answer to a quickly or to solve a problem efficiently. <i>(5-ESS3-1)</i>  <i>Mathematics -</i>  <b>MP.2</b> Reason abstractly and quantitatively . <i>(5-ESS2-1), (5-ESS2-2)</i>  <b>MP.4</b> Model with mathematics. <i>(5-ESS2-1), (5-ESS2-2)</i></p>		
<p><b>Essential Questions:</b></p> <ul style="list-style-type: none"> <li>• How does resource use affect Earth?</li> <li>• How can people protect the environment?</li> <li>• What are the Three R’s?</li> <li>• What are some ways that growing populations affect Earth’s surface?</li> <li>• Why recycle?</li> <li>• How can conservation save Earth’s resources?</li> </ul>	<p><b>Unit Goals:</b></p> <ol style="list-style-type: none"> <li>1. <b>Students are able to recognize and explain how people affect Earth’s resources.</b></li> <li>2. <b>Students are able to obtain, evaluate, and communicate information about the importance pf reducing, reusing, and recycling and other ways people protect the environment.</b></li> <li>3. <b>Students are able to investigate technologies and ideas used to help protect Earth’s resources and environments.</b></li> <li>4. <b>Students are able to identify which materials are recyclable, and which are not.</b></li> <li>5. <b>Students will demonstrate ways in which to recycle materials or use recycled materials.</b></li> </ol>	
<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>• Record observations</li> <li>• Identify cause and effect relationships</li> <li>• Create a model</li> <li>• Conduct an investigation</li> <li>• Collaborate</li> </ul>	<p><b>Vocabulary:</b>  <b>biodegradable, population, conserve, recycle, decompose, reduce, natural resources, reuse, pollution</b></p>	

<p><b>Demonstration of Learning/Assessments:</b></p> <p><b>Students will be able to recognize and explain how people affect Earth’s resources.</b></p> <ul style="list-style-type: none"> <li>• Students create a brochure to show how one of Earth’s systems is affected by human activities.</li> <li>• Students perform an investigation and develop a design solution to clean unfiltered water.</li> </ul> <p><b>Students will be able to identify and explain many ways that people can help protect the environment.</b></p> <ul style="list-style-type: none"> <li>• Students will conduct their own research to find out what kinds of green technologies are used in their community.</li> <li>• Students will pair up and pick an environmental issue such as energy production, waste management, food packaging or other issues based on an idea they have. Student pairs should create a drawing of their idea to conserve energy. Students will share their drawing with the class.</li> <li>• Students conduct research in order to plan and design a pocket park with a community garden to help the environment and increase green space in an urban area.</li> </ul>	<p><b>21<sup>st</sup> Century Themes:</b></p> <p><b>Global Awareness:</b></p> <ul style="list-style-type: none"> <li>• Effects of Recycling to solve environmental issues and determine their impact as individuals on the world around them.</li> </ul> <p><b>Health Literacy</b></p> <ul style="list-style-type: none"> <li>• Understanding how air pollution and plastic pollution effect humans, animals, and our oceans.</li> </ul> <p><b>Environmental Literacy</b></p> <ul style="list-style-type: none"> <li>• Demonstrate knowledge and understanding of the environment to address how humans can use science ideas to protect Earth’s resources and environment.</li> <li>• Take individual and collective action towards addressing environmental challenges (e.g., participating in global actions, designing solutions that inspire action on environmental issues).</li> </ul> <p><b>Civic Literacy</b></p> <ul style="list-style-type: none"> <li>• Understanding the local and global implications of civic decisions.</li> </ul>
<p><b>Resources: Additional/Supplementary</b></p> <p><b>Online tools:</b></p> <p><a href="http://www.scholastic.com">www.scholastic.com</a></p> <p><a href="http://www.naturespath.com/en-us/blog/19-activities-kids-learn-recycling/">www.naturespath.com/en-us/blog/19-activities-kids-learn-recycling/</a></p> <p><a href="http://www.scholastic.com/teachers/sponsored-content/njaw/17-18/water-works-unit-plan/">www.scholastic.com/teachers/sponsored-content/njaw/17-18/water-works-unit-plan/</a></p> <p><a href="http://www.scholastic.com/teachers/collections/teaching-content/recycling/">www.scholastic.com/teachers/collections/teaching-content/recycling/</a></p> <p><b>Books:</b></p> <p><i>Recycling and Upcycling: Science, Technology, Engineering</i> by Steven Otfinoski</p> <p><i>Compost Stew: An A-Z Recipe for the Earth</i> by Mary McKenna Siddals</p> <p><i>One Plastic Bag: Isatou Ceesay and The Recycling Women of the Gambia</i></p> <p><i>Things I Can Do to Help My World</i> by Melanie Walsh</p>	<p><b>Performance Tasks (Labs):</b> <i>Listed below are the suggested material that can be used to perform the labs. Teachers will be given autonomy to change the materials to make the proper adjustment needs in order to perform lab task.</i></p> <p>Students will work in pairs to brainstorm alternative uses for various objects.</p> <ul style="list-style-type: none"> <li>• Students will examine various objects, such as a clean, empty gallon milk or water jug and brainstorm alternative uses for it. Students can use additional materials to form their creations. (Some ideas: bird feeders, planters, supply containers)</li> </ul> <p>Students will obtain information and use it to design a way in which people can work together to protect one of Earth’s systems to demonstrate understanding of ESS3.C (Human Impacts on Earth Systems) in support of 5-ESS3-1.</p> <ul style="list-style-type: none"> <li>• Students will decide which of Earth’s systems to focus on. Each of them will be individually responsible for coming up with an idea of how to protect the chosen sphere.</li> <li>• The group will work together create a public service announcement about protecting a sphere of the Earth.</li> </ul>



<p><b>Unit: Engineering Design</b></p>	<p><b>Grade Level: 5</b></p>	<p><b>Time Frame: Quarter 4</b></p>										
<p><b>Standards:</b></p> <p>3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</p> <p>3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</p> <p>3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.</p> <p><i>ELA/Literacy -</i></p> <p><b>RI.5.1</b> Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (3-5-ETS1-2)</p> <p><b>RI.5.1</b> Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (3-5-ETS1-2)</p> <p><b>RI.5.9</b> Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (3-5-ETS1-2)</p> <p><b>W.5.7</b> Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic. (3-5-ETS1-1),(3-5-ETS1-3)</p> <p><b>W.5.8</b> Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (3-5-ETS1-1),(3-5-ETS1-3)</p> <p><b>W.5.9</b> Draw evidence from literary or informational texts to support analysis, reflection, and research. (3-5-ETS1-1),(3-5-ETS1-3)</p> <p><i>Mathematics -</i></p> <p><b>MP.2</b> Reason abstractly and quantitatively. (3-5-ETS1-1),(3-5-ETS1-2),(3-5-ETS1-3)</p> <p><b>MP.4</b> Model with mathematics. (3-5-ETS1-1),(3-5-ETS1-2),(3-5-ETS1-3)</p> <p><b>MP.5</b> Use appropriate tools strategically. (3-5-ETS1-1),(3-5-ETS1-2),(3-5-ETS1-3)</p> <p><b>3-5.OA</b> Operations and Algebraic Thinking (3-ETS1-1),(3-ETS1-2)</p>												
<p><b>Essential Questions:</b></p> <ol style="list-style-type: none"> <li>How does constraints affect a designed solution?</li> <li>What steps should be taken when creating a designed solution?</li> <li>How has the needs and wants of people changed over time?</li> <li>What advancements with existing technologies help improve our benefits, decrease known risks and meet societal demands?</li> <li>When is it the right solution?</li> </ol>	<p><b>Unit Goals:</b></p> <p>Students are expected to demonstrate grade-appropriate proficiency in developing and using models, planning and carrying out investigations, analyzing and interpreting data using mathematics and computational thinking, engaging in argument from evidence, and obtaining, evaluating, and communicating information; and to use these practices to demonstrate understanding of the core ideas.</p>											
<p><b>Skills:</b></p> <ul style="list-style-type: none"> <li>Asking questions and defining problems</li> <li>Planning and carrying out investigations</li> <li>Constructing explanations and designing solutions</li> </ul>	<p><b>Vocabulary:</b></p> <table border="0"> <tr> <td>need</td> <td>problem</td> </tr> <tr> <td>want</td> <td>solution</td> </tr> <tr> <td>brainstorming</td> <td>failure points</td> </tr> <tr> <td>constraints</td> <td>engineering</td> </tr> <tr> <td>criteria</td> <td></td> </tr> </table>		need	problem	want	solution	brainstorming	failure points	constraints	engineering	criteria	
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<p><b>Demonstration of Learning/Assessments:</b></p> <p>Students will demonstrate their ability to:</p> <ul style="list-style-type: none"> <li>Define a simple design problem and develop a specified criteria for success based on constraints.</li> <li>Generate and compare solutions to a problems based how it effectively meets the criteria and constraints of the problem.</li> <li>Plan and implement fair tests with controlled variables.</li> </ul>	<p><b>21<sup>st</sup> Century Themes:</b></p> <p><b>Global Awareness</b></p> <ul style="list-style-type: none"> <li>Students will explain how engineering, technology and science have influenced countries around the world.</li> </ul> <p><b>Creativity and Innovation</b></p> <ul style="list-style-type: none"> <li>Students will use a wide range of idea creation techniques (such as brainstorming) to develop, implement and communicate new ideas to others effectively.</li> </ul> <p><b>Environmental Literacy</b></p> <ul style="list-style-type: none"> <li>Investigate and analyze environmental issues, and make accurate conclusions about effective solutions.</li> </ul>											

<p><b>Resources: Additional/Supplementary</b>  <a href="https://betterlesson.com/.../ngss-3-5-ets1">https://betterlesson.com/.../ngss-3-5-ets1</a></p> <p><b>Books:</b>  <a href="#">Rosie Revere, Engineer</a> by Andrea Beaty and David Roberts  <a href="#">Violet the Pilot</a> by Steve Breen  <a href="#">Galimoto</a> by Karen Lynn Williams  <a href="#">Coppernickel, The Invention</a> by Wouter van Reek  <i>The Most Magnificent Thing</i> by Ashley Spires  <a href="#">Crafty Chloe</a> by Kelly DiPucchio  <i>Marvelous Mattie: How Margaret E. Knight Became An nventor</i> by Emily Arnold McCully  <i>What Do You Do With An Idea?</i> by Kobi Yamada and Mae Besom</p>	<p><b>Performance Tasks (Labs):</b> <i>Listed below are the suggested material that can be used to perform the labs. Teachers will be given autonomy to change the materials to make the proper adjustment needs in order to perform lab task.</i></p> <ul style="list-style-type: none"> <li>• <u>We Need a New Design</u>  <i>Students will select a design problem about their school in order to redesign it to improve efficiency. For example: Where students are picked up/dropped.</i></li> <li>• <u>My Car is Faster</u>  <i>Develop criteria and constraints to design and create a balloon-powered car.</i></li> <li>• <u>Engineering a Mountain Rescue Litter</u>  <i>Trying their hands at Biomedical Engineering, students use common household materials such as baggies, popsicle sticks and straws to construct a rescue litter that is stable, lightweight, low-cost, portable, and sturdy enough to carry a simulated human (potato).</i></li> <li>• <u>Waste Disposal Engineering Solutions</u>  <i>Students use Internet resources to explore the side effects of technology, and then design, implement and evaluate solutions for waste disposal.</i></li> <li>• <u>Bridge Building</u>  <i>Students will select a material to build a sturdy bridge.</i></li> <li>• <u>Marshmallow Catapult</u>  <i>Students will act just as real scientists by working through the engineering design process to plan, build, and test a catapult they made from craft sticks and rubber bands.</i></li> </ul>
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