



DELTA SCIENCE MODULES

(DSM™)
Grades K-8

Correlation
with the

Ohio Science Content Standards



Delta Science Modules (DSM™) Grades K-8

Correlation
with the

Ohio State Standards

The following correlation of the Ohio Science Standards to the Delta Science Module (DSM) Program is to show representative examples of investigations and activities that address listed standards and benchmarks. A citation does not reflect all of the investigations or activities that might address a particular standard or grade level expectation.

SCIENCE PRE-K

Note: The Pre-K correlation uses the Delta Science First Reader Program (DSFR) and the Delta Pre-K Discovery Kits (Pre-K)

Science Inquiry and Application

During the years of PreK-4 all students must use the following scientific processes to construct their knowledge and understanding in all science content areas:

Scientific Processes	DELTA
Observe and ask questions about the natural environment	How Do We Learn (DSFR) pp. 75-80 Weather (DSFR) pp. 181-187 Body and Senses (Pre-K) p. 26 Touch and Feel Box Insects and Spiders (Pre-K) p. 15 Cricket Visit
Plan and conduct simple investigations	Earth (DSFR) pp. 209-214 Where Is It? Is It Moving? (DSFR) pp. 265-273 Ocean (Pre-K) p. 13 Sink and Float Dinosaurs (Pre-K) p. Creating Fossils
Employ simple equipment and tools to gather data and extend the senses	Plants (DSFR) pp. 129-134 Earth (DSFR) pp. 209-214 Weather (Pre-K) p. 19 Rain Gauge Trees (Pre-K) p. 13 Seeds and Balances
Use appropriate mathematics with data to construct reasonable explanations	Matter (DSFR) p. 330 Science and Math Earth (DSFR) p. 214 Science and Math Weather (Pre-K) p. 20 Snowflake Count Health and Nutrition (Pre-K) p. 12 Measure Me
Communicate about observations, investigations and explanations	Sorting (DSFR) pp. 155-160 About Me (DSFR) pp. 235-244 Trees (Pre-K) p. 18 Tree Sort Insects and Spiders (Pre-K) p. 12 Ant Hunt
Review and ask questions about the observations and explanations of others	Animals (DSFR) pp. 101-107 Sky (DSFR) pp. 295-301 Health and Nutrition (Pre-K) p. 21 Snack Graph Body and Senses (Pre-K) p. 21 Heavy and Light

Earth and Space Science

This topic focuses on observing, exploring and describing the local natural environment.

Content Statements	DELTA
Weather changes every day. Wind, water and temperature are all part of daily weather changes. Weather changes throughout the day and from day to day.	Weather (DSFR) pp. 181-197; Reader pp. 4-17 Weather (Pre-K) p. 12 What is Weather; p. 13 Rain or Snow Walk; p. 14 Blow Wind Blow
The sun and the moon are visible at different times of the day or night. The sun is visible only in the daytime, but the moon is visible sometimes at night and sometimes during the day.	Sky (DSFR) pp. 295-301; Reader pp. 3, 5-13 Where Is It? Is It Moving? (DSFR) pp. 265-273
Water can be observed as lakes, ponds, rivers, streams, the ocean, rainfall, hail, sleet or snow. When it rains, water can create puddles or cause flooding. The puddles and flooding eventually go away. Some areas flood more than others. The ocean is the largest body of water on Earth.	Earth (DSFR) Reader pp. 11-13 Weather (Pre-K) p. 13 Rain or Snow walk Oceans (Pre-K) p. 11 Indoor Beach Party
Rocks and soil have properties that can help	

<p>identify them. Rocks and soil have different colors and textures. Rocks and soil can be sorted by different colors and textures.</p>	<p>Earth (DSFR) pp. 209-214; Reader pp. 5-6</p>
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Physical Science

This topic focuses on making sound and observing, exploring and describing properties of objects and materials that can be found in nature, classrooms and homes.

Content Statements	DELTA
<p>Objects and materials are described by their properties. Color, shape, size, weight and texture are some examples that can be used to describe and/or sort objects and materials.</p>	<p>Plants (DSFR) pp. 129-134 Sorting (DSFR) pp. 129-134; Reader, pp. 3-19 Body and Senses (Pre-K) p. 13 Explore Apple; p. 14 Sound Match Oceans (Pre-K) p. 13 Sink and Float; p. 17 Shell Graph</p>
<p>Many objects can be made to produce sound. Sound can be produced by touching, blowing or tapping objects.</p>	<p>Body and Senses (Pre-K) p. 14 Sound Match; p. 18 Maraca Band</p>

Life Science

This topic focuses on observing, exploring and describing external, physically observable characteristics and behaviors of plants and animals found in their natural environment, in classrooms and homes.

Content Statements	DELTA
<p>There are many distinct environments in Ohio that support different kinds of organisms. Plants and animals have traits that improve their chances of living in different environments. Plants and animals in Ohio interact with one another for food, shelter and nesting.</p>	<p>Plants (DSFR) Reader pp. 6-13 Animals (DSFR) Reader, pp. 4-7, 10-14 Insects and Spiders (Pre-K) p. 12 Ant Hunt; p. 13 Is It an Insect?; p. 15 Cricket Visit Trees (Pre-K) p. 11 Tree Walk; p. 12 It's a Tree's Life</p>
<p>Similarities and differences exist among individuals of the same kinds of plants and animals. Individuals among plants and animals of the same kind show greater likeness than difference, even though they vary in some traits and behaviors.</p> <p>Living things have physical traits and behaviors, which influence their survival.</p> <p>Physical traits and behaviors of plants and animals are sometimes the same and sometimes different from the characteristics ascribed to them in stories.</p>	<p>Plants (DSFR) Reader pp. 2, 5, 9, 11 Animals (DSFR) Reader, pp. 42, 9 Insects and Spiders (Pre-K) p. 12 Ant Hunt; p. 15 Cricket Visit Trees (Pre-K) p. 11 Tree Walk</p> <p>Plants (DSFR) Reader pp. 10-14 Animals (DSFR) Reader, pp. 4-7, 10-11 Insects and Spiders (Pre-K) p. 12 Ant Hunt; p. 13 Is It an Insect?; p. 15 Cricket Visit; p. 16 Pollen Trees (Pre-K) p. 11 Tree Walk</p> <p>The variety of plants and animals in the two programs provides the opportunity for teachers to address this content statement.</p>

SCIENCE GRADE K

Science Inquiry and Application

During the years of PreK-4 all students must use the following scientific processes to construct their knowledge and understanding in all science content areas:

Note: DSM is an inquiry-based program and has built into it the science processes listed below. Some examples are listed to illustrate.

Scientific Processes	DSM
Observe and ask questions about the natural environment	Properties Activity 6-9, pp. 53-78 Observing an Aquarium Activity 4-6, pp. 39-67 Finding the Moon Activity 3-5, pp. 29-54
Plan and conduct simple investigations	Investigating Water Activity 7-8, pp. 55-69 Sunshine and Shadows Activity 8-10, pp. 65-82 How Do We Learn Activity 6-7, pp. 51-64
Employ simple equipment and tools to gather data and extend the senses	Observing an Aquarium Activity 3-6, pp. 31-67 Properties Activity 6-7, pp. 47-60 How Do We Learn Activity 5-9, pp. 43-79
Use appropriate mathematics with data to construct reasonable explanations	From Seed to Plant Activity 7-8, pp. 59-72 How Do We Learn Activity 6-12, pp. 51-101 Properties Activity 6, pp. 47-52
Communicate about observations, investigations and explanations	Sunshine and Shadows Activity 3-4, pp. 27-41 Properties Activity 10-12, pp. 75-93 Observing an Aquarium Activity 8-10, pp. 79-107
Review and ask questions about the observations and explanations of others	From Seed to Plant Activity 3-4, p. 33-44 Investigating Water Activity 6-7, pp. 47-61 Finding the Moon Activity 9-11, pp. 77-97

Earth and Space Science

This topic focuses on observing, exploring and describing and comparing weather changes, Patterns in the sky and changing seasons.

Content Statements	DSM
Weather changes are long term and short term. Weather changes occur throughout the day and from day to day. Air is a nonliving substance that surrounds Earth, wind is moving air. Wind, temperature and precipitation document short-term weather changes. Yearly weather changes (seasons) are observable patterns in the daily weather changes.	This topic is addressed in the grade 2 module <u>Weather Watching</u> .
The moon, sun and stars are visible at different times of the day or night. The moon, sun and stars are in different positions at different times of the day or night. Sometimes the moon is visible during the night, sometimes the moon is visible during the day and at other times the moon is not visible at all. The observable shape of the moon changes in size very slowly throughout each day of every month. The sun is visible only during the day. The sun's position in the sky changes in a single day and from season to season. Stars are visible at night, some are visible in the evening or morning, and some are brighter than others.	Finding the Moon Activity 1-4, 9-10, pp. 13-46, 77-91 Reader, pp. 2-10 Sunshine and Shadows Activity 4, 6-7, pp. 33-41, 49-63 Reader, pp. 2, 8-9

Physical Science

This topic focuses on the production of sound and observing, exploring and describing properties of objects and materials with which the student is familiar.

Content Statements	DSM
Objects and materials can be sorted and described by their properties. Objects can be sorted and described by the properties of the materials from which they are made. Some of the properties can include color, size or texture.	Properties Activity 1-6, 10-12, pp. 13-52, 75-93 How Do We Learn Activity 2-3, pp. 23-35 Investigating Water Activity 5, pp. 41-46
Some objects and materials produce sound. Sound is produced by touching, blowing or tapping objects. The sounds that are produced vary depending on the properties of objects. Sound is produced when objects vibrate.	

Life Science

This topic focuses on observing, exploring and describing and comparing living things in Ohio.

Content Statements	DSM
Living things are different from nonliving things. Living things include anything that is alive or has ever been alive. Living things have specific traits. Living things grow and reproduce. Living things are found almost everywhere in the world. There are somewhat different kinds in different places.	Observing an Aquarium Activity 1, 3-10, 12, pp. 15-21, 31-107, 117-126 Reader, pp. 4-12, 14-15 From Seed to Plant Activity 2-7, 13, pp. 21-66, 97-103 Reader, pp. 2-5, 10-12
Living things have physical traits and behaviors, which influence their survival. Living things are made up of a variety of structures. Some of these structures and behaviors influence their survival.	Observing an Aquarium Activity 3-6, pp. 31-67 Reader, pp. 6-9 From Seed to Plant Activity 3-5, 9-10, pp. 33-52, 73-84 Reader, pp. 3-9

SCIENCE GRADE 1

Science Inquiry and Application

During the years of PreK-4 all students must use the following scientific processes to construct their knowledge and understanding in all science content areas:

Note: DSM is an inquiry-based program and has built into it the science processes listed below. Some examples are listed to illustrate.

Scientific Processes	DSM
Observe and ask questions about the natural environment	Properties Activity 6-9, pp. 53-78 Observing an Aquarium Activity 4-6, pp. 39-67 Finding the Moon Activity 3-5, pp. 29-54
Plan and conduct simple investigations	Investigating Water Activity 7-8, pp. 55-69 Sunshine and Shadows Activity 8-10, pp. 65-82 How Do We Learn Activity 6-7, pp. 51-64
Employ simple equipment and tools to gather data and extend the senses	Observing an Aquarium Activity 3-6, pp. 31-67 Properties Activity 6-7, pp. 47-60 How Do We Learn Activity 5-9, pp. 43-79
Use appropriate mathematics with data to construct reasonable explanations	From Seed to Plant Activity 7-8, pp. 59-72 How Do We Learn Activity 6-12, pp. 51-101 Properties Activity 6, pp. 47-52
Communicate about observations, investigations and explanations	Sunshine and Shadows Activity 3-4, pp. 27-41 Properties Activity 10-12, pp. 75-93 Observing an Aquarium Activity 8-10, pp. 79-107
Review and ask questions about the observations and explanations of others	From Seed to Plant Activity 3-4, p. 33-44 Investigating Water Activity 6-7, pp. 47-61 Finding the Moon Activity 9-11, pp. 77-97

Earth and Space Science

This topic focuses on the sun as a source of energy and energy changes that occur to land air and water.

Content Statements	DSM
The sun is the principal source of energy. Sunlight warms Earth's land, air and water. The amount of exposure to sunlight affects the amount of warming or cooling of air, water and land.	Sunshine and Shadows Reader, pp. 2, 16 Finding the Moon Activity 1, pp. 13-19
The physical properties of water change. Water can change from a liquid to a solid and from a solid to a liquid. Weather observations can be used to examine the property changes of water.	Investigating Water Activity 9-11, pp. 71-94 Reader, pp. 4-11 Properties Reader, p. 15

Physical Science

This topic focuses on the changes in properties that occur in objects and materials. Changes of position of an object are a result of pushing and pulling.

Content Statements	DSM
Properties of objects and materials change. Objects and materials change when exposed to various conditions, such as heating or freezing. Not all materials change in the same way.	Investigating Water Activity 7, 9-12, pp. 55-61, 71-100 Reader, pp. 4-11, 13 Properties Reader, p. 15
Objects can be moved in a variety of ways, such as straight, zigzag, circular, and back and forth.	

<p>The position of an object can be described by locating it relative to another object or to the object's surroundings.</p>	<p>Finding the Moon Activity 3, 10, pp. 29-37, 85-91 Investigating Water Activity 3-6, 8, pp. 27-54, 63-69 Sunshine and Shadows Activity 1-12, pp. 13-95 How Do We learn Activity 6-8, pp. 51-71</p>
<p>An object is in motion when its position is changing.</p>	<p>Properties Activity 6-7, 10-11, pp. 47-60, 75-86 Investigating Water Activity 2-6, 8, pp. 21-54, 63-69 Sunshine and Shadows Activity 4, 6-7, pp. 33-41, 49-63 Finding the Moon Activity 3, 9-10, pp. 29-37, 77-91</p>
<p>The motion of an object can be affected by pushing or pulling. A push or pull is a force that can make an object move faster, slower or go in a different direction.</p>	<p>Properties Activity 7, 10-11, pp. 53-60, 75-86 Investigating Water Activity 2-3, 8, pp. 21-34, 63-69</p>

Life Science

This topic focuses on the physical needs of living things in Ohio. Energy from the sun or food, nutrients, water, shelter and air are some of the physical needs of living things.

Content Statements	DSM
<p>Living things have basic needs, which are met by obtaining materials from the physical environment. Living things require energy, water and a particular range of temperatures in their environments.</p> <p>Plants get energy from sunlight. Animals get energy from plants and other animals.</p> <p>Living things acquire resources from the living and nonliving components of the environment.</p>	<p>Observing an Aquarium Activity 2, 7, pp. 23-30, 69-78 Reader, p. 12 From Seed to Plant Activity 2, 8, 10-11, 14, pp. 21-31, 67-72, 79-90, 105-109 Reader, pp. 6-8, 12</p> <p>Observing an Aquarium Activity 2-3, 7, pp. 23-38, 69-78 Reader, p. 12 From Seed to Plant Activity 10-11, 14, pp. 79-90, 105-109 Reader, pp. 8, 12</p> <p>Observing an Aquarium Activity 2, pp. 23-30 Reader, pp. 8-9, 12 From Seed to Plant Activity 2, 8, 10-11, 14, pp. 21-31, 67-72, 79-90, 105-109 Reader, pp. 4-8, 12, 14-15</p>
<p>Living things survive only in environments that meet their needs. Resources are necessary to meet the needs of an individual and populations of individuals. Living things interact with their physical environments as they meet those needs.</p> <p>Effects of seasonal changes within the local environment directly impact the availability of resources.</p>	<p>Observing an Aquarium Activity 2, pp. 23-30 Reader, pp. 8-9, 12 From Seed to Plant Activity 2, 8, 10-11, 14, pp. 21-31, 67-72, 79-90, 105-109 Reader, pp. 4-8, 12, 14-15</p>

SCIENCE GRADE 2

Science Inquiry and Application

During the years of PreK-4 all students must use the following scientific processes to construct their knowledge and understanding in all science content areas:

Note: DSM is an inquiry-based program and has built into it the science processes listed below. Some examples are listed to illustrate.

Scientific Processes	DSM
Observe and ask questions about the natural environment	Butterflies and Moths Activity 4-6, pp. 39-59 Weather Watching Activity 6-7, pp. 51-68 Plant and Animal Populations Activity 1-3, pp. 15-41
Plan and conduct simple investigations	Classroom Plants Activity 5, pp. 47-53 Using Your Senses Activity 9-12, pp. 75-103 Sink or Float Activity 1-5, pp. 13-51
Employ simple equipment and tools to gather data and extend the senses	States of Matter Activity 6-7, 11, pp. 51-63, 89-96 Soil Science Activity 1-4, pp. 15-44 Weather Watching Activity 2-3, pp. 21-36
Use appropriate mathematics with data to construct reasonable explanations	States of Matter Activity 6-7, pp. 51-63 Force and Motion Activity 2-5, pp. 25-55 Plant and Animal Populations Activity 6-8, pp. 59-83
Communicate about observations, investigations and explanations	Using Your Senses Activity 2-4, pp. 23-44 Sink or Float Activity 9-12, pp. 75-107 Soil Science Activity 8-12, pp. 69-114
Review and ask questions about the observations and explanations of others	Plant and Animal Populations Activity 9-11, pp. 85-110 Classroom Plants Activity 5-6, pp. 47-64 Butterflies and Moths Activity 10-12, pp. 89-110

Earth and Space Science

This topic focuses on air and water as they relate to weather and weather changes that can be observed and measured.

Content Statements	DSM
The atmosphere is made up of air. Air has properties that can be observed and measured. The transfer of energy in the atmosphere causes air movement, which is felt as wind. Wind speed and direction can be measured.	Weather Watching Activity 4-5, 9-10, pp. 37-50, 77-100 Reader, pp. 3-5, 7
Water is present in the air. Water is present in the air as clouds, steam, fog, rain, ice, snow, sleet or hail. When water in the air cools (change of energy), it forms small droplets of water that can be seen as clouds. Water can change from liquid to vapor in the air and from vapor to liquid. The water droplets can form into raindrops. Water droplets can change to solid by freezing into snow, sleet or hail. Clouds are moved by flowing air.	Weather Watching Activity 6-7, pp. 51-68 Reader, pp. 3-5
Long- and short-term weather changes occur due to changes in energy. Changes in energy affect all aspects of weather, including temperature, precipitation amount and	Weather Watching Activity 2-10, pp. 21-100 Reader, pp. 3-5, 8-10

wind.	
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Physical Science

This topic focuses on observing the relationship between forces and motion.

Content Statements	DSM
<p>Forces change the motion of an object. Motion can increase, change direction or stop depending on the force applied.</p> <p>The change in motion of an object is related to the size of the force.</p> <p>Some forces act without touching, such as using a magnet to move an object or objects falling to the ground.</p>	<p>Force and Motion Activity 3-5, pp. 31-55 Reader, pp. 3, 6-8, 15</p> <p>Weather Watching Activity 5, pp. 45-50</p> <p>Sink or Float Activity 1, pp. 13-19</p> <p>Force and Motion Activity 3-5, pp. 31-55</p> <p>Weather Watching Activity 5, pp. 45-50</p> <p>Force and Motion Reader, p. 2</p> <p>Sink or Float Activity 1, pp. 13-19 Reader, pp. 7-8</p>

Life Science

This topic focuses on how ecosystems work by observations of simple interactions between The biotic/living and abiotic/nonliving parts of an ecosystem. Just as living things impact the Environment in which they live, the environment also impacts living things.

Content Statements	DSM
<p>Living things cause changes on Earth. Living things function and interact with their physical environments. Living things cause changes in the environments where they live; the changes can be very noticeable or slightly noticeable, fast or slow.</p>	<p>Plant and Animal Populations Activity 3-4, 9-11, pp. 35-50, 85-100 Reader, pp. 4-13</p> <p>Classroom Plants Activity 3-6, 8, 11, pp. 29-64, 73-79, 97-104 Reader, pp. 3-10, 15</p> <p>Butterflies and Moths Activity 3, 8, 10, pp. 31-38, 71-77, 89-96 Reader, pp. 8-12</p> <p>Soil Science Activity 8-10, pp. 69-97 Reader, pp. 14-15</p>
<p>Some kinds of individuals that once lived on Earth have completely disappeared, although they were something like others that are alive today. Living things that once lived on Earth no longer exist; their basic needs were no longer met.</p>	<p>Plant and Animal Populations Reader, p. 15</p> <p>This topic is addressed in the grade 4 module <u>Dinosaurs and Fossils</u>.</p>

SCIENCE GRADE 3

Science Inquiry and Application

During the years of PreK-4 all students must use the following scientific processes to construct their knowledge and understanding in all science content areas:

Note: DSM is an inquiry-based program and has built into it the science processes listed below. Some examples are listed to illustrate.

Scientific Processes	DSM
Observe and ask questions about the natural environment	Butterflies and Moths Activity 4-6, pp. 39-59 Weather Watching Activity 6-7, pp. 51-68 Water Cycle Activity 4-5, pp. 39-51
Plan and conduct simple investigations	Classroom Plants Activity 5, pp. 47-53 Using Your Senses Activity 9-12, pp. 75-103 Food Chains and Webs Activity 3, pp. 31-37
Employ simple equipment and tools to gather data and extend the senses	States of Matter Activity 6-7, 11, pp. 51-63, 89-96 Soil Science Activity 1-4, pp. 15-44 Weather Instruments Activity 1-5, pp. 13-50
Use appropriate mathematics with data to construct reasonable explanations	States of Matter Activity 6-7, pp. 51-63 Force and Motion Activity 2-5, pp. 25-55 Dinosaurs and Fossils Activity 6-7, pp. 47-60
Communicate about observations, investigations and explanations	Using Your Senses Activity 2-4, pp. 23-44 Sink or Float Activity 9-12, pp. 75-107 Magnets Activity 2-4, pp. 19-34
Review and ask questions about the observations and explanations of others	Plant and Animal Populations Activity 9-11, pp. 85-110 Classroom Plants Activity 5-6, pp. 47-64 Sound Activity 7-11, pp. 59-98

Earth and Space Science

This topic focuses on Earth's resources. While resources can be living and nonliving, within this strand, the emphasis is on Earth's nonliving resources, such as water, air, rock, soil and the energy resources they represent.

Content Statements	DSM
Earth's nonliving resources have specific properties. Soil is composed of pieces of rock, organic material, water and air and has characteristics that can be measured and observed. Rocks have unique characteristics that allow them to be sorted and classified. Rocks form in different ways. Air and water are nonliving resources.	Soil Science Activity 1-5, pp. 15-50 Reader, pp. 2-6 Food Chains and Webs Activity 1, Part 1, pp. 15-22 Water Cycle Reader pp. 14-15 Earth Movements Reader, p. 15
Earth's resources can be used for energy. Many of Earth's resources can be used for the energy they contain. Renewable energy is an energy resource, such as wind, water or solar energy that is replenished within a short amount of time by natural processes. Nonrenewable energy is an energy resource, such as coal or oil that is a finite energy source that cannot be replenished in a short amount of time.	Soil Science Reader, pp. 10-11 Water Cycle Reader, pp. 14-15
Some of Earth's resources are limited. Some of Earth's resources become limited due to overuse and/or contamination. Reducing resource	Soil Science Reader, pp. 10-11 Water Cycle Reader, pp. 14-15

use, decreasing waste and/or pollution, recycling and reusing can help conserve these resources.

Physical Science

This topic focuses on the relationship between matter and energy. Matter has specific properties and is found in all substances on earth. Heat is a familiar form of energy that can change the states of matter.

Content Statements	DSM
<p>All objects and substances in the natural world are composed of matter. Matter takes up space and has weight.</p>	<p>States of Matter Reader, pp. 2-3</p>
<p>Matter exists in different states, each of which has different properties. The most common states of matter are solids, liquids and gases.</p> <p>Shape and compressibility are properties that can distinguish between the states of matter.</p> <p>The shape of a solid is independent of its container. Liquids and gases flow and take the shape of the container.</p> <p>One way to change matter from one state to another is by heating or cooling.</p>	<p>States of Matter Activity 1-3, pp. 13-34 Reader, pp. 4-6</p> <p>Water Cycle Reader, pp. 8-9</p> <p>States of Matter Activity 1-3, pp. 13-34 Reader, pp. 4-6</p> <p>States of Matter Activity 1-3, pp. 13-34 Reader, pp. 4-6</p> <p>States of Matter Activity 4-12, pp. 35-101 Reader, pp. 7-10</p> <p>Water Cycle Activity 4-5, 8-9, 11-13, pp. 39-51, 69-83, 91-114 Reader, pp. 8-9</p> <p>Weather Watching Reader, pp. 4-5</p> <p>Weather Instruments Activity 7, pp. 59-66 Reader, p. 6</p>
<p>Heat, electricity, light and sound are forms of energy. There are many different forms of energy. Energy is the ability to cause motion or create change.</p>	<p>States of Matter Activity 8-10, pp. 65-88 Reader, pp. 7-10, 13, 15</p> <p>Electrical Circuits Activity 1-4, pp. 13-43 Reader, 2-6, 10-11</p> <p>Sound Activity 1-3, pp. 13-35 Reader, pp. 2-3</p>

Life Science

This topic explores life cycles of organisms and the relationship between the natural environment and an organism's (physical and behavioral) traits, which affect its ability to survive and reproduce.

Content Statements	DSM
<p>Offspring resemble their parents and each other. Individual organisms inherit many traits from their parents indicating a reliable way to transfer information from one generation to the next.</p>	<p>DSM provides the opportunity for teachers to address this content statement. See below:</p> <p>Butterflies and Moths Activity 11, pp. 97-104 Reader, pp. 3, 8-13</p> <p>Classroom Plants Reader, p. 5</p> <p>Plant and Animal Life Cycles Activity 4-5, 10, pp. 43-56, 91-96</p>

<p>Some behavioral traits are learned through interactions with the environment and are not inherited.</p>	<p>Reader, pp. 7-12</p> <p>DSM provides the opportunity for teachers to address this content statement. See below: Butterflies and Moths Activity 10, pp. 89-95 Plant and Animal Life Cycles Activity 5, pp. 49-56 Reader, pp. 7-8, 10-11</p>
<p>Individuals of the same kind differ in their traits and sometimes the differences give individuals an advantage in surviving and reproducing. Plants and animals have physical features that are associated with the environments where they live.</p> <p>Plants and animals have certain physical or behavioral characteristics that improve their chances of surviving in particular environments.</p> <p>Individuals of the same kind have different characteristics that they have inherited. Sometimes these different characteristics give individuals an advantage in surviving and reproducing.</p>	<p>Butterflies and Moths Activity 4-5, 8, 10, pp. 39-52, 71-77, 89-96 Reader, pp. 4-7 Classroom Plants Activity 6-9, 11, pp. 55-86, 97-104 Reader, pp. 6-12 Plant and Animal Populations Activity 4-6, 10-11, pp. 43-67, 95-110 Plant and Animal Life Cycles Activity 4-5, pp. 43-56 Reader, pp. 10-12 Food Chains and Webs Activity 4-6, pp. 39-58 Reader, pp. 4-5</p> <p>DSM provides the opportunity for teachers to address this content statement. See below: Butterflies and Moths Activity 4-5, 8, 10, pp. 39-52, 71-77, 89-96 Reader, pp. 4-7 Classroom Plants Activity 6-9, 11, pp. 55-86, 97-104 Reader, pp. 6-12 Plant and Animal Populations Activity 4-6, 10-11, pp. 43-67, 95-110 Plant and Animal Life Cycles Activity 4-5, pp. 43-56 Reader, pp. 10-12 Food Chains and Webs Activity 4-6, pp. 39-58 Reader, pp. 4-5</p>
<p>Plants and animals have life cycles that are part of their adaptations for survival in their natural environments. Over the whole earth, organisms are growing, reproducing, dying and decaying. The details of the life cycle are different for different organisms affecting their ability to survive and reproduce in their natural environments.</p>	<p>Butterflies and Moths Activity 1, 6, 9, 11, pp. 15-21, 53-59, 79-87, 97-104 Classroom Plants Activity 9-10, pp. 81-95 Reader, p. 5 Plant and Animal Life Cycles Activity 2-6, 8-10, pp. 23-63, 75-96 Reader, pp. 2-13</p>

SCIENCE GRADE 4

Science Inquiry and Application

During the years of PreK-4 all students must use the following scientific processes to construct their knowledge and understanding in all science content areas:

Note: DSM is an inquiry-based program and has built into it the science processes listed below. Some examples are listed to illustrate.

Scientific Processes	DSM
Observe and ask questions about the natural environment	Earth Movements Activity 3-4, pp. 29-46 Water Cycle Activity 2-3, pp. 23-37 Solar System Activity 1, pp. 13-20
Plan and conduct simple investigations	Food Chains and Webs Activity 3, pp. 31-37 Sound Activity 9-11, pp. 73-98 Electrical Circuits Activity 6-, pp. 51-62
Employ simple equipment and tools to gather data and extend the senses	Dinosaurs and Fossils Activity 6-7, pp. 47-60 Weather Instruments Activity 1-5, pp. 13-50 Plant and Animal Life Cycles Activity 3-4, pp. 33-48
Use appropriate mathematics with data to construct reasonable explanations	Solar System Activity 6, 8, pp. 51-58, 65-72 Dinosaurs and Fossils Activity 6-7, pp. 47-60 Magnets Activity 4, pp. 29-34
Communicate about observations, investigations and explanations	Plant and Animal Life Cycles Activity 4-6, pp. 43-63 Magnets Activity 2-4, pp. 19-34 Electrical Circuits Activity 3-5, pp. 27-50
Review and ask questions about the observations and explanations of others	Water Cycle Activity 7-9, pp. 61-83 Earth Movements Activity 7-9, pp. 63-85 Sound Activity 7-11, pp. 59-98

Earth and Space Science

This topic focuses on the variety of processes that shape and reshape Earth's surface.

Content Statements	DSM
Earth's surface has specific characteristics and landforms that can be identified. About 70 percent of the Earth's surface is covered with water and most of that is the ocean. Only a small portion of the Earth's water is freshwater, which is found in rivers, lakes and groundwater. Earth's surface can change due to erosion and deposition of soil, rock or sediment. Catastrophic events such as flooding, volcanoes and earthquakes can create landforms.	Water Cycle Activity 1, pp. 13-21 Reader, pp. 2-5 Earth Movements Activity 3, 8-10, pp. 29-37, 71-96 Reader, pp. 8-13
The surface of Earth changes due to weathering. Rocks change shape, size and/or form due to water or ice movement, freeze and thaw, wind, plant growth, gases in the air, pollution and catastrophic events such as earthquakes, mass wasting, flooding and volcanic activity.	Earth Movements Activity 3, 8-10, pp. 29-37, 71-96 Reader, pp. 8-13
The surface of Earth changes due to erosion and deposition.	

Water, wind and ice physically remove and carry (erosion) rock, soil and sediment and deposit the material in a new location.	Earth Movements Reader, pp. 12-13
Gravitational force affects movements of water, rock and soil.	Earth Movements Raeder, pp. 12-13

Physical Science

This topic focuses on the conservation of matter and physical properties of matter that allow the transfer of heat or electricity.

Content Statements	DSM
<p>The total amount of matter is conserved when it undergoes a change. When an object is broken into smaller pieces, when a solid is dissolved in a liquid or when matter changes state (solid, liquid, gas), the total amount of matter remains constant</p>	
<p>Heat results when substances burn, when certain kinds of materials rub against each other, and when electricity flows through wires. Metals are good conductors of heat and electricity. Electricity flowing through an electric circuit produces magnetic effects in the wire. Electrical energy in circuits can be changed to other forms of energy, including light, heat, sound and motion. Electric circuits require a complete loop through conducting materials in which an electric current can pass.</p>	<p>Electrical Circuits Activity 1-12, pp. 13-94 Reader, pp. 3-7, 10-11 Magnets Activity 10-11, pp. 65-76 Reader, pp. 10-11</p>

Life Science

This topic focuses on using fossil evidence and living organisms to observe that suitable habitats depend upon a combination of biotic and abiotic factors.

Content Statements	DSM
<p>Changes in an organism's environment are sometimes beneficial to its survival and sometimes harmful. Ecosystems can change gradually or dramatically. When the environment changes, some plants and animals survive and reproduce and others die or move to new locations. An animal's patterns of behavior are related to the environment. This includes the kinds and numbers of other organisms present, the availability of food and resources, and the physical attributes of the environment.</p>	<p>Food Chains and Webs Activity 7-9, 11-2, pp. 59-79, 89-101 Reader, pp. 6-10, 12, 14-15</p>
<p>Fossils can be compared to one another and to present day organisms according to their similarities and differences. The concept of biodiversity is expanded to include different classification schemes based upon shared internal and external characteristics of organisms.</p> <p>Most species that have lived on Earth no longer exist.</p>	<p>Dinosaurs and Fossils Activity 9-10, pp. 61-73</p> <p>Dinosaurs and Fossils Activity 2-3, pp. 13-19</p>

Fossils provide a point of comparison between the types of organisms that lived long ago and those existing today.

Dinosaurs and Fossils Activity 2-3, pp. 21-34
Reader, pp. 4-11, 13-15

SCIENCE GRADE 5

Science Inquiry and Application

During the years of grades 5-8 all students must use the following scientific processes to construct their knowledge and understanding in all science content areas:

Note: DSM is an inquiry-based program and has built into it the science processes listed below. Some examples are listed to illustrate.

Scientific Processes	DSM
Identify questions that can be answered through scientific investigations	Flight and Rocketry Activity 8-9, pp. 81-97 Color and Light Activity 2-4, pp. 19-43 Rocks and Minerals Activity 4-5, pp. 35-45
Design and conduct a scientific investigation	Pollution Activity 10, pp. 71-76 Simple Machines Activity 3-4, pp. 25-37 Erosion Activity 7-8, pp. 59-73
Use appropriate mathematics, tools and techniques to gather data and information	You and Your Body Activity 6, pp. 49-54 Simple Machines Activity 1-2, pp. 13-24 Erosion Activity 4, 7, pp. 37-42, 59-66
Analyze and interpret data	Color and Light Activity 4-5, pp. 37-52 Electromagnetism Activity 5-6, pp. 37-48 Flight and Rocketry Activity 8-9, pp. 81-97
Develop descriptions, models, explanations and predictions	Rocks and Minerals Activity 9-10, pp. 69-84 You and Your Body Activity 4-6, pp. 33-54 Erosion Activity 10-12, pp. 83-104
Think critically and logically to connect evidence and explanations	Oceans Activity 4-5, pp. 43-63 Simple Machines Activity 8-9, pp. 65-76 Pollution Activity 8-10, pp. 59-76
Recognize and analyze alternative explanations and predications	Erosion Activity 5-6, pp. 43-57 Color and Light Activity 9-10, pp. 77-91 Flight and Rocketry Activity 5-6, pp. 55-72
Communicate scientific procedures and explanations	Oceans Activity 2-3, pp. 23-41 Electromagnetism Activity 2-5, pp. 19-42 You and Your Body Activity 9-11, pp. 67-84

Earth and Space Science

This topic focuses on the characteristics, cycles and patterns in the solar system and within the universe.

Content Statements	DSM
<p>The solar system includes the sun and all celestial bodies that orbit the sun. Each planet in the solar system has unique characteristics.</p> <p>The distance from the sun, size, composition and movement of each planet are unique. Planets revolve around the sun in elliptical orbits. Some of the planets have moons and/or debris that orbit them. Comets, asteroids and meteoroids orbit the sun.</p>	<p>This topic as addressed in the grade 4 module <u>Solar System</u>.</p> <p>This topic as addressed in the grade 6 module <u>Earth, Moon and Sun</u>.</p>
<p>The sun is one of many stars that exist in the universe.</p> <p>The sun appears to be the largest star in the sky because it is the closest star to Earth. Some stars are larger than the sun and some stars are smaller than the sun.</p>	<p>This topic as addressed in the grade 4 module <u>Solar System</u>.</p> <p>This topic as addressed in the grade 6 module <u>Astronomy</u>.</p>

<p>Most of the cycles and patterns of motion between the Earth and sun are predictable.</p> <p>Earth's revolution around the sun takes approximately 365 days. Earth completes one rotation on its axis in a 24-hour period, producing day and night. This rotation makes the sun; stars and moon appear to change position in the sky. Earth's axis is tilted at an angle of 23.5°. This tilt, along with Earth's revolution around the sun, affects the amount of direct sunlight that the Earth receives in a single day and throughout the year. The average daily temperature is related to the amount of direct sunlight received. Changes in average temperature throughout the year are identified as seasons.</p>	<p>This topic as addressed in the grade 4 module <u>Solar System</u>.</p> <p>This topic as addressed in the grade 6 module <u>Earth, Moon and Sun</u>.</p> <p>This topic as addressed in the grade 6 module <u>Astronomy</u>.</p>
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Physical Science

This topic focuses on the forces that affect motion. This includes the relationship between the speed of an object, the amount of force applied and the weight of the object. Light and sound are explored as forms of energy that move in predictable ways, depending on the matter through which they move.

Content Statements	DSM
<p>The amount of change in movement of an object is based on the weight of the object and the amount of force exerted.</p> <p>Movement can be measured by speed. The speed of an object is calculated by determining the distance (d) traveled in a period of time (t).</p> <p>Earth pulls down on all objects with gravitational force. Weight is a measure of the gravitational force between an object and the Earth. The weight of the object and the amount of force applied affect the speed of the object.</p>	<p>DSM provides the opportunity for teachers to address this content statement. See below: Flight and Rocketry Activity 8-9, pp. 81-97 Simple Machines Reader, p. 2</p> <p>Flight and Rocketry Activity 2, pp. 23-32 Reader, pp. 4, 7 Simple Machines Activity 1, pp. 13-18 Reader, p. 2</p>
<p>Light and sound are forms of energy that behave in predicable ways.</p> <p>Light travels and maintains its direction until it interacts with an object or when it moves from one medium to another, and then it can be reflected, refracted or absorbed.</p> <p>Sound is produced by vibrating objects and requires a medium through which to travel. The rate of vibration is related to the pitch of the sound.</p>	<p>Color and Light Activity 1-7, pp. 13-67 Reader, pp. 1-7</p> <p>This topic as addressed in the grade 4 module <u>Sound</u>.</p>

Life Science

This topic focuses on foundational knowledge of the structures and functions of ecosystems.

Content Statements	DSM
<p>Organisms perform a variety of roles in an ecosystem.</p> <p>Populations of organisms can be categorized by how they acquire energy.</p>	<p>This topic as addressed in the grade 4 module <u>Food Chains and Webs</u>.</p>

<p>Food webs can be used to identify the relationships among producers, consumers and decomposers in an ecosystem.</p>	<p>This topic as addressed in the grade 4 module <u>Food Chains and Webs</u>.</p>
<p>All of the processes that take place within organisms require energy. For ecosystems, the major source of energy is sunlight.</p> <p>Energy entering ecosystems as sunlight is transferred and transformed by producers into energy that organisms use through the process of photosynthesis. That energy then passes from organism to organism as illustrated in food webs.</p> <p>In most ecosystems, energy derived from the sun is transferred and transformed into energy that organisms use by the process of photosynthesis in plants and other photosynthetic organisms.</p>	<p>This topic as addressed in the grade 4 module <u>Food Chains and Webs</u>. This topic as addressed in the grade 6 module <u>Plants in Our World</u>. This topic as addressed in the grade 6 module <u>DNA-From Genes to Protein</u>.</p> <p>This topic as addressed in the grade 4 module <u>Food Chains and Webs</u>. This topic as addressed in the grade 6 module <u>Plants in Our World</u>. This topic as addressed in the grade 6 module <u>DNA-From Genes to Protein</u>.</p> <p>This topic as addressed in the grade 4 module <u>Food Chains and Webs</u>. This topic as addressed in the grade 6 module <u>Plants in Our World</u>. This topic as addressed in the grade 6 module <u>DNA-From Genes to Protein</u>.</p>

SCIENCE GRADE 6

Science Inquiry and Application

During the years of grades 5-8 all students must use the following scientific processes to construct their knowledge and understanding in all science content areas:

Note: DSM is an inquiry-based program and has built into it the science processes listed below. Some examples are listed to illustrate.

Scientific Processes	DSM
Identify questions that can be answered through scientific investigations	Flight and Rocketry Activity 8-9, pp. 81-97 Color and Light Activity 2-4, pp. 19-43 Matter and Change Activity 11-12, pp. 93-104
Design and conduct a scientific investigation	Pollution Activity 10, pp. 71-76 Simple Machines Activity 3-4, pp. 25-37 Plants in Our World Activity 3, pp. 35-40
Use appropriate mathematics, tools and techniques to gather data and information	You and Your Body Activity 6, pp. 49-54 Simple Machines Activity 1-2, pp. 13-24 Newton's Toy Box Activity 8-9, pp. 55-65
Analyze and interpret data	Color and Light Activity 4-5, pp. 37-52 Electromagnetism Activity 5-6, pp. 37-48 Electrical Connections Activity 9-10, pp. 75-87
Develop descriptions, models, explanations and predictions	Rocks and Minerals Activity 9-10, pp. 69-84 You and Your Body Activity 4-6, pp. 33-54 Earth Processes Activity 11-12, pp. 97-110
Think critically and logically to connect evidence and explanations	Oceans Activity 4-5, pp. 43-63 Simple Machines Activity 8-9, pp. 65-76 Newton's Toy Box Activity 7-9, pp. 49-65
Recognize and analyze alternative explanations and predications	Erosion Activity 5-6, pp. 43-57 Color and Light Activity 9-10, pp. 77-91 Earth processes Activity 1, pp. 13-21
Communicate scientific procedures and explanations	Oceans Activity 2-3, pp. 23-41 Electromagnetism Activity 2-5, pp. 19-42 Earth, Moon and Sun Activity 11-12, pp. 103-119

Earth and Space Science

This topic focuses on the study of rocks, minerals and soil which make up the lithosphere. By classifying and identifying different types of rocks, minerals and soil, the past environment in which they formed can be decoded.

Content Statements	DSM
Minerals have specific, quantifiable properties. Minerals are naturally occurring, inorganic solids that have a defined chemical composition. Minerals have properties that can be observed and measured. Minerals form in specific environments.	Rocks and Minerals Activity 1, 3-7, pp. 13-19, 29-59 Reader, pp. 2-8
Igneous, metamorphic and sedimentary rocks have unique characteristics that can be used for identification and/or classification. Most rocks are composed of one or more minerals, but there are a few types of sedimentary rocks that contain organic material, such as coal. The composition of the rock, types of mineral present, mineral arrangement, and/or mineral shape and size can be used to identify the rock and to interpret its history of formation, breakdown	Rocks and Minerals Activity 2, 9-12, pp. 21-28, 69-98 Reader, pp. 9-13 Earth Processes Activity 4-6, pp. 39-62 Reader, pp. 16-19

(weathering) and transport (erosion).	
<p>Igneous, metamorphic and sedimentary rocks form in different ways.</p> <p>Magma or lava cools and crystallizes to form igneous rocks. Heat and pressure applied to existing rock forms metamorphic rocks. Sedimentary rock forms as existing rock weathers chemically and/or physically and the weathered material is compressed and then lithifies. Each rock type can provide information</p>	<p>Rocks and Minerals Activity 2, 9-12, pp. 21-28, 69-98 Reader, pp. 9-13</p> <p>Earth Processes Activity 4-6, pp. 39-62 Reader, pp. 16-19</p>
<p>Soil is unconsolidated material that contains nutrient matter and weathered rock.</p> <p>Soil formation occurs at different rates and is based on environmental conditions, type of existing bedrock and rates of weathering. Soil forms in layers known as horizons. Soil horizons can be distinguished from one another based on properties that can be measured.</p>	<p>Erosion Reader, p. 7</p> <p>Earth Processes Reader, pp. 19-20</p>
<p>Rocks, minerals and soils have common and practical uses.</p> <p>Nearly all manufactured material requires some kind of geologic resource. Most geologic resources are considered nonrenewable. Rocks, minerals and soil are examples of geologic resources that are nonrenewable.</p>	<p>Rocks and Minerals Activity 11, pp. 85-92 Activity 9, Science, Technology and Society, p. 76 Reader, pp. 4, 7-8, 12</p>

Physical Science

This topic focuses on the study of foundational concepts of the particulate nature of matter, linear motion, and kinetic energy.

Content Statements	DSM
<p>All matter is made up of small particles called atoms.</p> <p>Each atom takes up space, has mass and is in constant motion. Mass is the amount of matter in an object.</p> <p>Elements are a class of substances composed of a single kind of atom.</p> <p>Molecules are the combination of two or more atoms that are joined together chemically.</p> <p>Compounds are composed of two or more different elements. Each element and compound has properties, which are independent of the amount of the sample.</p>	<p>Matter and Change Activity 4, pp. 37-44 Reader, p. 2</p> <p>Matter and Change Activity 4, pp. 37-44 Reader, pp. 4-5</p> <p>Matter and Change Activity 5, pp. 45-51 Reader, pp. 6-8</p> <p>Matter and Change Activity 5, pp. 45-51 Reader, pp. 6-8</p>
<p>Changes of state are explained by a model of matter composed of atoms and/or molecules that are in motion.</p> <p>Atoms and molecules are not changed in structure when a substance undergoes a change of state; the amount of motion of the atoms and molecules is changed. Thermal energy is a measure of the motion of the atoms and molecules in a substance.</p>	<p>Matter and Change Reader, pp. 9-12</p>

Mass is conserved when substances undergo changes of state.	
<p>There are two categories of energy: kinetic and potential. Objects and substances in motion have kinetic energy.</p> <p>Objects and substances can store energy as a result of its position (potential energy).</p>	<p>DSM provides the opportunity for teachers to address this content statement. See below: Flight and Rocketry Activity 8-9, 11-12, pp. 81-97, 111-130 Simple Machines Activity 3-6, pp. 25-55 Newton's Toy Box Activity 3-13, pp. 25-90 Reader, p. 14</p> <p>DSM provides the opportunity for teachers to address this content statement. See below: Flight and Rocketry Activity 8-9, pp. 81-97 Newton's Toy Box Activity 7-10, pp. 49-72 Reader, p. 14</p>
<p>An object's motion can be described by its speed and the direction in which it is moving. An object's position and speed can be measured and graphed as a function of time.</p>	<p>DSM provides the opportunity for teachers to address this content statement. See below: Flight and Rocketry Activity 8-9, pp. 81-97 Newton's Toy Box Activity 7-8, pp. 49-59 Reader, pp. 3, 5</p>

Life Science

This topic focuses on the study of the basics of Modern Cell Theory. All organisms are composed of cells, which are the fundamental unit of life. Cells carry on the many processes that sustain life. All cells come from pre-existing cells.

Content Statements	DSM
<p>Cells are the fundamental unit of life. All living things are composed of cells. Different body tissues and organs are made of different kinds of cells. The ways cells function are similar in all living organisms</p>	<p>Plants in Our World Activity 1-2, 4, pp. 13-33, 41-47 Reader, pp. 1, 14-15 DNA-From Genes to Proteins Activity 3-4, pp. 25-39 Reader, pp. 2-9</p>
<p>All cells come from pre-existing cells. Cells repeatedly divide resulting in more cells and growth and repair in multicellular organisms.</p>	<p>DNA-From Genes to Proteins Activity 5, pp. 41-49 Reader, pp. 12-14</p>
<p>Cells carry on specific functions that sustain life. Many basic functions of organisms occur in cells. Cells take in nutrients and energy to perform work, like making various molecules required by that cell or an organism.</p> <p>Every cell is covered by a membrane that controls what can enter and leave the cell</p>	<p>Plants in Our World Reader, pp. 3-4 DNA-From Genes to Proteins Reader, pp. 6-14</p>

<p>Within the cell are specialized parts for the transport of materials, energy capture and release, protein building, waste disposal, information feedback and movement.</p>	<p>Plants in Our World Activity 1, pp. 13-25 Reader, p. 2 DNA-From Genes to Proteins Activity 3-4, pp. 25-39 Reader, pp. 5-9</p> <p>Plants in Our World Activity 1, pp. 13-25 Reader, p. 2 DNA-From Genes to Proteins Activity 3-5, pp. 25-49 Reader, pp. 4-11</p>
<p>Living systems at all levels of organization demonstrate the complementary nature of structure and function. Level of organization within organisms includes cells, tissues, organs, organ systems and whole organisms.</p> <p>Whether the organism is single-celled or multicellular, all of its parts function as a whole to perform the tasks necessary for the survival of the organism.</p> <p>Organisms have diverse body plans, symmetry and internal structures that contribute to their being able to survive in their environments.</p>	<p>You and Your Body Reader, pp. 2-11 DNA-From Genes to Proteins Reader, p. 3 Plants in Our World Activity 1-3, pp. 13-35</p> <p>You and Your Body Reader, pp. 2-3 DNA-From Genes to Proteins Reader, p. 3 Plants in Our World Activity 1-6, 8-11, pp. 13-62, 73-102 Reader, pp. 2-20</p> <p>You and Your Body Activity 1-2, 4, 6-7, pp. 13-25, 33-39, 49-60 Reader, pp. 2-11 Plants in Our World Reader, pp. 3-20</p>

SCIENCE GRADE 7

Science Inquiry and Application

During the years of grades 5-8 all students must use the following scientific processes to construct their knowledge and understanding in all science content areas:

Note: DSM is an inquiry-based program and has built into it the science processes listed below. Some examples are listed to illustrate.

Scientific Processes	DSM
Identify questions that can be answered through scientific investigations	Earth Processes Activity 3, pp. 29-37 Plats in Our World Activity 3, pp. 35-40 Matter and Change Activity 11-12, pp. 93-104
Design and conduct a scientific investigation	Electrical Connections Activity 9, pp. 75-80 Newton's Toy Box Activity 7, pp. 49-54 Plants in Our World Activity 3, pp. 35-40
Use appropriate mathematics, tools and techniques to gather data and information	Earth, Moon and Sun Activity 3-4, pp. 29-44 Matter and Change Activity 1-2, pp. 13-27 Newton's Toy Box Activity 8-9, pp. 55-65
Analyze and interpret data	Earth Processes Activity 10, pp. 89-95 Electrical Connections Activity 9-10, pp. 75-87 Matter and Change Activity 2, pp. 21-27
Develop descriptions, models, explanations and predictions	DNA-From Genes to Proteins Activity 4-6, pp. 39-58 Astronomy Activity 4-5, pp. 41-60 Earth Processes Activity 11-12, pp. 97-110
Think critically and logically to connect evidence and explanations	Plants in Our World Activity 5, pp. 49-55 Electrical Connections Activity 9-10, pp. 75-87 Newton's Toy Box Activity 7-9, pp. 49-65
Recognize and analyze alternative explanations and predications	Electrical Connections Activity 5-6, pp. 43-52 Earth Processes Activity 1, pp. 13-21 Newton's Toy Box Activity 10-12, pp. 67-83
Communicate scientific procedures and explanations	Astronomy Activity 9, pp. 85-91 Matter and Change Activity 12-13, pp. 99-109 Earth, Moon and Sun Activity 11-12, pp. 103-119

Earth and Space Science

This topic focuses on Earth's hydrologic cycle, patterns that exist in atmospheric and oceanic currents, the relationship between thermal energy and the currents, and the relative position and movement of the Earth, sun, and moon.

Content Statements	DSM
<p>The hydrologic cycle illustrates the changing states of water as it moves through the lithosphere, biosphere, hydrosphere and atmosphere.</p> <p>Thermal energy is transferred as water changes state throughout the cycle. The cycling of water in the atmosphere is an important part of weather patterns on Earth. The rate at which water flows through soil and rock is dependent upon the porosity and permeability of the soil or rock.</p>	
<p>Thermal-energy transfers in the ocean and the atmosphere contribute to the formation of currents, which influence global climate</p>	

<p>patterns. The sun is the major source of energy for wind, air and ocean currents and the hydrologic cycle. As thermal energy transfers occur in the atmosphere and ocean, currents form. Large bodies of water can influence weather and climate. The jet stream is an example of an atmospheric current and the Gulf Stream is an example of an oceanic current. Ocean currents are influenced by factors other than thermal energy, such as water density, mineral content (such as salinity), ocean floor topography and Earth's rotation. All of these factors delineate global climate patterns on Earth.</p>	
<p>The atmosphere has different properties at different elevations and contains a mixture of gases that cycle through the lithosphere, biosphere, hydrosphere and atmosphere. The atmosphere is held to the Earth by the force of gravity. There are defined layers of the atmosphere that have specific properties, such as temperature, chemical composition and physical characteristics. Gases in the atmosphere include nitrogen, oxygen, water vapor, carbon dioxide and other trace gases. Biogeochemical cycles illustrate the movement of specific elements or molecules (such as carbon or nitrogen) through the lithosphere, biosphere, hydrosphere and atmosphere.</p>	
<p>The relative patterns of motion and positions of the Earth, moon and sun cause solar and lunar eclipses, tides and phases of the moon. The moon's orbit and its change of position relative to the Earth and sun result in different parts of the moon being visible from Earth (phases of the moon). A solar eclipse is when Earth moves into the shadow of the moon during a new moon). A lunar eclipse is when the moon moves into the shadow of Earth (during a full moon). Gravitational force between the Earth and the moon causes daily oceanic tides. When the gravitational forces from the sun and moon align (at new and full moons) spring tides occur. When the gravitational forces of the sun and moon are perpendicular (at first and last quarter moons), neap tides occur.</p>	<p>Earth, Moon and Sun Activity 10-12, pp. 93-119 Reader, pp. 13-19</p>

Physical Science

This topic focuses on the empirical evidence for the arrangements of atoms on the Periodic Table of Elements, conservation of mass and energy, transformation and transfer of energy.

Content Statements	DSM
<p>The properties of matter are determined by the arrangement of atoms. Elements can be organized into families of elements with similar properties, such as highly reactive metals, less-reactive metals, highly reactive nonmetals and some almost-completely nonreactive gases.</p>	<p>Matter and Change Activity 4-7, 10, pp. 37-68, 85-92 Reader, pp. 4-8, 14, 16-18, 20</p>

<p>Substances are classified according to their properties, such as metals and acids. When substances are combined in a mixture, the new product may have different properties, but the amount of mass does not change.</p>	
<p>Energy can be transformed from one form to another or can be transferred from one location to another, but is never lost. When energy is transferred from one system to another, the quantity of energy before transfer equals the quantity of energy after transfer. When energy is transformed from one form to another, the total amount of energy remains the same.</p>	<p>DSM provides the opportunity for teachers to address this content statement. See below: Electrical Connections Activity 2-3, pp. 21-33 Reader, pp. 7-8, 16 Newton's Toy Box Activity 8-10, pp. 55-72 Reader, p. 14</p>
<p>Energy can be transferred through a variety of ways. Thermal energy can be transferred through radiation, convection and conduction. Mechanical energy can be transferred when objects push or pull on each other over a distance. Electromagnetic waves transfer energy when they interact with matter. Electrical energy transfers when an electrical source is connected in a complete electrical circuit to an electrical device.</p>	<p>Earth Processes Activity 12, pp. 105-110 Electrical Connections Activity 2-3, 9-11, pp. 21-33, 75-94 Reader, pp. 7-8 Newton's Toy Box Activity 7-10, pp. 49-72 Reader, pp. 10-14</p>

Life Science

This topic focuses on the impact of matter and energy transfer within the biotic component of ecosystems.

Content Statements	DSM
<p>Matter is transferred continuously between one organism to another and between organisms and their physical environments. Plants use the energy in light to make sugars out of carbon dioxide and water (photosynthesis). These materials can be used immediately stored for later use. Organisms that eat plants break down plant structures to produce the materials and energy they need to survive. Then they are consumed by other organisms.</p> <p>Energy can transform from one form to another in living things. Animals get energy from oxidizing their food, releasing some of its energy as heat. The total amount of matter and energy remains constant, even though its form and location change</p>	<p>DNA-From Genes to Proteins Reader, pp. 10-11 Plants in Our World Activity 8-10, pp. 73-93 Reader, pp. 3-4</p> <p>DNA-From Genes to Proteins Reader, pp. 10-11 Plants in Our World Reader, pp. 3-4</p>
<p>In any particular biome, the number, growth and survival of organisms and populations depend on biotic and abiotic factors. Biomes are regional ecosystems characterized by distinct types of organisms that have developed under specific soil and climatic conditions. The variety of physical (abiotic) conditions that exists on Earth gives rise to diverse environments (biomes) and allows for the existence of a wide variety of organisms (biodiversity).</p>	

<p>Ecosystems are dynamic in nature; the number and types of species fluctuate over time. Disruptions, deliberate or inadvertent, to the physical (abiotic) or biological (biotic) components of an ecosystem impact the composition of an ecosystem.</p>	
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SCIENCE GRADE 8

Science Inquiry and Application

During the years of grades 5-8 all students must use the following scientific processes to construct their knowledge and understanding in all science content areas:

Note: DSM is an inquiry-based program and has built into it the science processes listed below. Some examples are listed to illustrate.

Scientific Processes	DSM
Identify questions that can be answered through scientific investigations	Earth Processes Activity 3, pp. 29-37 Plants in Our World Activity 3, pp. 35-40 Matter and Change Activity 11-12, pp. 93-104
Design and conduct a scientific investigation	Electrical Connections Activity 9, pp. 75-80 Newton's Toy Box Activity 7, pp. 49-54 Plants in Our World Activity 3, pp. 35-40
Use appropriate mathematics, tools and techniques to gather data and information	Earth, Moon and Sun Activity 3-4, pp. 29-44 Matter and Change Activity 1-2, pp. 13-27 Newton's Toy Box Activity 8-9, pp. 55-65
Analyze and interpret data	Earth Processes Activity 10, pp. 89-95 Electrical Connections Activity 9-10, pp. 75-87 Matter and Change Activity 2, pp. 21-27
Develop descriptions, models, explanations and predictions	DNA-From Genes to Proteins Activity 4-6, pp. 39-58 Astronomy Activity 4-5, pp. 41-60 Earth Processes Activity 11-12, pp. 97-110
Think critically and logically to connect evidence and explanations	Plants in Our World Activity 5, pp. 49-55 Electrical Connections Activity 9-10, pp. 75-87 Newton's Toy Box Activity 7-9, pp. 49-65
Recognize and analyze alternative explanations and predications	Electrical Connections Activity 5-6, pp. 43-52 Earth Processes Activity 1, pp. 13-21 Newton's Toy Box Activity 10-12, pp. 67-83
Communicate scientific procedures and explanations	Astronomy Activity 9, pp. 85-91 Matter and Change Activity 12-13, pp. 99-109 Earth, Moon and Sun Activity 11-12, pp. 103-119

Earth and Space Science

This topic focuses on the physical features of Earth and how they formed. This includes the interior of Earth, the rock record, plate tectonics and landforms.

Content Statements	DSM
<p>The composition and properties of Earth's interior are identified by the behavior of seismic waves.</p> <p>The refraction and reflection of seismic waves as they move through one type of material to another is used to differentiate the layers of Earth's interior. Earth has an inner and outer core, an upper and lower mantle, and a crust.</p> <p>The formation of the planet generated heat from gravitational energy and the decay of radioactive elements, which is still present today. Heat released from Earth's core drives convection currents throughout the mantle and the crust.</p>	<p>Earth Processes Activity 2, pp. 23-38 Reader, pp. 2-3</p> <p>Earth Processes Activity 12, pp. 105-110 Reader, pp. 3, 6</p>
Earth's crust consists of major and minor	

<p>tectonic plates that move relative to each other. Historical data and observations such as fossil distribution, paleomagnetism, continental drift and sea-floor spreading contributed to the theory of plate tectonics. The rigid tectonic plates move with the molten rock and magma beneath them in the upper mantle.</p> <p>Convection currents in the crust and upper mantle cause the movement of the plates. The energy that forms convection currents comes from deep within the Earth.</p> <p>There are three main types of plate boundaries: divergent, convergent and transform. Each type of boundary results in specific motion and causes events (such as earthquakes or volcanic activity) or features (such as mountains or trenches) that are indicative of that type of boundary.</p>	<p>Earth Processes Activity 1, 12-14, pp. 13-21, 105-129 Reader, pp. 4-10</p> <p>Earth Processes Activity 12, pp. 105-110 Reader, pp. 3-6</p> <p>Earth Processes Activity 14, pp. 121-129 Reader, pp. 7-8</p>
<p>A combination of constructive and destructive geologic processes formed Earth's surface. Earth's surface is formed from a variety of different geologic processes, including but not limited to plate tectonics.</p>	<p>Earth Processes Activity 3-8, pp. 29-79 Reader, pp. 8, 10-15</p>
<p>Evidence of the dynamic changes of Earth's surface through time is found in the geologic record. Earth is approximately 4.6 billion years old. Earth history is based on observations of the geologic record and the understanding that processes observed at present day are similar to those that occurred in the past (uniformitarianism). There are different methods to determine relative and absolute age of some rock layers in the geologic record. Within a sequence of undisturbed sedimentary rocks, the oldest rocks are at the bottom (superposition). The geologic record can help identify past environments and climate conditions.</p>	<p>Earth Processes Reader, p. 22</p>

Physical Science

This topic focuses on forces and motion within, on and around the Earth and within the universe.

Content Statements	DSM
<p>Some forces between objects act when the objects are in direct contact or when they are not touching. Magnetic, electrical and gravitational forces can act at a distance.</p>	<p>Electrical Connections Activity 1, 11, pp. 13-19, 89-94 Reader, pp. 4-6, 11-14</p> <p>Newton's Toy Box Activity 2-6, 8-9, pp. 19-48, 55-65 Reader, pp. 4, 8, 22-23</p> <p>Astronomy Reader, p. 3</p> <p>Earth, Moon and Sun Reader, p. 5</p>

<p>Forces have magnitude and direction. The motion of an object is always measured with respect to a reference point.</p> <p>Forces can be added. The net force on an object is the sum of all of the forces acting on the object. The net force acting on an object can change the object's direction and/or speed.</p> <p>When the net force is greater than zero, the object's speed and/or direction will change. When the net force is zero, the object remains at rest or continues to move at a constant speed in a straight line.</p>	<p>Newton's Toy Box Activity 1-13, pp. 13-90 Reader, pp. 2-3</p> <p>Newton's Toy Box Activity 4-6, pp. 33-48 Reader, pp. 4-7, 9-13</p> <p>DSM provides the opportunity for teachers to address this content statement. See below: Newton's Toy Box Activity 1-13, pp. 13-90 Reader, p. 11</p>
<p>There are different types of potential energy. Gravitational potential energy changes in a system as the masses or relative position(s) of objects are changed. Objects can have elastic potential energy due to their compression, or chemical potential energy due to the nature and arrangement of the atoms that make up the object.</p>	<p>Newton's Toy Box Activity 2-3, 10-12, pp. 19-31, 67-83, pp. 13-90 Reader, pp. 8, 14, 23</p>

Life Science

This topic focuses on continuation of the species.

Content Statements	DSM
<p>Diversity of species occurs through gradual processes over many generations. Fossil records provide evidence that changes have occurred in number and types of species.</p> <p>Fossils provide important evidence of how life and environmental conditions have changed.</p> <p>Changes in environmental conditions can affect how beneficial a trait will be for the survival and reproductive success of an organism or an entire species.</p> <p>Throughout Earth's history, extinction of a species has occurred when the environment changes and the individual organisms of that species do not have the traits necessary to survive and reproduce in the changed environment. Most species (approximately 99 percent) that have lived on Earth are now extinct.</p>	<p>Earth Processes Reader, p. 22</p> <p>DNA-From Genes to Proteins Reader p. 19</p>
<p>Reproduction is necessary for the continuation of every species. Every organism alive today comes from a long line of ancestors who reproduced successfully every generation. Reproduction is the transfer of genetic information from one generation to the next. It can occur with mixing of genes from two individuals (sexual reproduction). It can occur with the transfer of genes from one individual to the next generation (asexual reproduction). The ability to reproduce</p>	<p>DNA-From Genes to Proteins Reader pp. 12-14 Plants in Our World Reader, pp. 6-7</p>

<p>defines living things.</p>	
<p>The characteristics of an organism are a result of inherited traits received from parent(s). Expression of all traits is determined by genes and environmental factors to varying degrees. Many genes influence more than one trait, and many traits are influenced by more than one gene.</p> <p>During reproduction, genetic information (DNA) is transmitted between parent and offspring. In asexual reproduction, the lone parent contributes DNA to the offspring. In sexual reproduction, both parents contribute DNA to the offspring.</p>	<p>DNA-From Genes to Proteins Reader pp. 15-19</p> <p>DNA-From Genes to Proteins Reader pp. 15-19</p>