

Grade 5 - Science Standards

Standard

E & S Activities

Billy B & Me CD Songs

I. Inquiry		
<p>Process skills and inquiries are not an isolated unit of instruction and should be embedded throughout the content areas. Safety issues should be addressed as developmentally appropriate.</p>		
<p>A. Process Skills</p>		
<p>1. Observe</p>		
<p>a. Use the senses and simple tools to gather information about objects or events such as size, shape, color, texture, sound, position, and change (qualitative observations).</p>	<p>1 - Energy Detectives 2 - May the Source Be with You 4 - What Powers the Move?</p>	
<p>2. Classify</p>		
<p>a. Compare, sort, and group concrete objects according to two attributes.</p>	<p>2 - May the Source Be with You 4 - What Powers the Move?</p>	
<p>b. Arrange objects in sequential order.</p>	<p>3 - Energy Chains</p>	
<p>3. Measure</p>		
<p>a. Use standard (U.S. Customary and Metric) to estimate and measure mass, length, area, perimeter, volume, and temperature to the nearest whole unit (quantitative observations).</p>		
<p>4. Communicate</p>		
<p>a. Use drawings, tables, graphs, written and oral language to describe objects and explain ideas and actions.</p>	<p>2 - May the Source Be with You 4 - What Powers the Move?</p>	
<p>5. Infer</p>		
<p>a. Explain or interpret an observation based on data and prior knowledge.</p>	<p>4 - What Powers the Move?</p>	
<p>b. Discriminate between observations and inferences.</p>		
<p>6. Predict</p>		
<p>a. Use prior knowledge and observations to identify and explain in advance what will happen.</p>	<p>4 - What Powers the Move?</p>	
<p>b. Discriminate between inferences and predictions.</p>		
<p>7. Hypothesize</p>		
<p>a. Devise a statement of assumption, based on observations, experiences, and research, that can be supported or refuted through experimentation.</p>		

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8. Define variables		
a. Identify independent (manipulated), dependent (responding), and controlled variables in an experiment.		
B. Inquiry		
1. Plan and conduct a simple investigation.		
a. Identify questions that can be answered through scientific investigations.		
b. Design and conduct a scientific investigation.		
c. Use appropriate tools and techniques to gather, analyze, and interpret data.	5 - In the Driver's Seat	
d. Develop descriptions, explanations, predictions, and models using evidence.		
e. Use mathematical thinking in all aspects of scientific inquiry.	5 - In the Driver's Seat	
f. Communicate outcomes and explanations.	5 - In the Driver's Seat	
C. Abilities of Technological Design		
1. Identify appropriate problems for technological design.		
a. Identify a specific need for a product.	4 - What Powers the Move?	
b. Determine whether the product will meet the needs and be used.	4 - What Powers the Move?	
2. Design a solution or product.		
a. Compare and contrast different proposals using selected criteria (e.g., cost, time, trade-off, and materials needed).	4 - What Powers the Move?	
b. Communicate ideas with drawings and simple models.	4 - What Powers the Move?	
II. Life Science		
Units of Study: Cells and Systems Ecosystems (Aquatic/Terrestrial)		
A. Structure and Function in Living Systems		
1. All organisms are composed of cells, the fundamental unit of life. Most organisms are single cells. Other organisms, including humans, are multicellular.		
a. Recognize that animals and plants are made of cells.		

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b. Observe, identify, and distinguish among plant and animal cell parts: nucleus, cytoplasm, vacuole, cell membrane, cell wall and chloroplasts.		The Rock and Roll of Photosynthesis Energy Yummy, Yummy
2. The human organism has systems for respiration and circulation. These systems interact with each other.		
a. Label the parts and distinguish among the functions of the major organs of the respiratory system, including nose/mouth, larynx, trachea, bronchi, alveoli, lungs, diaphragm.		
b. Label the parts and distinguish among the function of the major organs of the circulatory system including heart, arteries, veins, capillaries, and blood cells.		
c. Describe how the respiratory and circulatory systems work together to carry gases to and from the body.		
3. Disease is a breakdown in structures or functions of an organism. Some diseases are the result of intrinsic failures of the system (respiratory and circulatory).		
a. Identify common diseases associated with the respiratory system caused by viruses (such as colds, influenza), diseases caused by bacteria (such as pneumonia, and tuberculosis), and diseases caused by substances such as tobacco. (P)		
b. Identify common intrinsic diseases and disorders associated with the respiratory system such as asthma and with the circulatory system such as leukemia, sickle cell, and heart disease.		
B. Populations and Ecosystems		
1. A population consists of all individuals of a species that occur together at a given place and time. All populations live together and the physical factors with which they interact compose an ecosystem.		
a. Define a population.		
b. Investigate and understand how plants and animals in aquatic/terrestrial ecosystems interact with one another and with the nonliving environment.		

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<p>2. Populations of organisms can be categorized by the function they serve in an ecosystem. Plants and some microorganisms are producers--they make their own food. All animals, including humans, are consumers, which obtain food by eating other organisms. Decomposers, primarily bacteria and fungi, are consumers that use waste materials and dead organisms for food.</p>		
<p>a. Distinguish among the roles organisms serve in a food web (producers, decomposers, consumers, prey and predators).</p>		
<p>b. Describe an organism by its niche in an ecosystem.</p>		
<p>3. For ecosystems, the major source of energy is sunlight. Energy entering ecosystems as sunlight is used by producers through photosynthesis.</p>		
<p>a. Recognize that energy passes from organism to organism in food webs.</p>	<p>1 - Energy Detectives</p>	
<p>b. Diagram how energy flows through food webs.</p>		
<p>4. The number of organisms an ecosystem can support depends on the resources available.</p>		
<p>a. Identify and investigate the abiotic factors in an ecosystem such as quantity of light, air, and water, range of temperature, salinity, water pressure, and soil composition.</p>		
<p>b. Identify and investigate the biotic factors in an ecosystem.</p>		
<p>c. Describe the effect of limiting factors such as food, water, space, and shelter, on a population.</p>		
<p>d. Evaluate the impact of the environment on populations of organisms.</p>		
<p>e. Draw conclusions about the influence of human activity on ecosystems. (P)</p>		
<p>f. Discuss ways to minimize the negative impact of technology/industrialization on the ecosystem and maximize the positive impact. (T)</p>		<p>What, What Is. . . Reduce, Reuse, Recycle Engine Oil Our Changing World We Can Save Energy</p>
<p>g. Explore and identify career opportunities in natural resource/ environmental/marine science. (P)</p>		

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III. Earth Science

Unit of Study: Changes in the Earth's Surface: Landforms and Oceans

A. Structure of the Earth System

1. Landforms are the result of a combination of constructive and destructive forces.

a. Define constructive forces, which include crustal deformation (folding and faulting), volcanic eruptions and deposition of sediment.		
b. Describe how land forms are created as a result of constructive forces.		
c. Locate and describe the characteristics of South Carolina landform regions such as Blue Ridge, Piedmont, Sandhills, Coastal Plains, and Coastal Zone.		
d. Model how constructive forces change the surface of the Earth.		
e. Define destructive forces, which include weathering and erosion.		
f. Describe how landforms change as a result of destructive forces.		
g. Model how destructive forces change the surface of the Earth.		
h. Investigate and describe how the Earth's surface is constantly changing by weathering, erosion, deposition and human impact. (P)		
i. Identify technological advances developed as a result of major geological events such as earthquakes. (T)		
j. Infer how waves, currents, tides, and storms affect the geological features of the ocean shore zone (e.g., beaches, barrier islands, inlets, estuaries, and harbors, etc.)		

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k. Discuss safety concerns associated with major geological events. (P)		
2. The ocean floor is a part of the Earth's lithosphere. Lithospheric plates on the ocean floor move.		
a. Identify that the lithosphere includes the crust and parts of the upper mantle, and is broken into large sections known as plates.		
b. Recognize how plate movement produces volcanoes, earthquakes, and mountains on the ocean floor.		
c. Identify and create a model of the geological features of the ocean floor (continental shelf/rise/slope, mid-Atlantic ridges, rifts, and trenches).		
3. Water, which covers the majority of the Earth's surface, circulates through the crust, oceans, and atmosphere in what is known as the "water cycle."		
a. Diagram, label, and describe evaporation, condensation and precipitation as components of the water cycle.		Water Cycle
b. Explain how the water cycle affects the salinity of the ocean's water.		
4. Gravity is the force that explains the phenomena of the tides.		
a. Describe the relationship of the positions of the sun and the moon on the ocean's tides.		
IV. Physical Science Units of Study: Mixtures and Solutions Forces, Motion, and Design		
A. Properties of Matter 1. A mixture of substances often can be separated into the original substances using one or more of the characteristic properties.		
a. Distinguish between a mixture and a solution, recognizing that a solution is one type of a mixture.		
b. Create and classify mixtures made of two or more substances (solid-solid, solid-liquid, and liquid-liquid).		
c. Identify the potential dangers associated with using some mixtures and solutions, such as bleach, ammonia, abrasive powders, etc. (P)		

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d. Design an investigation to separate (filtration, sifting, magnetism, evaporation, and flotation) mixtures based on their different properties.		
e. Investigate the effect of temperature changes on the solubility of a substance.		
2. Solubility is one characteristic property of a substance.		
a. Distinguish various solids (e.g., cornstarch, sugar, salt, baking powder, and flour) based on observed solubility in water.		
b. Distinguish between solvent and solute.		
c. Investigate the effect of stirring, shaking, and crushing on the rate of dissolving of solutes.		
d. Explain the difference between diluted and concentrated solutions.		
e. Identify safety concerns on the labels of common household solutions. (P)		
f. Research and identify common pollutants, and their sources, and infer their impact as they relate to water quality, since water is the universal solvent. (P, N)		
B. Motions and Forces		
1. The motion of an object can be described by its position, direction of motion and speed.		
a. Investigate and describe the relative positions and movements of objects using points of reference.		
b. Record and graph in metric units the distance vs. time of moving objects.		
c. Investigate the variables that affect speed (e.g., ramp height/length/ surface, and mass of object).		
2. If more than one force acts on an object along a straight line, then the forces will reinforce or cancel one another.		
a. Distinguish among gravity, friction, magnetism, drag, lift, and thrust.		
b. Investigate and describe how forces affect the motion of objects.		

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c. Analyze a device with parts that move and determine the purpose of each moving part and the overall purpose of the device.		On the Move
d. Design and construct a device that moves. (T)		