

Mad Science
Programming
Correlated to the
Georgia State
Performance
Standards



	Kindergarten Science Curriculum	
	Co-Requisite - Characteristics of Science	
	<u>Habits of Mind</u>	
SKCS1.	<p>Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.</p> <p>a. Raise questions about the world around you and be willing to seek answers to some of the questions by making careful observations (5 senses) and trying things out.</p>	All Mad Science Programming
SKCS2.	<p>Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.</p> <p>a. Use whole numbers for counting, identifying, and describing things and experiences.</p> <p>b. Make quantitative estimates of nonstandard measurements (blocks, counters) and check by measuring.</p>	NA
SKCS3.	<p>Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities.</p> <p>a. Use ordinary hand tools and instruments to construct, measure (for example: balance scales to determine heavy/light, weather data, nonstandard units for length), and look at objects (for example: magnifiers to look at rocks and soils).</p> <p>b. Make something that can actually be used to perform a task, using paper, cardboard, wood, plastic, metal, or existing objects. (For example: paper plate day and night sky models)</p>	Lab Works (ASP) Super Sticky Stuff (ASP) Super Structures (ASP) Measure for Measure (K-2 WS)
SKCS4.	<p>Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.</p> <p>a. Use a model—such as a toy or a picture—to describe a feature of the primary thing.</p> <p>b. Describe changes in size, weight, color, or movement, and note which of their other qualities remains the same. (For example, playing “Follow the Leader” and noting the changes.)</p> <p>c. Compare very different sizes (large/small), ages (parent/baby), speeds (fast/slow), and weights (heavy/light) of both manmade and natural things.</p>	Junior Reactors (ASP) pH Phactor (ASP) Slime Time (ASP) Dry Ice Capades (ASP) Chem in a Flash (ASP) Che-mystery (ASP) Planets and Moons (NASA ASP) Sun and Stars (NASA ASP) Space Travel (NASA ASP) Super Structures (ASP) Earthworks (ASP) Life in the Sea (ASP)

SKCS5.	Students will communicate scientific ideas and activities clearly. a. Describe and compare things in terms of number, shape, texture, size, weight, color, and motion. b. Begin to draw pictures that portray features of the thing being described.	All Mad Science Programming
	<u>Nature of Science</u>	
SKCS6.	Students will understand the important features of the process of scientific inquiry. Students will apply the following to inquiry learning practices: a. In doing science, it is often helpful to work with a team and to share findings with others. b. Tools such as rulers, magnifiers, and balance scales often give more information about things than can be obtained by just observing things without help. c. Much can be learned about plants and animals by observing them closely, but care must be taken to know the needs of living things and how to provide for them (classroom pets).	All Mad Science Programming
	Co-Requisite - Content	
	<u>Earth Science</u>	
SKE1.	Students will describe time patterns (such as day to night and night to day) and objects (such as sun, moon, stars) in the day and night sky. a. Describe changes that occur in the sky during the day, as day turns into night, during the night, and as night turns into day. b. Classify objects according to those seen in the day sky and those seen in the night sky. c. Recognize that the Sun supplies heat and light to Earth.	Planets and Moons (NASA ASP) Space Phenomena (NASA ASP) Sun and Stars (NASA ASP)
SKE2.	Students will describe the physical attributes of rocks and soils. a. Use senses to observe and group rocks by physical attributes such as large/small, heavy/light, smooth/rough, dark/light, etc. b. Use senses to observe soils by physical attributes such as smell, texture, color, particle/grain size. c. Recognize earth materials— soil, rocks, water, air, etc.	Earthworks (ASP)

	<u>Physical Science</u>	
SKP1.	Students will describe objects in terms of the materials they are made of and their physical properties. a. Compare and sort materials of different composition (common materials include clay, cloth, paper, plastic, etc.). b. Use senses to classify common materials, such as buttons or swatches of cloth, according to their physical attributes (color, size, shape, weight, texture, buoyancy, flexibility).	Super Sticky Stuff (ASP) Glow Show (ASP) Taste Buds (K-2 WS)
SKP2.	Students will investigate different types of motion. a. Sort objects into categories according to their motion. (straight, zigzag, round and round, back and forth, fast and slow, and motionless) b. Push, pull, and roll common objects and describe their motions.	Energy Burst (ASP) Fun-damental Forces (ASP) Mad Science Machines (ASP) Moving Motion (ASP)
SKP3.	Students will observe and communicate effects of gravity on objects. a. Recognize that some things, such as airplanes and birds, are in the sky, but return to earth. b. Recognize that the sun, moon, and stars are in the sky, but don't come down. c. Explain why a book does not fall down if it is placed on a table, but will fall down if it is dropped.	Fun-damental Forces (ASP) Great Gravity (ASP) Moving Motion (ASP) Stunt Planes & Gliders (ASP)
	<u>Life Science</u>	
SKL1.	Students will sort living organisms and non-living materials into groups by observable physical attributes. a. Recognize the difference between living organisms and nonliving materials. b. Group animals according to their observable features such as appearance, size, motion, where it lives, etc. (Example: A green frog has four legs and hops. A rabbit also hops.) c. Group plants according to their observable features such as appearance, size, etc.	All About Animals (ASP) Bugs! (ASP) Life in the Sea (ASP)

SKL2.	<p>Students will compare the similarities and differences in groups of organisms.</p> <p>a. Explain the similarities and differences in animals. (color, size, appearance, etc.)</p> <p>b. Explain the similarities and differences in plants. (color, size, appearance, etc.)</p> <p>c. Recognize the similarities and differences between a parent and a baby.</p> <p>d. Match pictures of animal parents and their offspring explaining your reasoning. (Example: dog/puppy; cat/kitten; cow/calf; duck/ducklings, etc.)</p> <p>e. Recognize that you are similar and different from other students. (senses, appearance)</p>	<p>All About Animals (ASP)</p> <p>Bugs! (ASP)</p> <p>Life in the Sea (ASP)</p> <p>Dinosaurs (K-2 WS)</p>
	First Grade Science Curriculum	
	Co-Requisite - Characteristics of Science	
	<u>Habits of Mind</u>	
S1CS1.	<p>Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.</p> <p>a. Raise questions about the world around them and be willing to seek answers to some of the questions by making careful observations and measurements and trying to figure things out.</p>	All Mad Science Programming
S1CS2.	<p>Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.</p> <p>a. Use whole numbers in ordering, counting, identifying, measuring, and describing things and experiences.</p> <p>b. Readily give the sums and differences of single-digit numbers in ordinary, practical contexts and judge the reasonableness of the answer.</p> <p>c. Give rough estimates of numerical answers to problems before doing them formally.</p> <p>d. Make quantitative estimates of familiar lengths, weights, and time intervals, and check them by measuring.</p>	NA

S1CS3.	<p>Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities.</p> <p>a. Use ordinary hand tools and instruments to construct, measure, and look at objects.</p> <p>b. Make something that can actually be used to perform a task, using paper, cardboard, wood, plastic, metal, or existing objects.</p> <p>c. Identify and practice accepted safety procedures in manipulating science materials and equipment.</p>	<p>Lab Works (ASP)</p> <p>Super Sticky Stuff (ASP)</p> <p>Super Structures (ASP)</p> <p>Measure for Measure (K-2 WS)</p>
S1CS4.	<p>Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.</p> <p>a. Use a model—such as a toy or a picture—to describe a feature of the primary thing.</p> <p>b. Describe changes in the size, weight, color, or movement of things, and note which of their other qualities remain the same during a specific change.</p> <p>c. Compare very different sizes, weights, ages (baby/adult), and speeds (fast/slow) of both human made and natural things.</p>	<p>Junior Reactors (ASP)</p> <p>pH Phactor (ASP)</p> <p>Slime Time (ASP)</p> <p>Dry Ice Capades (ASP)</p> <p>Chem in a Flash (ASP)</p> <p>Che-mystery (ASP)</p> <p>Planets and Moons (NASA ASP)</p> <p>Sun and Stars (NASA ASP)</p> <p>Space Travel (NASA ASP)</p> <p>Super Structures (ASP)</p> <p>Earthworks (ASP)</p> <p>Life in the Sea (ASP)</p>
S1CS5.	<p>Students will communicate scientific ideas and activities clearly.</p> <p>a. Describe and compare things in terms of number, shape, texture, size, weight, color, and motion.</p> <p>b. Draw pictures (grade level appropriate) that correctly portray features of the thing being described.</p> <p>c. Use simple pictographs and bar graphs to communicate data.</p>	<p>All Mad Science Programming</p>
	The Nature of Science	
S1CS6.	<p>Students will be familiar with the character of scientific knowledge and how it is achieved.</p> <p>Students will recognize that:</p> <p>a. When a science investigation is done the way it was done before, we expect to get a similar result.</p> <p>b. Science involves collecting data and testing hypotheses</p> <p>c. Scientists often repeat experiments multiple times, and subject their ideas to criticism by other scientists who may disagree with them and do further tests.</p> <p>d. All different kinds of people can be and are scientists.</p>	<p>All Mad Science Programming</p>

S1CS7.	<p>Students will understand important features of the process of scientific inquiry.</p> <p>Students will apply the following to inquiry learning practices:</p> <p>a. Scientists use a common language with precise definitions of terms to make it easier to communicate their observations to each other.</p> <p>b. In doing science, it is often helpful to work as a team. All team members should reach individual conclusions and share their understandings with other members of the team in order to develop a consensus.</p> <p>c. Tools such as thermometers, rulers and balances often give more information about things than can be obtained by just observing things without help.</p> <p>d. Much can be learned about plants and animals by observing them closely, but care must be taken to know the needs of living things and how to provide for them. Advantage can be taken of classroom pets.</p>	All Mad Science Programming
	Co-Requisite - Content	
	<u>Earth Science</u>	
S1E1.	<p>Students will observe, measure, and communicate weather data to see patterns in weather and climate.</p> <p>a. Identify different types of weather and the characteristics of each type.</p> <p>b. Investigate weather by observing, measuring with simple weather instruments (thermometer, wind vane, rain gauge), and recording weather data (temperature, precipitation, sky conditions, and weather events) in a periodic journal or on a calendar seasonally.</p> <p>c. Correlate weather data (temperature, precipitation, sky conditions, and weather events) to seasonal changes.</p>	Walloping Weather (ASP)
S1E2.	<p>Students will observe and record changes in water as it relates to weather.</p> <p>a. Recognize changes in water when it freezes (ice) and when it melts (water).</p> <p>b. Identify forms of precipitation such as rain, snow, sleet, and hailstones as either solid (ice) or liquid (water).</p> <p>c. Determine that the weight of water before freezing, after freezing, and after melting stays the same.</p> <p>d. Determine that water in an open container disappears into the air over time, but water in a closed container does not.</p>	Dry Ice Capades (ASP)

	Physical Science	
S1P1.	Students will investigate light and sound. a. Recognize sources of light. b. Explain how shadows are made. c. Investigate how vibrations produce sound. d. Differentiate between various sounds in terms of (pitch) high or low and (volume) loud or soft. e. Identify emergency sounds and sounds that help us stay safe.	Laser Light (ASP) Lights, Color, Action (ASP) Sonic Sounds (ASP) Sound Basics (K-2 WS)
S1P2.	Students will demonstrate effects of magnets on other magnets and other objects. a. Demonstrate how magnets attract and repel. b. Identify common objects that are attracted to a magnet. c. Identify objects and materials (air, water, wood, paper, your hand, etc.) that do not block magnetic force.	Magnetic Magic (ASP) Magnificent Magnets (ASP)
	Life Science	
S1L1.	Students will investigate the characteristics and basic needs of plants and animals. a. Identify the basic needs of a plant. (1. Air , 2. Water , 3. Light, 4. Nutrients) b. Identify the basic needs of an animal. (1. Air , 2. Water , 3. Food, 4. Shelter) c. Identify the parts of a plant—root, stem, leaf, and flower. d. Compare and describe various animals—appearance, motion, growth, basic needs.	All About Animals (ASP) Life in the Sea (ASP)
	Second Grade Science Curriculum	
	Co-Requisite - Characteristics of Science	
	Habits of Mind	
S2CS1.	Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works. a. Raise questions about the world around them and be willing to seek answers to some of the questions by making careful observations and measurements and trying to figure things out.	All Mad Science Programming

S2CS2.	<p>Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.</p> <p>a. Use whole numbers in ordering, counting, identifying, measuring, and describing things and experiences.</p> <p>b. Readily give the sums and differences of single-digit numbers in ordinary, practical contexts and judge the reasonableness of the answer.</p> <p>c. Give rough estimates of numerical answers to problems before doing them formally.</p> <p>d. Make quantitative estimates of familiar lengths, weights, and time intervals, and check them by measuring.</p>	NA
S2CS3.	<p>Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities.</p> <p>a. Use ordinary hand tools and instruments to construct, measure, and look at objects.</p> <p>b. Assemble, describe, take apart, and reassemble constructions using interlocking blocks, erector sets and other things.</p> <p>c. Make something that can actually be used to perform a task, using paper, cardboard, wood, plastic, metal, or existing objects.</p>	<p>Lab Works (ASP)</p> <p>Super Sticky Stuff (ASP)</p> <p>Super Structures (ASP)</p> <p>Measure for Measure (K-2 WS)</p>
S2CS4.	<p>Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.</p> <p>a. Identify the parts of things, such as toys or tools, and identify what things can do when put together that they could not do otherwise.</p> <p>b. Use a model—such as a toy or a picture—to describe a feature of the primary thing.</p> <p>c. Describe changes in the size, weight, color, or movement of things, and note which of their other qualities remain the same during a specific change.</p> <p>d. Compare very different sizes, weights, ages (baby/adult), and speeds (fast/slow) of both human made and natural things.</p>	<p>Junior Reactors (ASP)</p> <p>pH Phactor (ASP)</p> <p>Slime Time (ASP)</p> <p>Dry Ice Capades (ASP)</p> <p>Chem in a Flash (ASP)</p> <p>Che-mystery (ASP)</p> <p>Planets and Moons (NASA ASP)</p> <p>Sun and Stars (NASA ASP)</p> <p>Space Travel (NASA ASP)</p> <p>Super Structures (ASP)</p> <p>Earthworks (ASP)</p> <p>Life in the Sea (ASP)</p>

S2CS5.	<p>Students will communicate scientific ideas and activities clearly.</p> <p>a. Describe and compare things in terms of number, shape, texture, size, weight, color, and motion.</p> <p>b. Draw pictures (grade level appropriate) that correctly portray features of the thing being described.</p> <p>c. Use simple pictographs and bar graphs to communicate data.</p>	All Mad Science Programming
	<u>The Nature of Science</u>	
S2CS6.	<p>Students will be familiar with the character of scientific knowledge and how it is achieved.</p> <p>Students will recognize that:</p> <p>a. When a science investigation is done the way it was done before, we expect to get a similar result.</p> <p>b. Science involves collecting data and testing hypotheses.</p> <p>c. Scientists often repeat experiments multiple times and subject their ideas to criticism by other scientists who may disagree with them and do further tests.</p> <p>d. All different kinds of people can be and are scientists.</p>	All Mad Science Programming
S2CS7.	<p>Students will understand important features of the process of scientific inquiry.</p> <p>Students will apply the following to inquiry learning practices:</p> <p>a. Scientists use a common language with precise definitions of terms to make it easier to communicate their observations to each other.</p> <p>b. In doing science, it is often helpful to work as a team. All team members should reach their own individual conclusions and share their understandings with other members of the team in order to develop a consensus.</p> <p>c. Tools such as thermometers, rulers and balances often give more information about things than can be obtained by just observing things without help.</p> <p>d. Much can be learned about plants and animals by observing them closely, but care must be taken to know the needs of living things and how to provide for them. Advantage can be taken of classroom pets.</p>	All Mad Science Programming

Co-Requisite - Content		
<u>Earth Science</u>		
S2E1.	Students will understand that stars have different sizes, brightness, and patterns. a. Describe the physical attributes of stars—size, brightness, and patterns.	Sun and Stars (NASA ASP)
S2E2.	Students will investigate the position of sun and moon to show patterns throughout the year. a. Investigate the position of the sun in relation to a fixed object on earth at various times of the day. b. Determine how the shadows change through the day by making a shadow stick or using a sundial. c. Relate the length of the day and night to the change in seasons (for example: Days are longer than the night in the summer.). d. Use observations and charts to record the shape of the moon for a period of time.	Planets and Moons (NASA ASP)
S2E3.	Students will observe and record changes in their surroundings and infer the causes of the changes. a. Recognize effects that occur in a specific area caused by weather, plants, animals, and/or people.	NA
<u>Physical Science</u>		
S2P1.	Students will investigate the properties of matter and changes that occur in objects. a. Identify the three common states of matter as solid, liquid, or gas. b. Investigate changes in objects by tearing, dissolving, melting, squeezing, etc.	Che-mystery (ASP) Dry Ice Capades (ASP) Harnessing Heat (ASP)
S2P2.	Students will identify sources of energy and how the energy is used. a. Identify sources of light energy, heat energy, and energy of motion. b. Describe how light, heat, and motion energy are used.	Energy Burst (ASP) Harnessing Heat (ASP) Lights, Color, Action (ASP) Moving Motion (ASP)
S2P3.	Students will demonstrate changes in speed and direction using pushes and pulls. a. Demonstrate how pushing and pulling an object affects the motion of the object. b. Demonstrate the effects of changes of speed on an object.	Energy Burst (ASP) Fun-damental Forces (ASP) Mad Science Machines (ASP) Moving Motion (ASP)

	<u>Life Science</u>	
S2L1.	<p>Students will investigate the life cycles of different living organisms.</p> <p>a. Determine the sequence of the life cycle of common animals in your area: a mammal such as a cat or dog or classroom pet, a bird such as a chicken, an amphibian such as a frog, and an insect such as a butterfly.</p> <p>b. Relate seasonal changes to observations of how a tree changes throughout a school year.</p> <p>c. Investigate the life cycle of a plant by growing a plant from a seed and by recording changes over a period of time.</p> <p>d. Identify fungi (mushroom) as living organisms.</p>	NA
	Third Grade Science Curriculum	
	Co-Requisite - Characteristics of Science	
	<u>Habits of Mind</u>	
S3CS1.	<p>Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.</p> <p>a. Keep records of investigations and observations and do not alter the records later.</p> <p>b. Offer reasons for findings and consider reasons suggested by others.</p> <p>c. Take responsibility for understanding the importance of being safety conscious.</p>	All Mad Science Programming
S3CS2.	<p>Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.</p> <p>a. Add, subtract, multiply, and divide whole numbers mentally, on paper, and with a calculator.</p> <p>b. Use commonly encountered fractions – halves, thirds, and fourths (but not sixths, sevenths, and so on) – in scientific calculations.</p> <p>c. Judge whether measurements and computations of quantities, such as length, weight, or time, are reasonable answers to scientific problems by comparing them to typical values.</p>	NA

S3CS3.	<p>Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities utilizing safe laboratory procedures.</p> <p>a. Choose appropriate common materials for making simple mechanical constructions and repairing things.</p> <p>b. Use computers, cameras and recording devices for capturing information.</p> <p>c. Identify and practice accepted safety procedures in manipulating science materials and equipment.</p>	<p>Lab Works (ASP)</p> <p>Super Sticky Stuff (ASP)</p> <p>Super Structures (ASP)</p> <p>Electricity (3-6 WS)</p>
S3CS4.	<p>Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.</p> <p>a. Observe and describe how parts influence one another in things with many parts.</p> <p>b. Use geometric figures, number sequences, graphs, diagrams, sketches, number lines, maps, and stories to represent corresponding features of objects, events, and processes in the real world.</p> <p>c. Identify ways in which the representations do not match their original counterparts.</p>	<p>Junior Reactors (ASP)</p> <p>pH Phactor (ASP)</p> <p>Slime Time (ASP)</p> <p>Dry Ice Capades (ASP)</p> <p>Chem in a Flash (ASP)</p> <p>Che-mystery (ASP)</p> <p>Planets and Moons (NASA ASP)</p> <p>Sun and Stars (NASA ASP)</p> <p>Space Travel (NASA ASP)</p> <p>Super Structures (ASP)</p> <p>Earthworks (ASP)</p> <p>Life in the Sea (ASP)</p> <p>Electricity (3-6 WS)</p>
S3CS5.	<p>Students will communicate scientific ideas and activities clearly.</p> <p>a. Write instructions that others can follow in carrying out a scientific procedure.</p> <p>b. Make sketches to aid in explaining scientific procedures or ideas.</p> <p>c. Use numerical data in describing and comparing objects and events.</p> <p>d. Locate scientific information in reference books, back issues of newspapers and magazines, CD-ROMs, and computer databases.</p>	<p>Invention-ation (3-6 WS)</p>
S3CS6.	<p>Students will question scientific claims and arguments effectively.</p> <p>a. Support statements with facts found in books, articles, and databases, and identify the sources used.</p>	<p>NA</p>

	The Nature of Science	
S3CS7.	<p>Students will be familiar with the character of scientific knowledge and how it is achieved.</p> <p>Students will recognize that:</p> <p>a. Similar scientific investigations seldom produce exactly the same results, which may differ due to unexpected differences in whatever is being investigated, unrecognized differences in the methods or circumstances of the investigation, or observational uncertainties.</p> <p>b. Some scientific knowledge is very old and yet is still applicable today.</p>	All Mad Science Programming
S3CS8.	<p>Students will understand important features of the process of scientific inquiry.</p> <p>Students will apply the following to inquiry learning practices:</p> <p>a. Scientific investigations may take many different forms, including observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments.</p> <p>b. Clear and active communication is an essential part of doing science. It enables scientists to inform others about their work, expose their ideas to criticism by other scientists, and stay informed about scientific discoveries around the world.</p> <p>c. Scientists use technology to increase their power to observe things and to measure and compare things accurately.</p> <p>d. Science involves many different kinds of work and engages men and women of all ages and backgrounds.</p>	All Mad Science Programming
	Co-Requisite - Content	
	Earth Science	
S3E1.	<p>Students will investigate the physical attributes of rocks and soils.</p> <p>a. Explain the difference between a rock and a mineral.</p> <p>b. Recognize the physical attributes of rocks and minerals using observation (shape, color, texture), measurement, and simple tests (hardness).</p> <p>c. Use observation to compare the similarities and differences of texture, particle size, and color in top soils (such as clay, loam or potting soil, and sand).</p> <p>d. Determine how water and wind can change rocks and soil over time using observation and research..</p>	<p>Earthworks (ASP)</p> <p>Mineral Mania (3-6 WS)</p>

S3E2.	Students will investigate fossils as evidence of organisms that lived long ago. a. Investigate fossils by observing authentic fossils or models of fossils or view information resources about fossils as evidence of organisms that lived long ago. b. Describe how a fossil is formed.	NA
	<u>Physical Science</u>	
S3P1.	Students will investigate how heat is produced and the effects of heating and cooling, and will understand a change in temperature indicates a change in heat. a. Categorize ways to produce heat energy such as burning, rubbing (friction), and mixing one thing with another. b. Investigate how insulation affects heating and cooling. c. Investigate the transfer of heat energy from the sun to various materials. d. Use thermometers to measure the changes in temperatures of water samples (hot, warm, cold) over time.	Harnessing Heat (ASP)
S3P2.	Students will investigate magnets and how they affect other magnets and common objects. a. Investigate to find common objects that are attracted to magnets. b. Investigate how magnets attract and repel each other.	Magnetic Magic (ASP) Mischievous Magnets (3-6 WS)
	<u>Life Science</u>	
S3L1.	Students will investigate the habitats of different organisms and the dependence of organisms on their habitat. a. Differentiate between habitats of Georgia (mountains, marsh/swamp, coast, Piedmont, Atlantic Ocean) and the organisms that live there. b. Identify features of green plants that allow them to live and thrive in different regions of Georgia. c. Identify features of animals that allow them to live and thrive in different regions of Georgia. d. Explain what will happen to an organism if the habitat is changed.	All About Animals (ASP) Life in the Sea (ASP) Ecosystem Explorations (3-6 WS) Photosynthesis (3-6 WS)

S3L2.	Students will recognize the effects of pollution and humans on the environment. a. Explain the effects of pollution (such as littering) to the habitats of plants and animals. b. Identify ways to protect the environment. (Conservation of resources, recycling of materials)	Ecosystem Explorations (3-6 WS) The Dirt on Garbage (K-6 WS)
	Fourth Grade Science Curriculum	
	Co-Requisite - Characteristics of Science	
	<u>Habits of the Mind</u>	
S4CS1.	Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works. a. Keep records of investigations and observations and do not alter the records later. b. Carefully distinguish observations from ideas and speculation about those observations. c. Offer reasons for findings and consider reasons suggested by others. d. Take responsibility for understanding the importance of being safety conscious.	All Mad Science Programming
S4CS2.	Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations. a. Add, subtract, multiply, and divide whole numbers mentally, on paper, and with a calculator. b. Use fractions and decimals, and translate between decimals and commonly encountered fractions – halves, thirds, fourths, fifths, tenths, and hundredths (but not sixths, sevenths, and so on) – in scientific calculations. c. Judge whether measurements and computations of quantities, such as length, area, volume, weight, or time, are reasonable answers to scientific problems by comparing them to typical values.	NA

S4CS3.	<p>Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities utilizing safe laboratory procedures.</p> <p>a. Choose appropriate common materials for making simple mechanical constructions and repairing things.</p> <p>b. Measure and mix dry and liquid materials in prescribed amounts, exercising reasonable safety.</p> <p>c. Use computers, cameras and recording devices for capturing information.</p> <p>d. Identify and practice accepted safety procedures in manipulating science materials and equipment.</p>	<p>Lab Works (ASP)</p> <p>Super Sticky Stuff (ASP)</p> <p>Super Structures (ASP)</p> <p>Electricity (3-6 WS)</p>
S4CS4.	<p>Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.</p> <p>a. Observe and describe how parts influence one another in things with many parts.</p> <p>b. Use geometric figures, number sequences, graphs, diagrams, sketches, number lines, maps, and stories to represent corresponding features of objects, events, and processes in the real world. Identify ways in which the representations do not match their original counterparts.</p> <p>c. Identify patterns of change in things—such as steady, repetitive, or irregular change—using records, tables, or graphs of measurements where appropriate.</p>	<p>Junior Reactors (ASP)</p> <p>pH Phactor (ASP)</p> <p>Slime Time (ASP)</p> <p>Dry Ice Capades (ASP)</p> <p>Chem in a Flash (ASP)</p> <p>Che-mystery (ASP)</p> <p>Planets and Moons (NASA ASP)</p> <p>Sun and Stars (NASA ASP)</p> <p>Space Travel (NASA ASP)</p> <p>Super Structures (ASP)</p> <p>Earthworks (ASP)</p> <p>Life in the Sea (ASP)</p> <p>Electricity (3-6 WS)</p>
S4CS5.	<p>Students will communicate scientific ideas and activities clearly.</p> <p>a. Write instructions that others can follow in carrying out a scientific procedure.</p> <p>b. Make sketches to aid in explaining scientific procedures or ideas.</p> <p>c. Use numerical data in describing and comparing objects and events.</p> <p>d. Locate scientific information in reference books, back issues of newspapers and magazines, CD-ROMs, and computer databases.</p>	<p>Invention-ation (3-6 WS)</p>
S4CS6.	<p>Students will question scientific claims and arguments effectively.</p> <p>a. Support statements with facts found in books, articles, and databases, and identify the sources used.</p>	<p>NA</p>

	The Nature of Science	
S4CS7.	<p>Students will be familiar with the character of scientific knowledge and how it is achieved.</p> <p>Students will recognize that:</p> <p>a. Similar scientific investigations seldom produce exactly the same results, which may differ due to unexpected differences in whatever is being investigated, unrecognized differences in the methods or circumstances of the investigation, or observational uncertainties.</p> <p>b. Some scientific knowledge is very old and yet is still applicable today.</p>	All Mad Science Programming
S4CS8.	<p>Students will understand important features of the process of scientific inquiry.</p> <p>Students will apply the following to inquiry learning practices:</p> <p>a. Scientific investigations may take many different forms, including observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments.</p> <p>b. Clear and active communication is an essential part of doing science. It enables scientists to inform others about their work, expose their ideas to criticism by other scientists, and stay informed about scientific discoveries around the world.</p> <p>c. Scientists use technology to increase their power to observe things and to measure and compare things accurately.</p> <p>d. Science involves many different kinds of work and engages men and women of all ages and backgrounds.</p>	All Mad Science Programming
	Co-Requisite - Content	
	Earth Science	
S4E1.	<p>Students will compare and contrast the physical attributes of stars, star patterns, and planets.</p> <p>a. Recognize the physical attributes of stars in the night sky such as number, size, color and patterns.</p> <p>b. Compare the similarities and differences of planets to the stars in appearance, position, and number in the night sky.</p> <p>c. Explain why the pattern of stars in a constellation stays the same, but a planet can be seen in different locations at different times.</p> <p>d. Identify how technology is used to observe distant objects in the sky.</p>	<p>Planets and Moons (NASA ASP)</p> <p>Sun and Stars (NASA ASP)</p>

S4E2.	<p>Students will model the position and motion of the earth in the solar system and will explain the role of relative position and motion in determining sequence of the phases of the moon.</p> <ol style="list-style-type: none"> Explain the day/night cycle of the earth using a model. Explain the sequence of the phases of the moon. Demonstrate the revolution of the earth around the sun and the earth's tilt to explain the seasonal changes. Demonstrate the relative size and order from the sun of the planets in the solar system. 	Planets and Moons (NASA ASP)
S4E3.	<p>Students will differentiate between the states of water and how they relate to the water cycle and weather.</p> <ol style="list-style-type: none"> Demonstrate how water changes states from solid (ice) to liquid (water) to gas (water vapor/steam) and changes from gas to liquid to solid. Identify the temperatures at which water becomes a solid and at which water becomes a gas. Investigate how clouds are formed. Explain the water cycle (evaporation, condensation, and precipitation). Investigate different forms of precipitation and sky conditions. (rain, snow, sleet, hail, clouds, and fog). 	Dry Ice Capades (ASP)
S4E4.	<p>Students will analyze weather charts/maps and collect weather data to predict weather events and infer patterns and seasonal changes.</p> <ol style="list-style-type: none"> Identify weather instruments and explain how each is used in gathering weather data and making forecasts (thermometer, rain gauge, barometer, wind vane, anemometer). Using a weather map, identify the fronts, temperature, and precipitation and use the information to interpret the weather conditions. Use observations and records of weather conditions to predict weather patterns throughout the year. Differentiate between weather and climate. 	Walloping Weather (ASP)

	<u>Physical Science</u>	
S4P1.	Students will investigate the nature of light using tools such as mirrors, lenses, and prisms. a. Identify materials that are transparent, opaque, and translucent. b. Investigate the reflection of light using a mirror and a light source. c. Identify the physical attributes of a convex lens, a concave lens, and a prism and where each is used.	Laser Light (ASP) Lights, Color, Action (ASP)
S4P2.	Students will demonstrate how sound is produced by vibrating objects and how sound can be varied by changing the rate of vibration. a. Investigate how sound is produced. b. Recognize the conditions that cause pitch to vary.	Sonic Sounds (ASP) Good Vibrations (3-6 WS)
S4P3.	Students will demonstrate the relationship between the application of a force and the resulting change in position and motion on an object. a. Identify simple machines and explain their uses (lever, pulley, wedge, inclined plane, screw, wheel and axle). b. Using different size objects, observe how force affects speed and motion. c. Explain what happens to the speed or direction of an object when a greater force than the initial one is applied. d. Demonstrate the effect of gravitational force on the motion of an object.	Energy Burst (ASP) Fun-damental Force (ASP) Great Gravity (ASP) Mad Science Machines (ASP) Moving Motion (ASP) Stunt Planes and Gliders (ASP) Rocket Science (NASA ASP) Space Travel (NASA ASP)
	<u>Life Science</u>	
S4L1.	Students will describe the roles of organisms and the flow of energy within an ecosystem. a. Identify the roles of producers, consumers, and decomposers in a community. b. Demonstrate the flow of energy through a food web/food chain beginning with sunlight and including producers, consumers, and decomposers. c. Predict how changes in the environment would affect a community (ecosystem) of organisms. d. Predict effects on a population if some of the plants or animals in the community are scarce or if there are too many.	Ecosystem Explorations (3-6 WS)

S4L2.	<p>Students will identify factors that affect the survival or extinction of organisms such as adaptation, variation of behaviors (hibernation), and external features (camouflage and protection).</p> <p>a. Identify external features of organisms that allow them to survive or reproduce better than organisms that do not have these features (for example: camouflage, use of hibernation, protection, etc.).</p> <p>b. Identify factors that may have led to the extinction of some organisms.</p>	<p>All About Animals (ASP) Bugs! (ASP) Life in the Sea (ASP) Ecosystem Explorations (3-6 WS)</p>
	Fifth Grade Science Curriculum	
	Co-Requisite - Characteristics of Science	
	<u>Habits of the Mind</u>	
S5CS1.	<p>Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.</p> <p>a. Keep records of investigations and observations and do not alter the records later.</p> <p>b. Carefully distinguish observations from ideas and speculation about those observations.</p> <p>c. Offer reasons for findings and consider reasons suggested by others.</p> <p>d. Take responsibility for understanding the importance of being safety conscious.</p>	All Mad Science Programming
S5CS2.	<p>Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.</p> <p>a. Add, subtract, multiply, and divide whole numbers mentally, on paper, and with a calculator.</p> <p>b. Use fractions and decimals, and translate between decimals and commonly encountered fractions – halves, thirds, fourths, fifths, tenths, and hundredths (but not sixths, sevenths, and so on) – in scientific calculations.</p> <p>c. Judge whether measurements and computations of quantities, such as length, area, volume, weight, or time, are reasonable answers to scientific problems by comparing them to typical values.</p>	NA

S5CS3.	<p>Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities.</p> <p>a. Choose appropriate common materials for making simple mechanical constructions and repairing things.</p> <p>b. Measure and mix dry and liquid materials in prescribed amounts, exercising reasonable safety.</p> <p>c. Use computers, cameras and recording devices for capturing information.</p> <p>d. Identify and practice accepted safety procedures in manipulating science materials and equipment.</p>	<p>Lab Works (ASP) Super Sticky Stuff (ASP) Super Structures (ASP) Electricity (3-6 WS)</p>
S5CS4.	<p>Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.</p> <p>a. Observe and describe how parts influence one another in things with many parts.</p> <p>b. Use geometric figures, number sequences, graphs, diagrams, sketches, number lines, maps, and stories to represent corresponding features of objects, events, and processes in the real world. Identify ways in which the representations do not match their original counterparts.</p> <p>c. Identify patterns of change in things—such as steady, repetitive, or irregular change—using records, tables, or graphs of measurements where appropriate.</p> <p>d. Identify the biggest and the smallest possible values of something.</p>	<p>Junior Reactors (ASP) pH Phactor (ASP) Slime Time (ASP) Dry Ice Capades (ASP) Chem in a Flash (ASP) Che-mystery (ASP) Planets and Moons (NASA ASP) Sun and Stars (NASA ASP) Space Travel (NASA ASP) Super Structures (ASP) Earthworks (ASP)</p>
S5CS5.	<p>Students will communicate scientific ideas and activities clearly.</p> <p>a. Write instructions that others can follow in carrying out a scientific procedure.</p> <p>b. Make sketches to aid in explaining scientific procedures or ideas.</p> <p>c. Use numerical data in describing and comparing objects and events.</p> <p>d. Locate scientific information in reference books, back issues of newspapers and magazines, CD-ROMs, and computer databases.</p>	<p>Invention-ation (3-6 WS)</p>

S5CS6.	<p>Students will question scientific claims and arguments effectively.</p> <p>a. Support statements with facts found in books, articles, and databases, and identify the sources used.</p> <p>b. Identify when comparisons might not be fair because some conditions are different.</p>	NA
	<u>The Nature of Science</u>	
S5CS7.	<p>Students will be familiar with the character of scientific knowledge and how it is achieved.</p> <p>Students will recognize that:</p> <p>a. Similar scientific investigations seldom produce exactly the same results, which may differ due to unexpected differences in whatever is being investigated, unrecognized differences in the methods or circumstances of the investigation, or observational uncertainties.</p> <p>b. Some scientific knowledge is very old and yet is still applicable today.</p>	All Mad Science Programming
S5CS8.	<p>Students will understand important features of the process of scientific inquiry.</p> <p>Students will apply the following to inquiry learning practices:</p> <p>a. Scientific investigations may take many different forms, including observing what things are like or what is happening somewhere, collecting specimens for analysis, and doing experiments.</p> <p>b. Clear and active communication is an essential part of doing science. It enables scientists to inform others about their work, expose their ideas to criticism by other scientists, and stay informed about scientific discoveries around the world.</p> <p>c. Scientists use technology to increase their power to observe things and to measure and compare things accurately.</p> <p>d. Science involves many different kinds of work and engages men and women of all ages and backgrounds.</p>	All Mad Science Programming

Co-Requisite - Content		
<u>Earth Science</u>		
S5E1.	<p>Students will identify surface features of the Earth caused by constructive and destructive processes.</p> <p>a. Identify surface features caused by constructive processes. (Deposition [Deltas, sand dunes, etc.], earthquakes, volcanoes, faults)</p> <p>b. Identify and find examples of surface features caused by destructive processes. (Erosion [water—rivers and oceans, wind], weathering, impact of organisms, earthquake, volcano)</p> <p>c. Relate the role of technology and human intervention in the control of constructive and destructive processes. (Examples include, but are not limited to seismological studies, flood control, [dams, levees, storm drain management, etc.], beach reclamation [Georgia coastal islands])</p>	Earthworks (ASP)
<u>Physical Science</u>		
S5P1.	<p>Students will verify that an object is the sum of its parts.</p> <p>a. Demonstrate that the mass of an object is equal to the sum of its parts by manipulating and measuring different objects made of various parts.</p> <p>b. Investigate how common items have parts that are too small to be seen without magnification.</p>	NA
S5P2.	<p>Students will explain the difference between a physical change and a chemical change.</p> <p>a. Investigate physical changes by separating mixtures and manipulating (cutting, tearing, folding) paper to demonstrate examples of physical change.</p> <p>b. Recognize that the changes in state of water (water vapor/steam, liquid, ice) are due to temperature differences and are examples of physical change.</p> <p>c. Investigate the properties of a substance before, during, and after a chemical reaction to find evidence of change.</p>	Che-mystery (ASP) Junior Reactors (ASP) Matter of Fact (3-6 WS)
S5P3.	<p>Students will investigate the electricity, magnetism, and their relationship.</p> <p>a. Investigate static electricity.</p> <p>b. Determine the necessary components for completing an electric circuit.</p> <p>c. Investigate common materials to determine if they are insulators or conductors of electricity.</p> <p>d. Compare a bar magnet to an electromagnet.</p>	

	<u>Life Science</u>	
S5L1.	<p>Students will classify organisms into groups and relate how they determined the groups with how and why scientists use classification.</p> <p>a. Demonstrate how animals are sorted into groups (vertebrate and invertebrate) and how vertebrates are sorted into groups (fish, amphibian, reptile, bird, and mammal).</p> <p>b. Demonstrate how plants are sorted into groups.</p>	All About Animals (ASP)
S5L2.	<p>Students will recognize that offspring can resemble parents in inherited traits and learned behaviors.</p> <p>a. Compare and contrast the characteristics of learned behaviors and of inherited traits.</p> <p>b. Discuss what a gene is and the role genes play in the transfer of traits.</p>	NA
S5L3.	<p>Students will diagram and label parts of various cells (plant, animal, single-celled, multi-celled).</p> <p>a. Use magnifiers such as microscopes or hand lenses to observe cells and their structure.</p> <p>b. Identify parts of a plant cell (membrane, wall, cytoplasm, nucleus, chloroplasts) and of an animal cell (membrane, cytoplasm, and nucleus) and determine the function of the parts.</p> <p>c. Explain how cells in multi-celled organisms are similar and different in structure and function to single-celled organisms.</p>	Cells (3-6 WS)
S5L4.	<p>Students will relate how microorganisms benefit or harm larger organisms.</p> <p>a. Identify beneficial microorganisms and explain why they are beneficial.</p> <p>b. Identify harmful microorganisms and explain why they are harmful.</p>	NA

Sixth Grade Science Curriculum		
Co-Requisite – Characteristics of Science		
<u>Habits of Mind</u>		
S6CS1.	<p>Students will explore the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.</p> <p>a. Understand the importance of—and keep—honest, clear, and accurate records in science.</p> <p>b. Understand that hypotheses are valuable if they lead to fruitful investigations, even if the hypotheses turn out not to be completely accurate descriptions.</p>	All Mad Science Programming
S6CS2.	<p>Students will use standard safety practices for all classroom laboratory and field investigations.</p> <p>a. Follow correct procedures for use of scientific apparatus.</p> <p>b. Demonstrate appropriate techniques in all laboratory situations.</p> <p>c. Follow correct protocol for identifying and reporting safety problems and violations.</p>	Lab Works (ASP)
S6CS3.	<p>Students will use computation and estimation skills necessary for analyzing data and following scientific explanations.</p> <p>a. Analyze scientific data by using, interpreting, and comparing numbers in several equivalent forms, such as integers and decimals.</p> <p>b. Use metric input units (such as seconds, meters, or grams per milliliter) of scientific calculations to determine the proper unit for expressing the answer.</p> <p>c. Address the relationship between accuracy and precision and the importance of each.</p> <p>d. Draw conclusions based on analyzed data.</p>	NA

S6CS4.	<p>Students will use tools and instruments for observing, measuring, and manipulating equipment and materials in scientific activities.</p> <p>a. Use appropriate technology to store and retrieve scientific information in topical, alphabetical, numerical, and keyword files, and create simple files.</p> <p>b. Estimate the effect of making a change in one part of a system on the system as a whole.</p> <p>c. Read analog and digital meters on instruments used to make direct measurements of length, volume, weight, elapsed time, rates, and temperature, and choose appropriate units for reporting various quantities.</p>	Turn Up the Volume (3-6 WS)
S6CS5.	<p>Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.</p> <p>a. Observe and explain how parts are related to other parts in systems such as weather systems, solar systems, and ocean systems including how the output from one part of a system (in the form of material, energy, or information) can become the input to other parts. (For example: El Nino’s effect on weather)</p> <p>b. Identify several different models (such as physical replicas, pictures, and analogies) that could be used to represent the same thing, and evaluate their usefulness, taking into account such things as the model’s purpose and complexity.</p>	<p>Life in the Sea (ASP)</p> <p>Planets and Moons (NASA ASP)</p> <p>Wacky Waves (ASP)</p> <p>Walloping Weather (ASP)</p> <p>Black and Blue Oceans (3-6 WS)</p> <p>Ecosystem Explorations (3-6 WS)</p>
S6CS6.	<p>Students will communicate scientific ideas and activities clearly.</p> <p>a. Write clear, step-by-step instructions for conducting scientific investigations, operating a piece of equipment, or following a procedure.</p> <p>b. Understand and describe how writing for scientific purposes is different than writing for literary purposes.</p> <p>c. Organize scientific information using appropriate tables, charts, and graphs, and identify relationships they reveal.</p>	Invention-ation (3-6 WS)

S6CS7.	<p>Students will question scientific claims and arguments effectively.</p> <p>a. Question claims based on vague attributions (such as “Leading doctors say...”) or on statements made by people outside the area of their particular expertise.</p> <p>b. Recognize that there may be more than one way to interpret a given set of findings.</p>	NA
	<u>The Nature of Science</u>	
S6CS8.	<p>Students will investigate the characteristics of scientific knowledge and how it is achieved.</p> <p>Students will apply the following to scientific concepts:</p> <p>a. When similar investigations give different results, the scientific challenge is to judge whether the differences are trivial or significant, which often requires further study. Even with similar results, scientists may wait until an investigation has been repeated many times before accepting the results as meaningful.</p> <p>b. When new experimental results are inconsistent with an existing, well-established theory, scientists may require further experimentation to decide whether the results are flawed or the theory requires modification.</p> <p>c. As prevailing theories are challenged by new information, scientific knowledge may change and grow.</p>	NA

S6CS9.	<p>Students will investigate the features of the process of scientific inquiry.</p> <p>Students will apply the following to inquiry learning practices:</p> <p>a. Scientific investigations are conducted for different reasons. They usually involve collecting evidence, reasoning, devising hypotheses, and formulating explanations.</p> <p>b. Scientists often collaborate to design research. To prevent bias, scientists conduct independent studies of the same questions.</p> <p>c. Accurate record keeping, data sharing, and replication of results are essential for maintaining an investigator's credibility with other scientists and society.</p> <p>d. Scientists use technology and mathematics to enhance the process of scientific inquiry.</p> <p>e. The ethics of science require that special care must be taken and used for human subjects and animals in scientific research. Scientists must adhere to the appropriate rules and guidelines when conducting research.</p>	NA
S6CS10.	<p>Students will enhance reading in all curriculum areas by:</p> <p>a. Reading in All Curriculum Areas: Read a minimum of 25 grade-level appropriate books per year from a variety of subject disciplines and participate in discussions related to curricular learning in all areas.</p> <p>Read both informational and fictional texts in a variety of genres and modes of discourse. Read technical texts related to various subject areas</p> <p>b. Discussing books: Discuss messages and themes from books in all subject areas. Respond to a variety of texts in multiple modes of discourse. Relate messages and themes from one subject area to messages and themes in another area. Evaluate the merit of texts in every subject discipline. Examine author's purpose in writing. Recognize the features of disciplinary texts.</p> <p>c. Building vocabulary knowledge: Demonstrate an understanding of contextual vocabulary in various subjects. Use content vocabulary in writing and speaking. Explore understanding of new words found in subject area texts.</p> <p>d. Establishing context: Explore life experiences related to subject area content. Discuss in both writing and speaking how certain words are subject area related. Determine strategies for finding content and contextual meaning for unknown words.</p>	NA

	Co-Requisite-Content	
S6E1.	<p>Students will explore current scientific views of the universe and how those views evolved.</p> <p>a. Relate the Nature of Science to the progression of basic historical scientific models (geocentric, heliocentric) as they describe our solar system, and the Big Bang as it describes the formation of the universe.</p> <p>b. Describe the position of the solar system in the Milky Way galaxy and the universe.</p> <p>c. Compare and contrast the planets in terms of (size relative to the earth, surface and atmospheric features, relative distance from the sun, ability to support life)</p> <p>d. Explain the motion of objects in the day/night sky in terms of relative position.</p> <p>e. Explain that gravity is the force that governs the motion in the solar system.</p> <p>f. Describe the characteristics of comets, asteroids, and meteors.</p>	<p>Atmosphere and Beyond (NASA ASP)</p> <p>Planets and Moons (NASA ASP)</p> <p>Space Phenomena (NASA ASP)</p> <p>Sun and Stars (NASA ASP)</p>
S6E2.	<p>Students will understand the effects of the relative positions of the earth, moon and sun.</p> <p>a. Demonstrate the phases of the moon by showing the alignment of the earth, moon, and sun.</p> <p>b. Explain the alignment of the earth, moon, and sun during solar and lunar eclipses.</p> <p>c. Relate the tilt of the earth to the distribution of sunlight throughout the year and its effect on climate.</p>	<p>Planets and Moons (NASA ASP)</p>
S6E3.	<p>Students will recognize the significant role of water in earth processes.</p> <p>a. Explain that a large portion of the Earth's surface is water, consisting of oceans, rivers, lakes, underground water, and ice.</p> <p>b. Relate various atmospheric conditions to stages of the water cycle.</p> <p>c. Describe the composition, location, and subsurface topography of the world's oceans.</p> <p>d. Explain the causes of waves, currents, and tides.</p>	<p>Wacky Waves (ASP)</p> <p>Black and Blue Oceans (3-6 WS)</p> <p>Ecosystem Explorations (3-6 WS)</p>

S6E4.	<p>Students will understand how the distribution of land and oceans affects climate and weather.</p> <p>a. Demonstrate that land and water absorb and lose heat at different rates and explain the resulting effects on weather patterns.</p> <p>b. Relate unequal heating of land and water surfaces to form large global wind systems and weather events such as tornados and thunderstorms. c. Relate how moisture evaporating from the oceans affects the weather patterns and weather events such as hurricanes.</p>	NA
S6E5.	<p>Students will investigate the scientific view of how the earth's surface is formed.</p> <p>a. Compare and contrast the Earth's crust, mantle, and core including temperature, density, and composition.</p> <p>b. Investigate the contribution of minerals to rock composition.</p> <p>c. Classify rocks by their process of formation.</p> <p>d. Describe processes that change rocks and the surface of the earth.</p> <p>e. Recognize that lithospheric plates constantly move and cause major geological events on the earth's surface.</p> <p>f. Explain the effects of physical processes (plate tectonics, erosion, deposition, volcanic eruption, gravity) on geological features including oceans (composition, currents, and tides).</p> <p>g. Describe how fossils show evidence of the changing surface and climate of the Earth.</p> <p>h. Describe soil as consisting of weathered rocks and decomposed organic material.</p> <p>i. Explain the effects of human activity on the erosion of the earth's surface.</p> <p>j. Describe methods for conserving natural resources such as water, soil, and air.</p>	<p>Earthworks (ASP) Mineral Mania (3-6 WS)</p>
S6E6.	<p>Students will describe various sources of energy and with their uses and conservation.</p> <p>a. Explain the role of the sun as the major source of energy and its relationship to wind and water energy.</p> <p>b. Identify renewable and nonrenewable resources.</p>	NA