



Mad Science Programming
Correlated with
Maine Learning Results

A1 Systems

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students recognize that parts work together, and make up whole man-made and natural objects.</p> <p>a. Explain that most man-made and natural objects are made of parts.</p> <p>b. Explain that when put together, parts can do things they could not do separately.</p>	<p>Bugs – ASP</p> <p>Mad Science Machines – ASP</p> <p>Science of Toys – ASP</p> <p>Super Sticky Stuff – ASP</p> <p>Slime Time – ASP</p> <p>Junior Reactors – ASP</p> <p>Radical Robots – ASP</p> <p>Slippery Science – WS K-2</p> <p>Body Basics – WS K-2</p>
3-5	<p>Students explain interactions between parts that make up whole man-made and natural things.</p> <p>a. Give examples that show how individual parts of organisms, ecosystems, or man-made structures can influence one another.</p> <p>b. Explain ways that things including organisms, ecosystems, or manmade structures may not work as well (or at ALL) if a part is missing, broken, worn out, mismatched, or misconnected</p>	<p>Super Structures – ASP</p> <p>Mad Science Machines – ASP</p> <p>Life in the Sea- ASP</p> <p>Radical Robots – ASP</p> <p>Ecosystem Explorations – WS 3-6</p> <p>Photosynthesis – WS 3-6</p>
6-8	<p>Students describe and apply principles of systems in man-made things, natural things, and processes.</p> <p>a. Explain how individual parts working together in a system (including organisms, Earth systems, solar systems, or manmade structures) can do more than each part individually.</p> <p>b. Explain how the output of one part of a system, including waste products from manufacturing or organisms, can become the input of another part of a system.</p> <p>c. Describe how systems are nested and that systems may be thought of as containing subsystems (as well as being a subsystem of a larger system) and apply the understanding to analyze systems.</p>	<p>Planets and Moons – ASP</p> <p>Sun and Stars – ASP</p> <p>Radical Robots – ASP</p> <p>Black and Blue Oceans – WS 3-6</p> <p>Inner Workings – UL WS</p> <p>B and C – Mad Science Programming does not currently meet these Learning Results</p>

A2 Models

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students identify models and the objects they represent to learn about their features.</p> <p>a. Describe ways in which toys and pictures are like the real things they model.</p> <p>b. Use a model as a tool to describe the motion of objects or the features of plants and animals.</p>	<p>NASA AFSE – ASP ALL</p> <p>Junior Reactors – ASP</p> <p>Bugs – ASP</p> <p>Stunt Planes and Gliders – ASP</p> <p>Mad Science Machines – ASP</p> <p>All About Animals – ASP</p> <p>Moving Motion – ASP</p> <p>Digging for Dinosaurs – PK WS</p> <p>Human Body – PK WS</p> <p>Animal Friends – PK WS</p> <p>Dinosaurs – WS K-2</p>
3-5	<p>Students use models to represent objects, processes, and events from the physical setting, the living environment, and the technological world.</p> <p>a. Represent the features of a real object, event, or process using models including geometric figures, number sequences, graphs, diagrams, sketches, maps, or three-dimensional figures and note ways in which those representations do (and do not) match features of the originals.</p>	<p>Planets and Moons – ASP</p> <p>Rocket Science – ASP</p> <p>Junior Reactors – ASP</p> <p>Stunt Planes and Gliders – ASP</p> <p>Super Structures - ASP</p> <p>Cells – WS 3-6</p>
6-8	<p>Students use models to examine a variety of real-world phenomena from the physical setting, the living environment, and the technological world and compare advantages and disadvantages of various models.</p> <p>a. Compare different types of models that can be used to represent the same thing (including models of chemical reactions, motion, or cells) in order to match the purpose and complexity of a model to its use.</p> <p>b. Propose changes to models and explain how those changes may better reflect the real thing.</p>	<p>Mad Science programming does not currently meet this Learning Result.</p>

A3 Constancy and Change

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students observe that in the physical setting, the living environment, and the technological world some things change over time and some things stay the same.</p> <p>a. Describe the size, weight, color, or movement of things over varying lengths of time and note qualities that change or remain the same.</p>	<p>Sun and Stars – ASP Dry Ice Capades – ASP Chem in a Flash – ASP Earthworks – ASP Walloping Weather – ASP Digging for Dinosaurs – PK WS Decomposers –WS K-2 Dinosaurs – WS K-2</p>
3-5	<p>Students identify and represent basic patterns of change in the physical setting, the living environment, and the technological world.</p> <p>a. Recognize patterns of change including steady, repetitive, irregular, or apparently unpredictable change. b. Make tables or graphs to represent changes.</p>	<p>Sun and Stars – ASP Dry Ice Capades – ASP Chem in a Flash – ASP Earthworks – ASP Walloping Weather – ASP Photosynthesis – WS 3-6</p>
6-8	<p>Students describe how patterns of change vary in physical, biological, and technological systems.</p> <p>a. Describe systems that are changing including ecosystems, Earth systems, and technologies. b. Give examples of systems including ecosystems, Earth systems, and technologies that appear to be unchanging (even though things may be changing within the system) and identify any feedback mechanisms that may be modifying the changes. c. Describe rates of change and cyclic patterns using appropriate grade-level mathematics.</p>	<p>Sun and Stars – ASP Dry Ice Capades – ASP Chem in a Flash – ASP Earthworks – ASP Walloping Weather – ASP Photosynthesis – WS 3-6</p> <p>B and C – Mad Science programming does not currently meet the Learning Results</p>

A4 Scale

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students observe differences in scale. a. Compare significantly different sizes, weights, ages, and speeds of objects.</p>	<p>Planets and Moons – ASP Living in Space – ASP Fun-damental Forces – ASP Stunt Planes and Gliders – ASP Mad Science Machines – ASP How Big? How Much? – PK WS Measure for Measure – WS K-2</p>
3-5	<p>Students use mathematics to describe scale for man-made and natural things. a. Measure things to compare sizes, speeds, times, distances, and weights. b. Use fractions and multiples to make comparisons of scale.</p>	<p>Planets and Moons – ASP Living in Space – ASP Fun-damental Forces – ASP Stunt Planes and Gliders – ASP Mad Science Machines – ASP</p>
6-8	<p>Students use scale to describe objects, phenomena, or processes related to Earth, space, matter, and mechanical and living systems. a. Describe how some things change or work differently at different scales. b. Use proportions, averages, and ranges to describe small and large extremes of scale.</p>	<p>Mad Science Programming does not currently meet this Learning Result.</p>

B1 Skills and Traits of Scientific Inquiry

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students conduct and communicate results of simple investigations.</p> <ul style="list-style-type: none"> a. Ask questions and make observations about objects, organisms, and events in the environment. b. Safely conduct simple investigations to answer questions. c. Use simple instruments with basic units of measurement to gather data and extend the senses. d. Know what constitutes evidence that can be used to construct a reasonable explanation. e. Use writing, speaking, and drawing to communicate investigations and explanations. 	ALL Mad Science Programming
3-5	<p>Students plan, conduct, analyze data from, and communicate results of investigations, including fair tests.</p> <ul style="list-style-type: none"> a. Pose investigable questions and seek answers from reliable sources of scientific information and from their own investigations. b. Plan and safely conduct investigations including simple experiments that involve a fair test. c. Use simple equipment, tools, and appropriate metric units of measurement to gather data and extend the senses. d. Use data to construct and support a reasonable explanation. e. Communicate scientific procedures and explanations. 	ALL Mad Science Programming
6-8	<p>Students plan, conduct, analyze data from, and communicate results of investigations, including simple experiments.</p> <ul style="list-style-type: none"> a. Identify questions that can be answered through scientific investigations. b. Design and safely conduct scientific investigations including experiments with controlled variables. c. Use appropriate tools, metric units, and techniques to interpret data. d. Use mathematics to gather, organize, and present data and structure convincing explanations. e. Use logic, critical reasoning and evidence to develop descriptions, explanations, predictions, and models. f. Communicate, critique, and analyze their own scientific work. 	ALL Mad Science Programming

B2 Skills and Traits of Technological Design

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students use a simple design process and basic tools and materials to solve a problem or create a product.</p> <ul style="list-style-type: none"> a. Describe a design problem in their own words. b. Propose a way to build something or cause something to work better. c. Use suitable tools, materials, safe techniques, and measurements to implement a proposed solution to a design problem. d. Judge how well a product or design solved a problem. e. Present a design or solution to a problem using oral, written, or pictorial means of communication. 	Rocket Science – ASP Space Travel – ASP Space Technology – ASP Living in Space – ASP Labworks – ASP Stunt Planes and Gliders – ASP Super Structures – ASP Mad Science Machines – ASP
3-5	<p>Students use a design process, simple tools, and a variety of materials to solve a problem or create a product, recognizing the constraints that need to be considered.</p> <ul style="list-style-type: none"> a. Identify and explain a simple design problem and a solution. b. Propose a solution to a design problem that recognizes constraints including cost, materials, time, space, or safety. c. Use appropriate tools, materials, safe techniques, and quantitative measurements to implement a proposed solution to a design problem. d. Balance simple constraints in carrying out a proposed solution to a design problem. e. Evaluate their own design results and others, using established criteria. f. Modify designs based on results of evaluations. g. Present the design problem, process, and design or solution using oral, written, and/or pictorial means of communication. 	Mad Science programming does not currently meet this Learning Result.
6-8	<p>Students use a systematic process, tools, equipment, and a variety of materials to design and produce a solution or product to meet a specified need, using established criteria.</p> <ul style="list-style-type: none"> a. Identify appropriate problems for technological design. b. Design a solution or product. c. Communicate a proposed design using drawings and simple models. d. Implement a proposed design. e. Evaluate a completed design or product. f. Suggest improvements for their own and others’ designs and try out proposed modifications. g. Explain the design process including the stages of problem identification, solution design, implementation, and evaluation. 	Mad Science programming does not currently meet this Learning Result.

C1 Understandings of Inquiry

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students describe the use of questions and accurate communication in scientists' work.</p> <p>a. Describe how scientific investigations involve asking and answering a question.</p> <p>b. Point out the importance of describing things and investigations accurately so others can learn about them or repeat them.</p>	ALL Mad Science Programming
3-5	<p>Students describe how scientific investigations result in explanations that are communicated to other scientists.</p> <p>a. Describe how scientists answer questions by developing explanations based on observations, evidence, and knowledge of the natural world.</p> <p>b. Describe how scientists make their explanations public.</p>	<p>ALL Mad Science Programming</p> <p>B- Mad Science Programming does not currently meet this Learning Result.</p>
6-8	<p>Students describe how scientists use varied and systematic approaches to investigations that may lead to further investigations.</p> <p>a. Explain how the type of question informs the type of investigation.</p> <p>b. Explain why it is important to identify and control variables and replicate trials in experiments.</p> <p>c. Describe how scientists' analyses of findings can lead to new investigations.</p>	<p>ALL Mad Science Programming</p> <p>B- Specifically: The Scientific Method – WS 3-5</p>

C2 Understandings about Science and Technology

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students recognize that people have always engaged in science and technology and that there is a difference between the natural and designed worlds.</p> <p>a. Recognize that people have always had problems and invented tools and ways of doing things to solve problems.</p> <p>b. Distinguish between objects that occur in nature and objects that are man-made.</p>	<p>Space Phenomena – ASP Space Technology – ASP Labworks – ASP Slime Time – ASP Lights, Color, Action – ASP Mad Science Machines – ASP Radical Robots – ASP Slippery Science – WS K-2</p>
3-5	<p>Students describe why people use science and technology and how scientists and engineers work.</p> <p>a. Describe how scientists seek to answer questions and explain the natural world.</p> <p>b. Describe how engineers seek solutions to problems through the design and production of products.</p>	<p>NASA AFSE – ASP ALL Stunt Planes and Gliders – ASP Super Structures – ASP Mad Science Machines –ASP Radical Robots – ASP</p>
6-8	<p>Students understand and compare the similarities and differences between scientific inquiry and technological design.</p> <p>a. Compare the process of scientific inquiry to the process of technological design.</p> <p>b. Explain how constraints and consequences impact scientific inquiry and technological design.</p>	<p>Mad Science programming does not currently meet this Learning Result.</p>

C3 Science, Technology, and Society

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>No performance indicator. Although no performance indicators are stated, students are expected to have instructional experiences that describe influences of science and technology on their own lives.</p>	N/A
3-5	<p>Students identify and describe the influences of science and technology on people and the environment. a. Explain how scientific and technological information can help people make safe and healthy decisions. b. Give examples of changes in the environment caused by natural or man-made influences. c. Explain that natural resources are limited, and that reusing, recycling, and reducing materials and using renewable resources is important.</p>	<p>Space Technology – ASP Mission Nutrition –ASP Earthworks – ASP Walloping Weather –ASP Ecosystem Explorations – WS 3-6 Black and Blue Oceans – WS 3-6 The Dirt on Garbage – WS K-6</p>
6-8	<p>Students identify and describe the role of science and technology in addressing personal and societal challenges. a. Describe how science and technology can help address societal challenges including population, natural hazards, sustainability, personal health and safety, and environmental quality. b. Identify personal choices that can either positively or negatively impact society including population, ecosystem sustainability, personal health, and environmental quality. c. Identify factors that influence the development and use of science and technology.</p>	<p>Space Technology – ASP Mission Nutrition –ASP Earthworks – ASP Ecosystem Explorations – WS 3-6 Black and Blue Oceans – WS 3-6 The Dirt on Garbage – WS K-6</p>

C4 History and Nature of Science

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>No performance indicator. Although no performance indicators are stated, students are expected to have instructional experiences that describe how people use science in their lives.</p>	N/A
3-5	<p>No performance indicator. Although no performance indicators are stated, students are expected to have instructional experiences that describe how science helps people understand the natural world.</p>	N/A
6-8	<p>Students describe historical examples that illustrate how science advances knowledge through the scientists involved and through the ways scientists think about their work and the work of others.</p> <p>a. Describe how women and men of various backgrounds, working in teams or alone and communicating about their ideas extensively with others, engage in science, engineering, and related fields.</p> <p>b. Describe a breakthrough from the history of science that contributes to our current understanding of science.</p> <p>c. Describe and provide examples that illustrate that science is a human endeavor that generates explanations based on verifiable evidence that are subject to change when new evidence does not match existing explanations.</p>	ALL Mad Science programming

D1 Universe and Solar System

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students describe the movement of objects across the sky, as seen from Earth.</p> <p>a. Describe how the sun and moon seem to move across the sky.</p> <p>b. Describe the changes in the appearance of the moon from day to day.</p>	<p>Planets and Moons – ASP</p> <p>Sun and Stars – ASP</p> <p>Space Frontiers – PK WS</p>
3-5	<p>Students describe the positions and apparent motions of different objects in and beyond our solar system and how these objects can be viewed from Earth.</p> <p>a. Show the locations of the sun, Earth, moon, and planets and their orbits.</p> <p>b. Observe and report on observations that the sun appears to move across the sky in the same way every day, but its path changes slowly over the seasons.</p> <p>c. Recognize that the sun is a star and is similar to other stars in the universe.</p>	<p>Planets and Moons – ASP</p> <p>Sun and Stars – ASP</p> <p>Atmosphere and Beyond – ASP</p>
6-8	<p>Students explain the movements and describe the location, composition, and characteristics of our solar system and universe, including planets, the sun, and galaxies.</p> <p>a. Describe the different kinds of objects in the solar system including planets, sun, moons, asteroids, and comets.</p> <p>b. Explain the motions that cause days, years, phases of the moon, and eclipses.</p> <p>c. Describe the location of our solar system in its galaxy and explain that other galaxies exist and that they include stars and planets.</p>	<p>Planets and Moons – ASP</p> <p>Sun and Stars – ASP</p> <p>Atmosphere and Beyond – ASP</p> <p>Space Phenomena – ASP</p>

D2 Earth

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students describe Earth’s weather and surface materials and the different ways they change.</p> <p>a. Explain that the sun warms the air, water, and land. b. Describe the way in which weather changes over months. c. Describe what happens to water left in an open container as compared to water left in a closed container.</p>	<p>Walloping Weather – ASP Harnessing Heat – ASP Water Works – PK WS Weather Wonders – PK WS</p>
3-5	<p>Students describe the properties of Earth’s surface materials, the processes that change them, and cycles that affect the Earth.</p> <p>a. Explain the effects of the rotation of Earth on the day/night cycle, and how that cycle affects local temperature. b. Describe the various forms water takes in the air and how that relates to weather. c. Explain how wind, waves, water, and ice reshape the surface of Earth. d. Describe the kinds of materials that form rocks and soil. e. Recognize that the sun is the source of Earth’s surface heat and light energy.</p>	<p>Planets and Moons – ASP Walloping Weather – ASP Earthworks – ASP Sun and Stars – ASP Harnessing Heat – ASP Mineral Mania – WS 3-6</p>
6-8	<p>Students describe the various cycles, physical and biological forces and processes, position in space, energy transformations, and human actions that affect the short term and long-term changes to the Earth.</p> <p>a. Explain how the tilt of Earth’s rotational axis relative to the plane of its yearly orbit around the sun affects the day length and sunlight intensity to cause seasons. b. Describe Earth Systems -biosphere, atmosphere, hydrosphere and lithosphere – and cycles and interactions within them (including water moving among and between them, rocks forming and transforming, and weather formation). c. Give several reasons why the climate is different in different regions of the Earth. d. Describe significant Earth resources and how their limited supply affects how they are used. e. Describe the effect of gravity on objects on Earth. f. Give examples of abrupt changes and slow changes in Earth Systems.</p>	<p>Planets and Moons – ASP Walloping Weather – ASP Earthworks – ASP Sun and Stars – ASP Harnessing Heat – ASP Fun-damental Forces - ASP Great Gravity – ASP Mineral Mania – WS 3-6 Ecosystem Explorations – WS 3-6</p>

D3 Matter and Energy

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students use observable characteristics to describe objects and materials and changes to physical properties of materials.</p> <p>a. Describe objects: what they are made of and physical properties.</p> <p>b. Describe changes in properties of materials when mixed, heated, frozen, or cut.</p>	<p>Crazy Chemworks – ASP ALL</p> <p>Che-Mystery – ASP</p> <p>Earthworks – ASP</p> <p>Mad Science Machines – ASP</p> <p>Radical Robots – ASP</p> <p>Color Lab – PK WS</p> <p>Mad Mixtures – PK WS</p> <p>Slippery Science – WS K-2</p>
3-5	<p>Students describe properties of objects and materials before and after they undergo a change or interaction.</p> <p>a. Describe how the weight of an object compares to the sum of the weight of its parts.</p> <p>b. Illustrate how many different substances are made from a small number of ingredients.</p> <p>c. Describe properties of original materials, and the new material(s) formed, to demonstrate that a change has occurred.</p> <p>d. Describe what happens to the temperatures of objects when a warm object is near a cool one</p> <p>e. Describe how the heating and cooling of water and other materials can change the properties of the materials.</p> <p>f. Explain that the properties of a material may change but the total amount of material remains the same.</p>	<p>Labworks – ASP</p> <p>Junior Reactors – ASP</p> <p>ph Phactor – ASP</p> <p>Slime Time –ASP</p> <p>Chem in a Flash – ASP</p> <p>Dry Ice Capades – ASP</p> <p>Che-Mystery – ASP</p> <p>Playing with Polymers – WS 3-6</p>
6-8	<p>Students describe physical and chemical properties of matter, interactions and changes in matter, and transfer of energy.</p> <p>a. Describe that all matter is made up of atoms and distinguish between/among elements, atoms, and molecules.</p> <p>b. Describe how physical characteristics of elements and types of reactions they undergo have been used to create the Periodic Table.</p> <p>c. Describe the difference between physical and chemical change.</p> <p>d. Explain the relationship of the motion of atoms and molecules to the states of matter for gases, liquids, and solids.</p> <p>e. Explain how atoms are packed together in arrangements that compose all substances including elements, compounds, mixtures, and solutions.</p> <p>f. Explain and apply the understanding that substances have characteristic properties, including density, boiling point, and solubility</p> <p>g. Use the idea of atoms to explain the conservation of matter.</p> <p>h. Describe several different types of energy forms including heat energy, chemical energy, and mechanical energy.</p> <p>i. Use examples of energy transformations from one form to another to explain that energy cannot be created or destroyed.</p> <p>j. Describe how heat is transferred from one object to another by conduction, convection, and/or radiation.</p> <p>k. Describe the properties of solar radiation and its interaction with objects on Earth.</p>	<p>Crazy Chemworks – ASP ALL</p> <p>Harnessing Heat – ASP</p> <p>Energy Burst – ASP</p> <p>Earthworks – ASP</p> <p>Mad Science Machines – ASP</p> <p>Science of Toys – ASP</p> <p>Matter of Fact – WS 3-6</p>

D4 Force and Motion

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students describe how objects move in different ways. a. Describe different ways things move and what it takes to start objects moving, keep objects moving, or stop objects. b. Give examples of things that make sound by vibrating.</p>	<p>Rocket Science – ASP Science of Toys – ASP Sonic Sounds – ASP Energy Burst – ASP Fun-dametal Forces – ASP Radical Robots – ASP Stunt Planes and Gliders – ASP Mad Science Machines – ASP Listen Closely – PK WS Science of Music – PK WS Energy and Motion – PK WS Sound Basics – WS K-2</p>
3-5	<p>Students summarize how various forces affect the motion of objects. a. Predict the effect of a given force on the motion of an object. b. Describe how fast things move by how long it takes them to go a certain distance. c. Describe the path of an object. d. Give examples of how gravity, magnets, and electrically charged materials push and pull objects.</p>	<p>Rocket Science – ASP Watts-Up – ASP Magnetic Magic – ASP Great Gravity – ASP Moving Motion – ASP Fun-dametal Forces – ASP Science of Toys – ASP Energy Burst – ASP Radical Robots – ASP Stunt Planes and Gliders – ASP Mad Machines – ASP Electricity – WS 3-6 Mischievous Magnets – WS 3-6</p>
6-8	<p>Students describe the force of gravity, the motion of objects, properties of waves, and the wavelike property of energy in light waves. a. Describe the similarities and differences in the motion of sound vibrations, earthquakes, and light waves. b. Explain the relationship among visible light, the electromagnetic spectrum, and sight. c. Describe and apply an understanding of how the gravitational force between any two objects would change if their mass or the distance between them changed. d. Describe and apply an understanding of how electric currents and magnets can exert force on each other. e. Describe and apply an understanding of the effects of multiple forces on an object, and how unbalanced forces will cause changes in the speed or direction.</p>	<p>Moving Motion – ASP Fun-dametal Forces – ASP Great Gravity – ASP Magnetic Magic – ASP Lights, Color, Action – ASP Sonic Sounds – ASP Watts-Up – ASP Stunt Planes and Gliders – ASP Earthworks – ASP Moving Motion – ASP Mischievous Magnets – WS 3-6 Good Vibrations – WS 3-6</p>

E1 Biodiversity

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students describe similarities and differences in the observable behaviors, features, and needs of plants and animals.</p> <p>a. Describe similarities and differences in the way plants and animals look and the things that they do.</p> <p>b. Describe some features of plants and animals that help them live in different environments.</p> <p>c. Describe how organisms change during their lifetime.</p>	<p>Bugs – ASP All About Animals – ASP Life in the Sea – ASP Wiggly World of Worms – PK WS Animals Friends – PK WS Butterflies – PK WS Fluttering Birds – PK WS Dinosaurs – WS K-2</p>
3-5	<p>Students compare living things based on their behaviors, external features, and environmental needs.</p> <p>a. Describe how living things can be sorted in many ways, depending on which features or behaviors are used to sort them, and apply this understanding to sort living things.</p> <p>b. Describe the changes in external features and behaviors of an organism during its life cycle.</p>	<p>Bugs – ASP All About Animals – ASP Life in the Sea – ASP Photosynthesis – WS 3-6</p>
6-8	<p>Students differentiate among organisms based on biological characteristics and identify patterns of similarity.</p> <p>a. Compare physical characteristics that differentiate organisms into groups (including plants that use sunlight to make their own food, animals that consume energy-rich food, and organisms that cannot easily be classified as either).</p> <p>b. Explain how biologists use internal and external anatomical features to determine relatedness among organisms and to form the basis for classification systems.</p> <p>c. Explain ways to determine whether organisms are the same species.</p> <p>d. Describe how external and internal structures of animals and plants contribute to the variety of ways organisms are able to find food and reproduce.</p>	<p>Mad Science programming does not currently meet this Learning Result.</p>

E2 Ecosystems

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students understand how plants and animals depend on each other and the environment in which they live.</p> <p>a. Explain that animals use plants and other animals for food, shelter, and nesting.</p> <p>b. Compare different animals and plants that live in different environments of the world.</p>	<p>Bugs – ASP All About Animals – ASP Life in the Sea – ASP Wiggly World of Worms – PK WS Animals Friends – PK WS Butterflies – PK WS Fluttering Birds – PK WS Dinosaurs – WS K-2</p>
3-5	<p>Students describe ways organisms depend upon, interact within, and change the living and non-living environment as well as ways the environment affects organisms.</p> <p>a. Explain how changes in an organism's habitat can influence its survival.</p> <p>b. Describe that organisms all over the Earth are living, dying, and decaying and new organisms are being produced by the old ones.</p> <p>c. Describe some of the ways in which organisms depend on one another, including animals carrying pollen and dispersing seeds.</p> <p>d. Explain how the food of most animals can be traced back to plants and how animals use food for energy and repair.</p> <p>e. Explain how organisms can affect the environment in different ways.</p>	<p>Bugs – ASP All About Animals – ASP Life in the Sea – ASP Photosynthesis – WS 3-6 Ecosystem Explorations – WS 3-6</p>
6-8	<p>Students examine how the characteristics of the physical, nonliving (abiotic) environment, the types and behaviors of living (biotic) organisms, and the flow of matter and energy affect organisms and the ecosystem of which they are part.</p> <p>a. List various kinds of resources within different biomes for which organisms compete.</p> <p>b. Describe ways in which two types of organisms may interact (including competition, predator/prey, producer/consumer/decomposer, parasitism, and mutualism) and describe the positive and negative consequences of such interactions.</p> <p>c. Describe the source and flow of energy in the two major food webs, terrestrial and marine.</p> <p>d. Describe how matter and energy change from one form to another in living things and in the physical environment.</p> <p>e. Explain that the total amount of matter in the environment stays the same even as its form and location change.</p>	<p>Mad Science programming does not currently meet this Learning Result.</p>

E3 Cells

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students describe parts and wholes of living things, their basic needs, and the structures and processes that help them stay alive.</p> <p>a. List living things and their parts that are so small we can only see them using magnifiers.</p> <p>b. List the basic things that most organisms need to survive.</p> <p>c. Identify structures that help organisms do things to stay alive.</p>	<p>Bugs – ASP All About Animals – ASP Life in the Sea – ASP Wiggly World of Worms – PK WS Animals Friends – PK WS Butterflies – PK WS Fluttering Birds – PK WS Dinosaurs – WS K-2</p>
3-5	<p>Students describe how living things are made up of one or more cells and the ways cells help organisms meet their basic needs.</p> <p>a. Give examples of organisms that consist of a single cell and organisms that are made of a collection of cells.</p> <p>b. Compare how needs of living things are met in single-celled and multi-celled organisms.</p>	<p>Cells – WS 3-6</p>
6-8	<p>Students describe the hierarchy of organization and function in organisms, and the similarities and differences in structure, function, and needs among and within organisms.</p> <p>a. Describe the basic functions of organisms carried out within cells including the extracting of energy from food and the elimination of wastes.</p> <p>b. Explain the relationship among cells, tissues, organs, and organ systems, including how tissues and organs serve the needs of cells and organisms.</p> <p>c. Compare the structures, system, and interactions that allow single celled organisms and multi-celled plants and animals, including humans, to defend themselves, acquire and use energy, self regulate, reproduce, and coordinate movement.</p> <p>d. Explain that all living things are composed of cells numbering from just one to millions.</p>	<p>Cells – WS 3-6 Heredity – UL WS Inner Workings – UL WS DNA – UL WS</p>

E4 Heredity and Reproduction

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students describe the cycle of birth, development, and death in different organisms and the ways in which organisms resemble their parents.</p> <p>a. Give examples of how organisms are like their parents and not like them.</p> <p>b. Describe the life cycle of a plant or animal (including being born, growing, reproducing, and dying).</p>	Animal Friends – PK WS
3-5	<p>Students describe characteristics of organisms, and the reasons why organisms differ from or are similar to their parents.</p> <p>a. Name some likenesses between children and parents that are inherited, and some that are not.</p> <p>b. Explain that in order for offspring to look like their parents, information related to inherited likenesses must be handed from parents to offspring in a reliable manner.</p>	Mad Science Programming does not currently meet this Learning Result.
6-8	<p>Students describe the general characteristics and mechanisms of reproduction and heredity in organisms, including humans, and ways in which organisms are affected by their genetic traits.</p> <p>a. Explain that sexual reproduction includes fertilization that results in the inclusion of genetic information from each parent and determines the inherited traits that are a part of every cell.</p> <p>b. Identify some of the risks to the healthy development of an embryo including mother’s diet, lifestyle, and hygiene.</p> <p>c. Describe asexual reproduction as a process by which all genetic information comes from one parent and determines the inherited traits that are a part of every cell.</p>	<p>Cells – WS 3-6 Heredity – UL WS DNA – UL WS</p> <p>B - Mad Science Programming does not currently meet this Learning Result.</p>

E5 Evolution

Grade	Performance Indicators and Descriptors	Mad Science Programming
Pre K - 2	<p>Students describe similarities and differences between present day and past organisms that helped the organisms live in their environment.</p> <p>a. Describe some organisms' features that allow the organisms to live in places others cannot.</p> <p>b. Explain how some kinds of organisms that once lived on Earth have completely disappeared, although they were similar to some that are alive today.</p>	<p>Bugs – ASP All About Animals – ASP Life in the Sea – ASP Wiggly World of Worms – PK WS Animals Friends – PK WS Butterflies – PK WS Fluttering Birds – PK WS Digging for Dinosaurs – PK WS Dinosaurs – WS K-2</p>
3-5	<p>Students describe the fossil evidence and present explanations that help us understand why there are differences among and between present and past organisms.</p> <p>a. Explain advantages and disadvantages gained when some individuals of the same kind are different in their characteristics and behavior.</p> <p>b. Compare fossils to one another and to living organisms according to their similarities and differences.</p>	<p>Mad Science Programming does not currently meet this Learning Result.</p>
6-8	<p>Students describe the evidence that evolution occurs over many generations, allowing species to acquire many of their unique characteristics or adaptations.</p> <p>a. Explain how the layers of sedimentary rock and their contained fossils provide evidence for the long history of Earth and for the long history of changing life.</p> <p>b. Describe how small differences between parents and offspring can lead to descendants who are very different from their ancestors.</p> <p>c. Describe how variations in the behavior and traits of an offspring may permit some of them to survive a changing environment.</p> <p>d. Explain that new varieties of cultivated plants and domestic animals can be developed through genetic modification and describe the impacts of the new varieties of plants and animals.</p>	<p>Earthworks – ASP</p> <p>B, D and D - Mad Science Programming does not currently meet these Learning Results.</p>