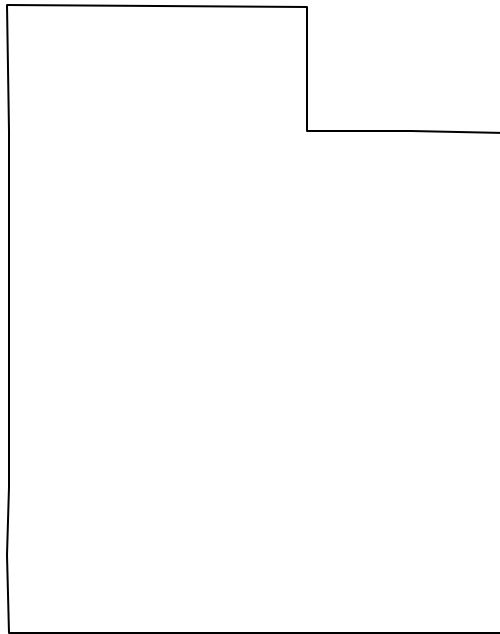


Delta Science Modules
(DSM™)
Grades K-8

Correlation to

UTAH
Core Curriculum



Correlation of the Utah Science Core Curriculum with Delta Science Modules (DSM)

The following correlation of the Utah Science Core Curriculum to the Delta Science Modules Program is to show representative examples of investigations and activities that address listed standards and their objectives. A citation does not reflect all of the investigations or activities from DSM that might address a particular standard or objective.

Note: The Kindergarten, First, and Second Grade Core Curriculum is an integrated curriculum and core concepts are distributed across all curricular areas. The standards relevant to science are presented in this correlation.

August 2005

Kindergarten

STANDARD III

Students will develop an understanding of their environment.

Objective 1: Investigate changes in the seasons.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify the seasons and represent each with pictures and songs.		
b. Observe and describe typical weather for each of the seasons.		
c. Describe the information each of the five senses provides with the changing of seasons.		
d. Observe and describe changes in behavior of animals as the seasons change.		
e. Describe how people change their behavior as the seasons change.		

Objective 2: Observe and describe animals in the local environment.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Observe, describe, draw, and compare familiar animals.	Observing an Aquarium Activity 4-6, 8-9 Activity 1, Science and Language Arts Reader	Pages 39-67, 79-95 Page 21 Pages 4-11
b. Describe how young animals are different from adult animals.	Observing an Aquarium Activity 10 Reader	Pages 97-107 Pages 10-11
c. Describe how animals care for their young.	Observing an Aquarium Activity 10	Pages 97-107
d. Observe and Imitate the sounds and movements of animals with songs, dances, and storytelling.	Observing an Aquarium Activity 5, Science and Language Arts	Page 55
e. Distinguish between real and make-believe animal behaviors.	Observing an Aquarium Activity 5, Science and Language Arts	Page 55

Grade One

STANDARD III

Students will develop an understanding of their environment.

Objective 1: Investigate plants and plant growth.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Observe and draw pictures of plants.	From Seed to Plant Activity 3-14 Reader Observing an Aquarium Activity 3, 6	Pages 33-109 Pages 2-11 Pages 31-38, 57-67
b. Compare seeds of plants and describe ways they may be carried through the environment (e.g., wind, water, animals).	From Seed to Plant Activity 1-3 Reader	Pages 15-39 Pages 3-5, 14-15
c. Observe and describe plants as they grow from seeds.	From Seed to Plant Activity 4-7, 13 Reader	Pages 39-66, 97-103 Pages 4-5, 10-11
d. Identify how people use plants (e.g., food, clothing, paper, shelter).	From Seed to Plant Activity 2, Science and Social Studies Activity 4, Science and Social Studies Activity 10, Science and Social Studies Activity 14, Science and Social Studies Reader	Page 31 Page 44 Page 84 Page 109 Page 13
e. Investigate and report conditions that affect plant growth.	From Seed to Plant Activity 8, 11 Reader	Pages 67-72, 85-90 Page 12

Objective 2: Investigate water and interactions with water.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Observe and measure characteristics of water as a solid and liquid.	Properties Activity 8 Investigating Water Activity 1-4, 9 Reader	Pages 61-66 Pages 13-40, 71-80 Pages 2-9
b. Compare objects that float and sink in water.	Properties Activity 10 Investigation Water Activity 5 Reader	Pages 75-80 Pages 41-46 Page 12
c. Measure and predict the motion of objects in water.	Investigation Water Activity 5, Science Extension Activity 5, Science, Technology and Society	Page 46 Page 46
d. Describe how plants and people need, use, and receive water.	Observing an Aquarium Activity 11, Science, Technology and Society Investigating Water Activity 12 Reader	Page 116 Pages 95-100 Page 16

	Activity 1, Science and Health	Page 20
	Activity 5, Science and Career	Page 46
	Activity 9, Science and Social Studies	Page 80
	Activity 12, Science, Technology and Society	Page 100

Grade Two

STANDARD III

Students will develop an understanding of their environment.

Objective 1: Investigate relationships between plants and animals and how living things change during their lives.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Observe and describe relationships between plants and animals.	Butterflies and Moths Activity 4, 8, 10 Plant and Animal Populations Activity 6 Reader	Pages 39-45, 71-77, 89-95 Pages 59-67 Pages 8-13
b. Describe the life cycle of local plants and animals using diagrams and pictures.	Plant and Animal Populations Activity 5 Butterflies and Moths Activity 1, 6, 9, 11 Reader Classroom Plants Activity 9, Science and Language Arts Reader	Pages 51-57 Pages 15-21,53-59, 79-87, 97-104 Pages 3, 8-13 Page 86 Page 5
c. Create pictures and stories about real animals and compare them to make-believe stories about animals.	Plant and Animal Populations Activity 4, Science and the Arts	Page 50

Objective 2: Observe and describe weather.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Observe and describe patterns of change in weather.	Weather Watching Activity 1,3-4,12	Pages 13-20, 29-44, 109-116
b. Measure, record, graph, and report changes in local weather.	Weather Watching Activity 2-7	Pages 21-88
c. Describe how weather affects people and animals.	Weather Watching Activity 9-10	Pages 77-10
d. Draw pictures and create dances and sounds that represent weather features (e.g., clouds, storms, snowfall).	Weather Watching Activity 1, Science and the Arts Activity 7, Science and the Arts	Page 19 Page 68

Objective 3: Investigate the properties and uses of rocks.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Describe rocks in terms of the parts that make up the rocks.	Soil Science Activity 5, Science Extension	Page 50
b. Sort rocks based on color, hardness, texture, layering, and particle size.		
c. Identify how the properties of rocks determine how people use them.		
d. Create artworks using rocks and rock products.	Soil Science Activity 7, Science and the Arts	Page 67

Grade Three

Intended Learning Outcomes

The Intended Learning Outcomes describe the skills and attitudes students should learn as a result of science instruction.

1. Use Science Process and Thinking Skills.

DSM modules are inquiry based and stress process and thinking skills. See for example:

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Observe simple objects and patterns and report their observations	Soil Science Activity 1-14 Classroom Plants Activity 1-2 Plant and Animal Life Cycles Activity 1 Food Chains and Webs Activity 4-6	Pages 15-44 Pages 15-28 Pages 15-21 Pages 39-58
b. Sort and sequence data according to a given criteria.	Force and Motion Activity 2, 7 Amazing Air Activity 4-5 Dinosaurs and Fossils Activity 6 Electric Circuits Activity 6-7	Pages 23-29, 65-72 Pages 35-49 Pages 47-53 Pages 51-62
c. Make simple predictions and inferences based upon observations.	You and Your Senses Activity 4 Plant and Animal Populations Activity 10-11 Sound Activity 8-11 Electric Circuits Activity 5-6, 8-9	Pages 37-44 Page 95-110 Pages 67-98 Pages 45-55, 63-76
d. Compare things and events.	Butterflies and Moths Activity 12 Sink or Float Activity 1-3 Sound Activity 7-10 Solar System Activity 6, 8	Pages 105-110 Pages 13-34 Pages 59-89 Pages 51-58, 65-72
e. Use instruments to measure length, temperature, volume, and weight using appropriate units.	Weather Watching Activity 2-3 States of Matter Activity 6-7, 11 Measuring Activity 5-6, 8, 10 Weather Instruments Activity 1	Pages 21-36 Pages 51-63, 89-96 Pages 37-50, 57-63, 71-78 Pages 13-21
f. Conduct a simple investigation when given directions.	Classroom Plants Activity 5 Plant and Animal Populations Activity 9 Food Chains and Webs Activity 2-3	Pages 47-53 Pages 85-93 Pages 23-37

	Animal Behavior Activity 3-7	Pages 19-52
g. Develop and use simple classification systems.	Weather Watching Activity 6 Insect Life Activity 6 Plant and Animal Life Cycles Activity 1 Dinosaurs and Fossils Activity 9-10	Pages 51-59 Pages 41-46 Pages 15-21 Pages 67-82
h. Use observations to construct a reasonable explanation.	You and Your Senses Activity 2 Force and Motion Activity 7-9 Magnets Activity 1-4 Earth Movements Activity 4-5	Pages 23-30 Pages 65-90 Pages 13-34 Pages 39-54

2. Manifest Scientific Attitudes and Interests

INDICATORS	DSM	PAGE(S)
a. Demonstrate a sense of curiosity about nature.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
b. Voluntarily read or look at books and other materials about science.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
c. Pose questions about objects, events, and processes.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	

3. Understand Science Concepts and Principles

INDICATORS	DSM	PAGE(S)
a. Know specified information for their grade level.	Local Activity	
b. Distinguish between examples and non-examples of science concepts taught.	Local Activity	
c. Explain science concepts and principles using their own words and explanations.	Local Activity	

4. Communicate Effectively Using Science Language and Reasoning.

DSM provides the opportunity to communicate effectively. See for example:

INDICATORS	DSM	PAGE(S)
a. Record data accurately when given the appropriate form and format (e.g., table, graph, chart).	Amazing Air Activity 4-5 Plant and Animal Populations Activity 8-9 Dinosaurs and Fossils Activity 6-7 Weather Instruments Activity 1, 6	Pages 35-49 Pages 77-93 Pages 47-60 Pages 13-21, 51-57

b. Report observation with pictures, sentences, and models.	Force and Motion Activity 6-10 You and Your Senses Activity 1-5 Earth Movements Activity 4-5 Water Cycle Activity 8-10	Pages 57-99 Pages 13-52 Pages 39-54 Pages 69-89
c. Use scientific language appropriate to grade level in oral and written communication.	States of Matter Activity 1-4 Butterflies and Moths Activity 6-9 Food Chains and Webs Activity 9-12 Electric Circuits Activity 2-8	Pages 13-40 Pages 53-87 Pages 73-101 Pages 19-70
d. Use available reference sources to obtain information.	Readers are provided with all DSM III modules. The Teacher Resource section suggests additional reading.	

STANDARD ONE

Students will understand that the shape of Earth and the moon are spherical and that Earth rotates on its axis to produce the appearance of the sun and moon moving through the sky.

Objective 1: Describe the appearance of Earth and moon.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Describe the shape of Earth and the moon as spherical.	Earth Movements Activity 1 Reader Solar System Activity 6 Reader	Pages 13-19 Pages 2-3 Pages 51-58 Pages 2-3, 6-7
b. Explain that the sun is the source of light that lights the moon.	Solar System Reader	Page 7
c. List the differences in the physical appearance of Earth and the moon as viewed from space.	Solar System Activity 2, Science Extension Reader	Page 26 Pages 6-7

Objective 2: Describe the movement of Earth and the moon and the apparent movement of other bodies through the sky.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Describe the motions of Earth (i.e., the rotation [spinning] of earth on its axis, the revolution [orbit] of Earth around the sun.	Solar System Activity 9 Activity 9, Science Challenge Reader Weather Watching Reader	Page 73-81 Page 81 Pages 3, 6 Page 10
b. Use a chart to show that the moon orbits Earth approximately every 28 days.	Solar System Reader	Pages 7
c. Use a model of earth to demonstrate that earth rotates on its axis once every 24 hours to produce the night and day cycle.	Solar System Activity 9 Reader	Pages 73-81 Page 6

d. Use a model to demonstrate why it seems to a person on earth that the sun, planets, and stars appear to move across the sky.	Solar System Activity 12	Pages 101-110
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STANDARD TWO

Students will understand that organisms depend on living and nonliving things within their environment.

Objective 1: Classify living and nonliving things in an environment.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify characteristics of living things (i.e., growth, movement, reproduction).	Butterflies and Moths Activity 1-2, 9 Reader Plant and Animal Populations Activity 4-7, 10-11 Classroom Plants Activity 1, 6-9 Reader Plant and Animal Life Cycles Activity 1 Reader	Pages 15-30, 79-87 Pages 4-12 Pages 43-76, 103-117 Pages 15-20, 55-86 Pages 2-3,6-12 Pages 15-21 Pages 1-13
b. Identify characteristics of nonliving things.	Butterflies and Moths Reader Classroom Plants Reader Food Chains and Webs Activity 1 Plant and Animal Life Cycles Activity 1 Dinosaurs and Fossils Activity 9	Page 2 Page 4 Pages 15-22 Pages 15-21 Pages 67-93
c. Classify living and nonliving things in an environment.	Butterflies and Moths Activity 12 Reader Plant and Animal Populations Activity 3 Classroom Plants Activity 1 Dinosaurs and Fossils Activity 9-10 Reader Plant and Animal Life Cycles Activity 11 Reader Food Chains and Webs Activity 1, 11 Reader	Pages 105-110 Pages 4-7 Pages 35-41 Pages 15-20 Pages 67-82 Pages 8-11 Pages 97-103 Pages 7-12 Pages 15-22, 89-95 Page 6

Objective 2: Describe the interactions between living and nonliving things in a small environment.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify living and nonliving things in a small environment (e.g., terrarium, aquarium, flowerbed) composed of living and nonliving	Butterflies and Moths Activity 1 Classroom Plants Activity 12	Pages 15-21 Pages 105-112

things.	Reader Plant and Animal Populations Activity 4-7 Food Chains and Webs Activity 1-9	Page 15 Pages 43-69 Pages 23-37
b. Predict the effects of changes in the environment (e.g., temperature, light, moisture) on a living organism.	Classroom Plants Activity 3-5 Food Chains and Webs Activity 2-3	Pages 29-53 Pages 23-37
c. Observe and record the effect of changes (e.g., temperature, amount of water, light) upon the living organisms and nonliving things in a small-scale environment.	Classroom Plants Activity 5 Food Chains and Webs Activity 2-3	Pages 47-53 Pages 23-37
d. Compare a small-scale environment to a larger environment (e.g., aquarium to a pond, terrarium to a forest).	Butterflies and Moths Activity 4 Plant and Animal Populations Activity 4 Food Chains and Webs Activity 11-12	Pages 39-45 Pages 43-50 Pages 89-101
e. Pose a question about the interaction between living and nonliving things in the environment that could be investigated by observation.	Classroom Plants Activity 4-5 Food Chains and Webs Activity 2-3	Pages 39-53 Pages 23-37

STANDARD THREE

Students will understand the relationship between the force applied to an object and resulting motion of the object.

Objective 1: Demonstrate how forces cause changes in speed or direction of objects.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Show that objects at rest will not move unless a force is applied to them.	Force and Motion Activity 1-2 Reader	Pages 13-29 Page 4
b. Compare the forces of pushing and pulling.	Force and Motion Activity 1 Reader Sink or Float Reader	Pages 13-22 Pages 2-3 Page 11
c. Investigate how forces applied through simple machines affect the direction and/or amount of resulting force.	Force and Motion Activity 3, 6-12 Reader	Pages 31-39, 57-117 Pages 5-11

Objective 2: Demonstrate that the greater the force applied to an object, the greater the change in speed or direction of the object.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Predict and observe what happens when a force is applied to an object (e.g., wind, flowing water).	Force and Motion Activity 1-12 Weather Watching Activity 4-5 Weather Instruments	Pages 13-117 Pages 37-50

	Activity 4-5 Sound Activity 1-2	Pages 37-50 Pages 13-28
b. Compare and chart the relative effects of a force of the same strength on objects of different weight (e.g., the breeze from a fan will move a piece of paper but may not move a piece of cardboard).	Weather Watching Activity 5 Weather Instruments Activity 5	Pages 45-50 Pages 43-50
c. Compare the relative effects of forces of different strengths on an object (e.g., strong wind affects an object differently than a breeze).	Weather Watching Activity 5 Weather Instruments Activity 5	Pages 45-50 Pages 43-50
d. Conduct a simple investigation to show what happens when objects of various weights collide with one another (e.g., marbles, balls).		
e. Show how these concepts apply to various activities (e.g., batting a ball, kicking a ball, hitting a golf ball with a golf club) in terms of force, motion, speed, direction, and distance (e.g., slow, fast, hit hard, hit soft).		

STANDARD FOUR

Students will understand that objects near earth are pulled toward Earth by gravity.

Objective 1: Demonstrate that gravity is a force.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Demonstrate that a force is required to overcome gravity.	Force and Motion Activity 8-9 Reader Solar System Activity 2	Pages 73-90 Page 2 Pages 21-26
b. Use measurement to demonstrate that heavier objects require more force than lighter ones to overcome gravity.	Force and Motion Activity 8 Reader	Pages 73-82 Page 2

Objective 2: Describe the effects of gravity on the motion of an object.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Compare how the motion of an object rolling up or down a hill changes with the incline of the hill.		
b. Observe, record, and compare the effect of gravity on several objects in motion (e.g., a thrown ball and a dropped ball falling to Earth).	Solar System Activity 2	Pages 21-26
c. Pose questions about gravity and forces.	Force and Motion Activity 1-12 Solar System Activity 2	Pages 13-117 Pages 21-26

STANDARD FIVE

Students will understand that the sun is the main source of heat and light for things living on Earth. They will also understand that the motion of rubbing objects together may produce heat.

Objective 1: Provide evidence showing that the sun is the source of heat and light for Earth.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Compare temperatures in sunny and shady places.	Weather Watching Activity 3 Activity 3, Science Extension Weather Instruments Activity 1 Activity 1, Science Extension	Pages 29-36 Page 36 Pages 13-21 Page 21
b. Observe and report how sunlight affects plant growth.	Classroom Plants Activity 5 Food Chains and Webs Activity 3	Pages 47-53 Pages 31-37
c. Provide examples of how sunlight affects people and animals by providing heat and light.	Food Chains and Webs Reader	Pages 6-7
d. Identify and discuss as a class some misconceptions about heat sources (e.g., clothes do not produce heat, ice cubes do not give off cold).		

Objective 2: Demonstrate that mechanical and electrical machines produce heat and sometimes light.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify and classify mechanical and electrical sources of heat.	Electric Circuits Activity 1-4, 8-11 Reader	Pages 13-43, 63-88 Pages 3-6
b. List examples of mechanical or electrical devices that produce light.	Electric Circuits Activity 1-4, 9-10 Reader	Pages 13-43, 71-82 Pages 3-6
c. Predict, measure, and graph the temperature changes produced by a variety of mechanical machines and electrical devices while they are operating.		

Objective 3: Demonstrate that heat may be produced when objects are rubbed against one another.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify several examples of how rubbing one object against another produces heat.	Force and Motion Activity 4	Pages 41-47
b. Compare relative differences in the amount of heat given off or force required to move an object over lubricated/non-lubricated surfaces and smooth/rough surfaces (e.g., waterslide with and	Force and Motion Activity 4	Pages 41-47

without water, hands rubbing together with and without lotion).		
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Grade Four

Intended Learning Outcomes

The Intended Learning Outcomes describe the skills and attitudes students should learn as a result of science instruction.

1. Use Science Process and Thinking Skills.

DSM modules are inquiry based and stress process and thinking skills. See for example:

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Observe simple objects and patterns and report their observations	Earth Movements Activity 3-4 Food Chains and Webs Activity 4-6 Plant and Animal Life Cycles Activity 1 Magnets Activity 2-4 Looking at Liquids Activity 1-2	Pages 29-46 Pages 39-58 Pages 15-21 Pages 19-34 Pages 7-21
b. Sort and sequence data according to a given criteria.	Dinosaurs and Fossils Activity 6 Electric Circuits Activity 6-7 Solar System Activity 6, 8 Sound Activity 9-11	Pages 47-53 Pages 51-62 Pages 51-58, 65-72 Pages 73-98
c. Make simple predictions and inferences based upon observations.	Water Cycle Activity 4, 6, 8 Earth Movements Activity 3-4, 6-7 Sound Activity 8-11 Electric Circuits Activity 5-6, 8-9	Pages 39-44, 53-60, 69-76 Pages 29-46, 55-69 Pages 67-98 Pages 45-55, 63-76
d. Compare things and events.	Solar System Activity 6,8, Sound Activity 7-10 Insect Life Activity 9, 12 Powders and Crystals Activity 5-9	Pages 51-58, 65-72 Pages 59-89 Pages 61-66, 79-83 Pages 35-69
e. Use instruments to measure length, temperature, volume, and weight using appropriate units.	Weather Instruments Activity 1 Solar System Activity 5-8 Measuring Activity 5-6, 8, 10 Dinosaurs and Fossils Activity 6-7	Pages 13-21 Pages 43-72 Pages 37-50, 57-63, 71-78 Pages 47-60
f. Conduct a simple investigation when given directions.	Electric Circuits Activity 6-7 Animal Behavior Activity 3-7	Pages 51-62 Pages 19-52

	Magnets Activity 3-4 Food Chains and Webs Activity 2-3	Pages 25-34 Pages 23-37
g. Develop and use simple classification systems.	Insect Life Activity 6 Dinosaurs and Fossils Activity 9-10 Plant and Animal Life Cycles Activity 1	Pages 41-46 Pages 67-82 Pages 15-21
h. Use observations to construct a reasonable explanation.	Magnets Activity 2-4 Water Cycle Activity 10-13 Earth Movements Activity 4-5 Magnets Activity 1-4	Pages 19-34 Pages 85-114 Pages 39-54 Pages 13-34

2. Manifest Scientific Attitudes and Interests

INDICATORS	DSM	PAGE(S)
a. Demonstrate a sense of curiosity about nature.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
b. Voluntarily read or look at books and other materials about science.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
c. Pose questions about objects, events, and processes.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	

3. Understand Science Concepts and Principles

INDICATORS	DSM	PAGE(S)
a. Know specified information for their grade level.	Local Activity	
b. Distinguish between examples and non-examples of science concepts taught.	Local Activity	
c. Explain science concepts and principles using their own words and explanations.	Local Activity	

4. Communicate Effectively Using Science Language and Reasoning.

DSM provides the opportunity to communicate effectively. See for example:

INDICATORS	DSM	PAGE(S)
a. Record data accurately when given the appropriate form and format (e.g., table, graph, chart).	Weather Instruments Activity 1, 6 Dinosaurs and Fossils Activity 6-7 Powders and Crystals Activity 5-9 Electric Circuits Activity 6-7	Pages 13-21, 51-57 Pages 47-60 Pages 35-69 Pages 51-62

b. Report observation with pictures, sentences, and models.	Water Cycle Activity 8-10 Plant and Animal Life Cycles Activity 2-5 Magnets Activity 5-7 Earth Movements Activity 4-5	Pages 69-89 Pages 23-56 Pages 35-51 Pages 39-54
c. Use scientific language appropriate to grade level in oral and written communication.	Weather Instruments Activity 1-5 Solar System Activity 9-12 Electric Circuits Activity 2-8 Food Chains and Webs Activity 9-12	Pages 13-50 Pages 73-110 Pages 19-70 Pages 73-101
d. Use available reference sources to obtain information.	Readers are provided with all DSM III modules. The Teacher Resource section suggests additional reading.	

STANDARD ONE

Students will understand that water changes state as it moves through the water cycle.

Objective 1: Describe the relationship between heat energy, evaporation and condensation of water on Earth.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify the relative amount and kind of water found in various locations on Earth (e.g., oceans have most of the water, glaciers and snowfields contain most fresh water).	Water Cycle Reader	Pages 2-7
b. Identify the sun as the source of energy that evaporates water from the surface of Earth.	Water Cycle Reader	Pages 10-11
c. Compare the process of evaporation and condensation of water.	Water Cycles Activity 4-5, 8, 12 Reader Weather Instruments Activity 7 Reader	Pages 39-51, 69-76, 99-108 Pages 8-11 Pages 59-66 Page 6
d. Investigate and record temperature data to show the effects of heat energy on changing the states of water.		

Objective 2: Describe the water cycle.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Locate examples of evaporation and condensation in the water cycle (e.g., water evaporates when heated and clouds or dew forms when vapor is cooled).	Water Cycle Activity 9, 11-13 Reader Weather Instruments Reader	Pages 77-83, 91-114 Pages 10-11 Page 6

b. Describe the processes of evaporation, condensation, and precipitation as they relate to the water cycle.	Water Cycle Activity 9, 11-13 Reader Weather Instruments Reader	Pages 77-83, 91-114 Pages 10-11 Page 6
c. Identify locations that hold water as it passes through the water cycle (e.g., oceans, atmosphere, fresh surface water, snow, ice, and ground water).	Water Cycle Activity 9, 11-13 Reader Weather Instruments Reader	Pages 77-83, 91-114 Pages 10-11 Page 6
d. Construct a model or diagram to show how water continuously moves through the water cycle over time.	Water Cycle Activity 11-13	Pages 91-114
e. Describe how the water cycle relates to the water supply in your community.	Water Cycle Activity 2, Science Challenge Reader	Pages 29 Pages 14-15

STANDARD TWO

Students will understand that the elements of weather can be observed, measured, and recorded to make predictions and determine simple weather patterns.

Objective 1: Observe, measure, and record the basic elements of weather.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify basic cloud types (i.e., cumulus, cirrus, stratus clouds).	Water Cycle Reader Weather Instruments Activity 10 Reader	Page 13 Pages 81-87 Page 13
b. Observe, measure, and record data on the basic elements of weather over a period of time (i.e., precipitation, air temperature, wind speed and direction, and air pressure).	Weather Instruments Activity 1-6, 10-11	Pages 13-57, 81-96
c. Investigate evidence that air is a substance (e.g., takes up space, moves as wind, temperature can be measured).		
d. Compare the components of severe weather phenomena to normal weather conditions (e.g., thunderstorm with lightning and high winds compared to rainstorm with showers and breezes).		

Objective 2: Interpret recorded weather data for simple patterns.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Observe and record effects of air temperature on precipitation (e.g., below freezing results in snow, above freezing results in rain).		
b. Graph recorded data to show	Weather Instruments	

daily and seasonal patterns in weather.	Activity 1-6	Pages 13-57
c. Infer relationships between wind and weather change (e.g., windy days often precede changes in the weather; south winds in Utah often precede a cold front coming from the north).		

Objective 3: Evaluate weather predictions based upon observational data.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify and use tools of a meteorologist (e.g., measure rainfall using a rain gauge, measure air pressure using a barometer, measure temperature using a thermometer).	Weather Instruments Activity 1-5, 11 Reader	Pages 13-50, 89-96 Pages 3-5, 7-9
b. Describe how weather and forecasts affect people's lives.	Weather Instruments Activity 12, Science and Health	Page 101
c. Predict weather and justify prediction with observable evidence.	Weather Instruments Activity 3-4	Pages 31-42
d. Evaluate the accuracy of student and professional weather forecasts.	Local Activity	
e. Relate weather forecast accuracy to evidence or tools used to make the forecast (e.g., feels like rain vs. barometer dropping).	Weather Instruments Activity 3-4	Pages 31-42

STANDARD THREE

Students will understand the basic properties of rocks, the processes involved in the formation of soils, and the needs of plants provided by soil.

Objective 1: Identify basic properties of minerals and rocks.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Describe the differences between minerals and rocks.	This concept is covered in grade 5 module <u>Rocks and Minerals</u> .	
b. Observe rocks using a magnifying glass and draw shapes and colors of the minerals.	This concept is covered in grade 5 module <u>Rocks and Minerals</u> .	
c. Sort rocks by appearance according to the basic types: sedimentary, igneous and metamorphic (e.g., sedimentary-rounded-appearing mineral and rock particles that are cemented together, often in layers; igneous-with or without observable crystals that are not in layers or with or without air holes or glasslike; metamorphic- crystals/minerals, often in layers).	This concept is covered in grade 5 module <u>Rocks and Minerals</u> .	
d. Classify common rocks found in Utah as sedimentary (i.e., sandstone, conglomerate, shale),	Local Activity	

igneous (i.e., basalt, granite, obsidian, pumice) and metamorphic (i.e., marble, gneiss, schist).		
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Objective 2: Explain how the process of weathering and erosion change and move materials that become soil.

INDICATORS	DSM	PAGE(S)
a. Identify the processes of physical weathering that break down rocks at Earth's surface (i.e., water movement, freezing, plant growth, wind).	This concept is covered in grade 5 module <u>Erosion</u> .	
b. Distinguish between weathering (i.e., wearing down and breaking of rocks surfaces) and erosion (i.e., the movement of materials).	This concept is covered in grade 5 module <u>Erosion</u> .	
c. Model erosion of Earth materials and collection of these materials as part of the process that leads to soil (e.g., water moving sand in a playground area and depositing this sand in another area).	This concept is covered in grade 5 module <u>Erosion</u> .	
d. Investigate layers of soil in the local area and predict the sources of the sand and rocks in the soil.		

Objective 3: Observe the basic components of soil and relate the components to plant growth.

INDICATORS	DSM	PAGE(S)
a. Observe and list the components of soil (i.e., minerals, rocks, air, water, living and dead organisms) and distinguish between the living, nonliving, and once living components of soil.	Food Chains and Webs Activity 1	Pages 15-22
b. Diagram or model a soil profile showing topsoil, subsoil, and bedrock, and how the layers differ in composition.		
c. Relate the components of soil to the growth of plants in soil (e.g., mineral nutrients, water).	Food Chains and Webs Activity 2	Pages 23-29
d. Explain how plants may help control the erosion of soil.		
e. Research and investigate ways to provide mineral nutrients for plants to grow without soil (e.g., grow plants in wet towels, grow plants in wet gravel, grow plants in water).	Plant and Animal Life Cycles Activity 3	Pages 33-41

STANDARD FOUR

Students will understand how fossils are formed, where they may be found in Utah, and how they can be used to make inferences.

Objective 1: Describe Utah fossils and explain how they were formed.

INDICATORS	DSM	PAGE(S)
a. Identify features of fossils that can be used to compare them to living organisms that are familiar (e.g., shape, size and structure, of skeleton, patterns of leaves).	Dinosaurs and Fossils Activity 2-3 Reader	Pages 21-34 Pages 4-5,13-15
b. Describe three ways fossils are formed in sedimentary rock (i.e., preserved organisms, mineral replacement of organisms, impressions or tracks).	Dinosaurs and Fossils Activity 2 Activity 2, Science and the Arts Activity 2, Science Extension' Reader	Pages 21-28 Page 28 Page 28 Pages 4-5
c. Research locations where fossils are found in Utah and construct a simple fossil map.	Local Activity	

Objective 2: Explain how fossils can be used to make inferences about past life, climate, geology, and environments.

INDICATORS	DSM	PAGE(S)
a. Explain why fossils are usually found in sedimentary rock.	Dinosaurs and Fossils Reader	Pages 4-5
b. Based on the fossils found in various locations, infer how Utah environments have changed over time (e.g., trilobite fossils indicate that Millard County was once covered by a large shallow ocean; dinosaur fossils and coal indicate that Emery and Uintah County were once tropical and swampy).	Dinosaurs and Fossils Reader Local Activity	Page 5
c. Research information on two scientific explanations for the extinction of dinosaurs and other prehistoric organisms.	Dinosaurs and Fossils Activity 1, Science Challenge Reader	Page 19 Page 12
d. Formulate questions that can be answered using information gathered on the extinction of dinosaurs.	Dinosaurs and Fossils Activity 1, Science Challenge Reader	Page 19 Page 12

STANDARD FIVE

Students will understand the physical characteristics of Utah's wetlands, forests, and deserts and identify common organisms for each environment.

Objective1: Describe the physical characteristics of Utah's wetlands, forests, and deserts.

INDICATORS	DSM	PAGE(S)
a. Compare the physical characteristics (e.g., precipitation, temperature, and surface terrain) of Utah's wetlands, forests, and	Local Activity	

deserts.		
Describe Utah's wetlands (e.g., river, lake, stream, and marsh areas where water is a major feature of the environment), forests (e.g., oak, pine, aspen, juniper areas where trees are a major feature of the environment), deserts (e.g., areas where the lack of water provided an environment where plants needing little water are a major feature of the environment).	Local Activity	
c. Locate examples of areas that have characteristics of wetlands, forests, and deserts in Utah.	Local Activity	
d. Based on information gathered, classify areas of Utah that are generally identified as wetlands, forests, or deserts.	Local Activity	
e. Create models of wetlands, forests, and deserts.	Food Chains and Webs Activity 1-9	Pages 15-73

Objective 2: Describe the common plants and animals found in Utah environments and how these organisms have adapted to the environment in which they live.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify common plants and animals that inhabit Utah's forests, wetlands, and deserts.	Local Activity	
b. Cite examples of physical features that allow particular plants and animals to live in specific environments (e.g., duck has webbed feet, cactus has waxy coating).	Food Chains and Webs Activity 4-6 Reader Plant and Animal Life Cycles Activity 4-5 Reader	Pages 39-58 Pages 3, 6-12 Pages 43-56 Pages 7-12
c. Describe some of the interactions between animals and plants of a given environment (e.g., woodpecker eats insects that live on trees of a forest, brine shrimp of the Great Salt Lake eat alga and birds feed on brine shrimp).	Food Chains and Webs Activity 7-8, 10-12 Readers	Pages 59-72, 81-101 Pages 4-9
d. Identify the effect elevation has on types of plants and animals that live in a specific wetland, forest, or desert.	Food Chains and Webs Reader	Page 15
e. Find examples of endangered Utah plants and animals and describe steps being taken to protect them.	Local Activity	

Objective 3: Use a simple scheme to classify Utah plants and animals.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Explain how scientists use		

classification schemes.		
b. Use a simple classification system to classify unfamiliar Utah plants or animals (e.g., fish/amphibians/reptile/bird/mammal, invertebrate/vertebrate, tree/shrub/grass, deciduous/conifers).	Local Activity	

Objective 4: Observe and record the behavior of Utah animals.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Observe and record the behavior of birds (e.g., caring for young, obtaining food, surviving winter).	Plant and Animal Life Cycles Reader	Page 7
b. Describe how the behavior and adaptations of Utah mammals help them survive winter (e.g., obtaining food building homes, hibernation, migration).	Local Activity	
c. Research and report on the behavior of a species of Utah fish (e.g., feeding on the bottom or surface, time of year and movement of fish to spawn, types of food and how it is obtained).	Local Activity	
d. Compare the structure and behavior of Utah amphibians and reptiles.	Local Activity	
e. Use simple classification schemes to sort Utah's common insects and spiders.	Local Activity	

Grade Five

Intended Learning Outcomes

The Intended Learning Outcomes describe the skills and attitudes students should learn as a result of science instruction.

1. Use Science Process and Thinking Skills.

DSM modules are inquiry based and stress process and thinking skills. See for example:

INDICATORS	DSM	PAGE(S)
a. Observe simple objects, patterns, and events and report their observations.	Oceans Activity 2-3 Flight and Rocketry Activity 1 Rocks and Minerals Activity 1, 3 Erosion Activity 1-2	Pages 23-41 Pages 13-21 Pages 13-19, 29-34 Pages 13-27
b. Sort and sequence data according to criteria given.	Flight and Rocketry Activity 5 You and Your Body Activity 9-11 Simple Machines Activity 7 Pollution Activity 7-8	Pages 55-64 Pages 67-84 Pages 57-63 Pages 53-64
c. Given the appropriate instrument, measure length, temperature, volume, and mass in metric units as specified.	Weather Forecasting Activity 3 Simple Machines Activity 1, 4 Solar Energy Activity 2-8	Pages 25-32 Pages 13-18, 33-37 Pages 13-58
d. Compare things, processes, and events.	Fungi-Small Wonders Activity 3 Rocks and Minerals Activity 3-7 Oceans Activity 3,12 Color and Light Activity 4-5	Pages 19-23 Pages 29-59 Pages 31-41, 135-142 Pages 37-52
e. Use classification systems.	Pond Life Activity 6 Rocks and Minerals Activity 10 Weather Forecasting Activity 10	Pages 41-47 Pages 77-84 Pages 75-80
f. Plan and conduct simple experiments.	You and Your Body Activity 3, 5 Erosion Activity 5-8 Pollution Activity 10 Color and Light Activity 3-5	Pages 27-31, 41-48 Pages 43-73 Pages 71-76 Pages 29-52
g. Formulate simple research questions.	Flight and Rocketry Activity 9	Pages 91-97

	Solar Energy Activity 3-8 Fungi-Small Wonders Activity 7, 11-12 Pond Life Activity 12	Pages 21-58 Pages 45-49, 69-79 Pages 81-86
h. Predict results of investigations based on prior data.	Color and Light Activity 2, 4 Erosion Activity 10-11 Lenses and Mirrors Activity 8	Pages 19-27, 37-43 Pages 83-97 Pages 55-65
i. Use data to construct a reasonable explanation.	Electromagnetism Activity 5-6 Simple Machines Activity Erosion Activity 10-12 You and Your Body Activity 3, 5	Pages 37-48 Pages 25-31, 49-55 Pages 83-104 Pages 27-31, 41-48

2. Manifest Scientific Attitudes and Interests

INDICATORS	DSM	PAGE(S)
a. Demonstrate a sense of curiosity about nature.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
b. Voluntarily read and look at books and other materials about science.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
c. Pose science questions about objects, events, and processes.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
d. Maintain an open and questioning mind toward new ideas and alternative points of view.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
e. Seek and weigh evidence before drawing conclusions.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
f. Accept and use scientific evidence to help resolve ecological problems.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	

3. Understand Science Concepts and Principles.

INDICATORS	DSM	PAGE(S)
a. Know and explain science information specified for the grade level.	Local Activity	
b. Distinguish between examples and non-examples of concepts that have been taught.	Local Activity	

c. Solve problems appropriate to grade level by applying science principles and procedures.	Pond Life Activity 12	Pages 81-86
	Electromagnetism Activity 6	Pages 43-48
	Solar Energy Activity 3-8	Pages 21-58
	You and Your Body Activity 3, 5	Pages 27-31, 41-48

4. Communicate Effectively Using Science Language and Reasoning.

DSM provides the opportunity to communicate effectively. See for example:

INDICATORS	DSM	PAGE(S)
a. Record data accurately and when given the appropriate form (e.g., table, graph, chart).	Electromagnetism Activity 6 You and Your Body Activity 3 Solar Energy Activity 2-8 Rocketry and Minerals Activity 4-5	Pages 43-48 Pages 27-31 Pages 13-58 Pages 35-45
b. Describe or explain observations carefully and report with pictures, sentences, and models.	Erosion Activity 5-7 You and Your Body Activity 1-2 Pond Life Activity 8-11 Oceans Activity 7-9	Pages 43-66 Pages 13-25 Pages 57-80 Pages 75-111
c. Use scientific language in oral and written communication.	Weather Forecasting Activity 7-10 Pollution Activity 7-10 Simple Machines Activity 6-12 Rocketry and Minerals Activity 3-7	Pages 55-80 Pages 53-76 Pages 49-95 Pages 29-59
d. Use reference sources to obtain information and cite the source.	Readers are provided with all DSM III modules. The Teacher Resource section suggests additional reading.	
e. Use mathematical reasoning to communicate information.	Oceans Activity 3-4 Solar Energy Activity 6 Simple Machines Activity 1-4 You and Your Body Activity 5	Pages 31-54 Pages 39-46 Pages 13-37 Pages 41-48

5. Demonstrate Awareness of Social and Historical Aspects of Science

INDICATORS	DSM	PAGE(S)
a. Cite examples of how science affects life.	Pollution Reader You and Your Body Reader Weather Forecasting	Pages 2-15 Page 12

	Reader Electromagnetism Reader Flight and Rocketry Reader	Pages 6-8 Page 15 Pages 8-13
b. Understand the cumulative nature of science knowledge.	Electromagnetism Reader Flight and Rocketry Reader Simple Machines Reader	Pages 8-15 Pages 2-15 Pages 4-11

6. Understand the Nature of Science

INDICATORS	DSM	PAGE(S)
a. Science is a way of knowing that is used by many people not just scientists.	Electromagnetism Reader You and Your Body Activity 3, Science and Careers Simple Machines Activity 7, Science and Careers Rocks and Minerals Activity 11, Science and Careers	Page 14 Page 31 Page 63 Page 92
b. Understand that science investigations use a variety of methods and do not always use the same set of procedures; understand that there is not just one "scientific method".	DSM activities use a variety of inquiry techniques and research procedures.	
c. Science findings are based upon evidence.	Electromagnetism Activity 6 Pollution Activity 10 Pond Life Activity 12 Solar Energy Activity 3-8	Pages 43-48 Pages 71-76 Pages 81-86 Pages 21-58

STANDARD ONE

Students will understand that chemical and physical changes occur in matter.

Objective 1: Describe that matter is neither created nor destroyed even though it may undergo change.

INDICATORS	DSM	PAGE(S)
a. Compare the total weight of an object to the weight of its individual parts after being disassembled.		
b. Compare the weight of a specified quantity of matter before and after it undergoes melting or freezing.		
c. Investigate the results of the combined weights of a liquid and solid after the solid has been dissolved and then recovered from		

the liquid (e.g., salt dissolved in water then water evaporated).		
d. Investigate chemical reactions in which the total weight of the materials before and after reaction is the same (e.g., cream and vinegar before and after mixing, borax and glue mixed to make a new substance).		

Objective 2: Evaluate evidence that indicates a physical change has occurred.

INDICATORS	DSM	PAGE(S)
a. Identify the physical properties of matter (e.g., hard, soft, solid, liquid, gas).	Flight and Rocketry Activity 1 Rocks and Minerals Activity 1, 3-7 Reader Oceans Activity 3	Pages 13-21 Pages 13-19, 29-59 Pages 4-6 Pages 31-41
b. Compare changes in substances that indicate a physical change has occurred.	Erosion Activity 1 Activity 1, Science and Language Arts Oceans Activity 2	Pages 13-19 Page 19 Pages 23-30
c. Describe the appearance of a substance before and after a physical change.	Erosion Activity 1 Oceans Activity 2	Pages 13-19 Pages 23-30

Objective 3: Investigate evidence for changes in matter that occur during a chemical reaction.

INDICATORS	DSM	PAGE(S)
a. Identify observable evidence of a chemical reaction (e.g., color change, heat or light given off, heat absorbed, gas given off).		
b. Explain why the measured weight of a remaining product is less than its reactants when a gas is produced.		
c. Cite examples of chemical reactions in daily life..	Erosion Activity 1, Science and Language Arts	Page 19
d. Compare a physical change to a chemical change.	Erosion Activity 1, Science and Language Arts	Page 19
e. Hypothesize how changing one of the materials in a chemical reaction will change the results.		

STANDARD TWO

Students will understand that volcanoes, earthquakes, uplift, weathering, and erosion reshape Earth's surface.

Objective 1: Describe how weathering and erosion change Earth's surface.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify the objects, processes, or forces that weather and erode Earth's surface (e.g., ice, plants, animals, abrasion, gravity, water, wind).	Oceans Reader Erosion Activity 1-2, 6 10-12 Reader	Page 6 Pages 10-27, 51-57, 83-104 Pages 5-13
b. Describe how geological features (e.g., valleys, canyons, buttes, arches) are changed through erosion (e.g., waves, wind, glaciers, gravity, running water).	Erosion Activity 6, 10-12 Reader Oceans Reader	Pages 51-56, 83-104 Page 8-13 Page 6
c. Explain the relationship between time and specific geologic changes.	Erosion Reader	Pages 9-13

Objective 2: Explain how volcanoes, earthquakes, and uplift affect Earth's surface.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify specific geological features created by volcanoes, earthquakes, and uplift.	Erosion Reader	Pages 2-4
b. Give examples of different landforms that are formed by volcanoes, earthquakes, and uplift (e.g., mountains, valleys, new lakes, canyons).	Erosion Reader	Page 4
c. Describe how volcanoes, earthquakes, and uplift change landforms.	Erosion Reader	Page 4
d. Cite examples of how technology is used to predict volcanoes and earthquakes.		

Objective 3: Relate the building up and breaking down of Earth's surface over time to the various physical land features.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Explain how layers of exposed rock, such as those observed in the Grand Canyon, are the result of natural processes acting over long periods of time.		
b. Describe the role of deposition in the processes that change Earth's surface.	Erosion Activity 5-6, 12 Reader	Pages 43-57, 99-104 Page 8-13
c. Use a time line to identify the sequence and time required for building and breaking down of geologic features on Earth.		
d. Describe and justify how the		

surface of Earth would appear if there were no mountain uplift, weathering, or erosion.		
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STANDARD THREE

Students will understand that magnetism can be observed when there is an interaction between the magnetic fields of magnets or between a magnet and materials made of iron.

Objective 1: Investigate and compare the behavior of magnetism using magnets.

INDICATORS	DSM	PAGE(S)
a. Compare various types of magnets (e.g., permanent, temporary, and natural magnets) and their abilities to push or pull iron objects they are not touching.	Electromagnetism Reader	Pages 6-8
b. Investigate how magnets will both attract and repel other magnets.	Electromagnetism Reader	Pages 6-7
c. Compare permanent magnets and electromagnets.	Electromagnetism Reader	Pages 6-9
d. Research and report the use of magnets that is supported by sound scientific principles.	Electromagnetism Reader	Pages 9-13, 15

Objective 2: Describe how the magnetic field of Earth and a magnet are similar.

INDICATORS	DSM	PAGE(S)
a. Compare the magnetic fields of various magnets (e.g., bar magnet, disc magnet, horseshoe magnet).	Electromagnetism Activity 2 Reader	Pages 19-23 Page 6
b. Compare Earth's magnetic field to the magnetic field of a magnet.	Electromagnetism Reader	Page 7
c. Construct a compass and explain how it works.		
d. Investigate the effects of magnets on the needle of a compass (e.g., magnets effect the needle only at close distances, Earth's magnetic field affects the needle at great distances, magnets close to a compass overrides the Earth's effect on the needle).		

STANDARD FOUR

Students will understand features of static and current electricity.

Objective 1: Describe the behavior of static electricity as observed in nature and everyday occurrences.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. List several occurrences of static electricity that happen in everyday life.	Electromagnetism Reader	Page 3
b. Describe the relationship between static electricity and lightning.	Electromagnetism Reader	Page 3
c. Describe the behavior of objects charged with static electricity in attracting or repelling without touching.	Electromagnetism Reader	Page 3
d. Compare the amount of static charge produced by rubbing various materials together (e.g., rubbing fur on a glass rod produces a greater charge than rubbing the fur with a metal rod, the static charge produced when a balloon is rubbed on hair is greater than when a plastic bag is rubbed on hair).		
e. Investigate how various materials react differently to statically charged objects.		

Objective 2: Analyze the behavior of current electricity.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Draw and label the components of a complete electrical circuit that includes switches and loads (e.g., light bulb, bell, speaker, motor),	Electromagnetism Activity 5, 8-10	Pages 37-42, 57-76
b. Predict the effect of changing one or more of the components (e.g., battery, load, wires) in an electric circuit.	Electromagnetism Activity 6	Pages 43-48
c. Generalize the properties of materials that carry the flow of electricity using data by testing different materials.		
d. Investigate materials that prevent the flow of electricity.		
e. Make a working model of a complete circuit using a power source, switch, bell or light, and a conductor for a pathway.	Electromagnetism Activity 5	Pages 37-42

STANDARD FIVE

Students will understand that traits are passed from the parent organism to their offspring, and that sometimes the offspring may possess variations of these traits that may help or hinder survival in a given environment.

Objective 1: Using supporting evidence, show that traits are transferred from parent organism to its offspring.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Make a chart and collect data identifying various traits among a given population (e.g., the hand span of students in the classroom, the color and texture of different apples, the number of petals of a given flower).		
b. Identify similar physical traits of a parent organism and its offspring (e.g., trees and saplings, leopards and cubs, chickens and chicks).		
c. Compare various examples of offspring that do not initially resemble the parent organism but mature to become similar to the parent organism (e.g., mealworms and darkling beetles, tadpoles and frogs, seedlings and vegetables, caterpillars and butterflies).		
d. Contrast inherited traits with traits and behaviors that are not inherited but may be learned or induced by environmental factors (e.g., cat purring to cat meowing to be let out of the house; the round shape of a willow is inherited, while leaning away from the prevailing wind is induced).		
e. Investigate variations and similarities in plants grown from seeds of a parent plant (e.g., how seeds from the same plant species produce different colored flowers or identical flowers).		

Objective 2: Describe how some characteristics could give a species survival advantage in a particular environment.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Compare the traits of similar species for physical abilities, instinctual behaviors, and specialized body structures that increase the survival of one species in a specific environment over another species (e.g., differences between the feet of snowshoe hare and cottontail rabbit, differences in leaves of		

<p>plants growing at different altitudes, differences between the feathers of an owl and a hummingbird, differences in parental behavior among various fish).</p>		
<p>b. Identify that some environments give one species a survival advantage over another (e.g., warm water favors fish such as carp, cold water favors fish such as trout, environments that burn regularly favor grasses, environments that do not burn favor trees).</p>		
<p>c. Describe how a particular physical attribute may provide an advantage for survival in one environment but not in another (e.g., heavy fur in arctic climates keep animals warm whereas in hot desert climates it would cause overheating; flippers on such animals as sea lions and seals provide excellent swimming structures in the water but become clumsy and awkward on land; cacti retain the right amount of water in arid regions but would develop root rot in a more temperate region; fish gills have the ability to absorb oxygen in water but not on land).</p>		
<p>d. Research a specific plant or animal and report how specific physical attributes provide an advantage in a specific environment.</p>		

Grade Six

Intended Learning Outcomes

The Intended Learning Outcomes describe the skills and attitudes students should learn as a result of science instruction.

1. Use Science Process and Thinking Skills.

DSM modules are inquiry based and stress process and thinking skills. See for example:

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Observe simple objects, patterns, and events and report their observations.	Rocks and Minerals Activity 1, 3 Oceans Activity 2-3 Plants in Our World Activity 1-2 Earth, Moon and Sun Activity 1-2	Pages 13-19, 29-34 Pages 23-41 Pages 7-18 Pages 7-21
b. Sort and sequence data according to criteria given.	You and Your Body Activity 9-11 Pollution Activity 7-8 Newton's Toy Box Activity 8 Famous Scientists Activity 2, 8	Pages 67-84 Pages 53-64 Pages 45-49 Pages 21-28, 77-84
c. Given the appropriate instrument, measure length, temperature, volume, and mass in metric units as specified.	Solar Energy Activity 2-8 Simple Machines Activity 1, 4 Matter and Change Activity 1-2 Newton's Toy Box Activity 7	Pages 13-58 Pages 13-18, 33-37 Pages 7-21 Pages 34-43
d. Compare things, processes, and events.	Rocks and Minerals Activity 3-7 Color and Light Activity 4-5 Plants in Our World Activity 6-7 DNA-From Genes to Proteins Activity 1-2	Pages 29-59 Pages 37-52 Pages 37-50 Pages 7-18
e. Use classification systems.	Pond Life Activity 6 Rocks and Minerals Activity 10 Weather Forecasting Activity 10 Astronomy Activity 11 Matter and Change Activity 10	Pages 41-47 Pages 77-84 Pages 75-80 Pages 93-99 Pages 73-79
f. Plan and conduct simple experiments.	You and Your Body Activity 3, 5 Erosion Activity 5-8	Pages 21-31, 41-48 Pages 43-73

	Matter and Change Activity 12-13 Plants in Our World Activity 3	Pages 87-97 Pages 19-24
g. Formulate simple research questions.	Pond Life Activity 12 Fungi-Small World Activity 7, 11-12 Plants in Our World Activity 8 Famous Scientists Activity 7, 10	Pages 81-86 Pages 45-49, 69-79 Pages 51-56 Pages 65-75, 95-103
h. Predict results of investigations based on prior data.	Color and Light Activity 2, 4 Erosion Activity 10-11 Electrical Connections Activity 10 Famous Scientists Activity 3, 7	Pages 19-27, 37-43 Pages 83-97 Pages 65-70 Pages 29-34, 65-75
i. Use data to construct a reasonable explanation.	Electromagnetism Activity 5-6 Simple Machines Activity 3, 6 Famous Scientists Activity 2, 7 Plants in Our World Activity 5-6	Pages 37-48 Pages 25-31, 49-55 Pages 21-28, 65-75 Pages 31-41

2. Manifest Scientific Attitudes and Interests

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Demonstrate a sense of curiosity about nature.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
b. Voluntarily read and look at books and other materials about science.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
c. Pose science questions about objects, events, and processes.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
d. Maintain an open and questioning mind toward new ideas and alternative points of view.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
e. Seek and weigh evidence before drawing conclusions.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
f. Accept and use scientific evidence to help resolve ecological problems.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	

3. Understand Science Concepts and Principles.

INDICATORS	DSM	PAGE(S)
a. Know and explain science information specified for the grade level.	Local Activity	
b. Distinguish between examples and non-examples of concepts that have been taught.	Local Activity	
c. Solve problems appropriate to grade level by applying science principles and procedures.	Pond Life Activity 12 You and Your Body Activity 3, 5 Plants in Our World Activity 3, 5 Electrical Connections Activity 9-10	Pages 81-86 Pages 27-31, 41-48 Pages 19-24, 31-36 Pages 51-70

4. Communicate Effectively Using Science Language and Reasoning.

DSM provides the opportunity to communicate effectively. See for example:

INDICATORS	DSM	PAGE(S)
a. Record data accurately and when given the appropriate form (e.g., table, graph, chart).	Electromagnetism Activity 6 Solar Energy Activity 2-8 Matter and Change Activity 1-2 Famous Scientists Activity 7	Pages 43-48 Pages 13-58 Pages 7-21 Pages 65-75
b. Describe or explain observations carefully and report with pictures, sentences, and models.	Oceans Activity 7-9 Pond Life Activity 8-11 Electrical Connections Activity 11-13 Earth Processes Activity 10-14	Pages 75-111 Pages 57-80 Pages 71-88 Pages 77-112
c. Use scientific language in oral and written communication.	Rocks and Minerals Activity 3-7 Simple Machines Activity 6-12 DNA-From Genes to Proteins Activity 3-6 Earth, Moon and Sun Activity 8-13	Pages 29-59 Pages 49-95 Pages 19-44 Pages 61-112
d. Use reference sources to obtain information and cite the source.	Readers are provided with all DSM III modules. The Teacher Resource section suggests additional reading.	
e. Use mathematical reasoning to communicate information.	Simple Machines Activity 1-4 Oceans Activity 3-4 Newton's Toy Box Activity 7-9 Matter and Change Activity 1-2	Pages 13-37 Pages 31-54 Pages 39-54 Pages 7-21

5. Demonstrate Awareness of Social and Historical Aspects of Science

INDICATORS	DSM	PAGE(S)
a. Cite examples of how science affects life.	Pollution Reader You and Your Body Reader Flight and Rocketry Reader Electromagnetism Reader Weather Forecasting Reader	Pages 2-15 Page 12 Pages 8-13 Page 15 Pages 6-9
b. Understand the cumulative nature of science knowledge.	Flight and Rocketry Reader Simple Machines Reader Electromagnetism Reader	Pages 2-15 Pages 4-11 Pages 8-15

6. Understand the Nature of Science

INDICATORS	DSM	PAGE(S)
a. Science is a way of knowing that is used by many people not just scientists.	Electromagnetism Reader You and Your Body Activity 3, Science and Careers Simple Machines Activity 7, Science and Careers Rocks and Minerals Activity 11, Science and Careers	Page 14 Page 31 Page 63 Page 72
b. Understand that science investigations use a variety of methods and do not always use the same set of procedures; understand that there is not just one "scientific method".	DSM activities use a variety of inquiry techniques and research procedures.	
c. Science findings are based upon evidence.	Electromagnetism Activity 6 Pollution Activity 10 Pond Life Activity 12 Matter and Change Activity 12-13	Pages 43-48 Pages 71-76 Pages 81-86 Pages 87-97

STANDARD ONE

Students will understand that the appearance of the moon changes in a predictable cycle as it orbits Earth and as Earth rotates on its axis.

Objective 1: Explain patterns of changes in the appearance of the moon as it orbits Earth.

INDICATORS	DSM	PAGE(S)
a. Describe changes in the appearance of the moon during a month.	Earth, Moon and Sun Activity 2, 10	Pages 15-21, 79-86
b. Identify the pattern of change in	Earth, Moon and Sun	

the in the moon's appearance.	Activity 2, 10	Pages 15-21, 79-86
c. Use observable evidence to explain the movement of the moon around Earth in relationship to earth turning on its axis and the position of the moon changing in the sky.	Earth, Moon and Sun Activity 10	Pages 79-86
d. Design an investigation, construct a chart, and collect data depicting the phases of the moon.	Earth, Moon and Sun Activity 2, 10	Pages 15-21, 79-86

Objective 2: Demonstrate how the relative positions of Earth, the moon, and the sun create the appearance of the moon's phases.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify the difference between the motion of an object rotating on its axis and an object revolving in orbit.	Astronomy Activity 2 Earth, Moon and Sun Activity 8	Pages 17-23 Pages 61-68
b. Compare how objects in the sky (the moon, planets, stars) change in relative position over the course of the day or night.	Astronomy Activity 1-2 Earth, Moon and Sun Activity 10	Pages 7-23 Pages 79-86
c. Model the movement and relative positions of Earth, the moon, and the sun.	Astronomy Activity 2, 5 Earth, Moon and Sun Activity 8-11	Pages 17-23, 43-51 Pages 61-93

STANDARD TWO

Students will understand how Earth's tilt on its axis changes the length of daylight and creates the seasons.

Objective 1: Describe the relationship between the tilt of Earth's axis and its yearly orbit around the sun.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Describe the yearly revolution (orbit) of Earth around the sun.	Earth, Moon and Sun Activity 8-9 Astronomy Activity 4-5	Pages 61-78 Pages 35-51
b. Explain that earth's axis is tilted relative to its yearly orbit around the sun.	Earth, Moon and Sun Activity 9 Astronomy Activity 5	Pages 69-78 Pages 43-51
c. Investigate the relationship between the amount of heat absorbed and the angle to the light.	Earth, Moon and Sun Activity 9	Pages 69-78

Objective 2: Explain how the relationship between the tilt of Earth's axis and its yearly orbit around the sun produces the seasons.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Compare earth's position in relationship to the sun during each	Earth, Moon and Sun Activity 9	Pages 69-78

season.	Astronomy Activity 5	Pages 43-51
b. Compare the hours of daylight and illustrate the angle that the sun's rays strike the surface of earth during summer, fall, winter, and spring in the Northern Hemisphere.	Earth, Moon and Sun Activity 9 Astronomy Activity 5	Pages 69-78 Pages 43-51
c. Use collected data to compare patterns relating to seasonal daylight changes.		
d. Use a drawing and/or model to explain that changes in the angle at which light from the sun strikes the Earth, and the length of daylight, determine seasonal differences in the amount of energy received.	Earth, Moon and Sun Activity 9	Pages 69-78
e. Use a model to explain why the seasons are reversed in the Northern and Southern Hemispheres.	Earth, Moon and Sun Activity 9	Pages 69-78

STANDARD THREE

Students will understand the relationship and attributes of objects in the solar system.

Objective 1: Describe and compare the components of the solar system.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify the planets in the solar system by name and relative location from the sun.	Astronomy Activity 6 Earth, Moon and Sun Activity 3-4	Pages 53-60 Pages 23-35
b. Using references, compare the physical properties of the planets (e.g., size, solid or gaseous).	Earth, Moon and Sun Activity 3 Activity 3, Science and Math Activity 4, Science Challenge	Pages 23-28 Page 28 Page 35
c. Use models and graphs that accurately depict scale to compare the size and distance between objects in the solar system.	Astronomy Activity 6 Earth, Moon and Sun Activity 3-5	Pages 53-60 Pages 23-43
d. Describe the characteristics of comets, asteroids, and meteors.		
e. Research and report on the use of manmade satellites orbiting Earth and various planets.	Astronomy Activity 6, Science, Technology and Society	Page 60

Objective 2: Describe the use of technology to observe objects in the solar system and relate this to science's understanding of the solar system.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Describe the use of instruments to observe and explore the moon and planets.	Astronomy Activity 6, Science, Technology and Society Activity 9, Science, Technology and Society	Page 60 Page 83

b. Describe the role of computers in understanding the solar system (e.g., collecting and interpreting data from observations, predicting motions of objects, operating space probes.		
c. Relate science's understanding of the solar system to the technology used to investigate it.	Astronomy Activity 9, Science, Technology and Society	Page 83
d. Find and report on ways technology has been and is being used to investigate the solar system.	Astronomy Activity 6, Science, Technology and Society Activity 9, Science, Technology and Society	Page 60 Page 83

Objective 3: Describe the forces that keep objects in orbit in the solar system.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Describe the forces holding Earth in orbit around the sun, and the moon in orbit around Earth.	Earth, Moon and Sun Activity 12	Page 95-103
b. Relate a celestial object's mass to its gravitational force on other objects.		
c. Identify the role gravity plays in the structure of the solar system.		

STANDARD FOUR

Students will understand the scale of size, distance between objects, movement, and apparent motion (due to Earth's rotation) of objects in the universe and how cultures have understood, related to and used these objects in the night sky.

Objective 1: Compare the size and distance of objects within systems in the universe.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Use the speed of light as a measuring standard to describe the relative distances to objects in the universe (e.g., 4.4 light years to star Alpha Centauri; 0.0002 light years to the sun).		
b. Compare distances between objects in the solar system.	Earth, Moon and Sun Activity 4 Astronomy Activity 6	Pages 29-36 Pages 53-60
c. Compare the size of the Solar system to the size of the Milky Way galaxy.	Astronomy Activity 11	Pages 93-99
d. Compare the size of the Milky Way galaxy to the size of the known universe.	Astronomy Activity 11	Pages 93-99

Objective 2; Describe the appearance and apparent motion of groups of stars in the night sky relative to earth and how various cultures have understood and used them.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Locate and identify stars that are grouped in patterns in the night sky.	Astronomy Activity 1, 4-5	Pages 7-16, 35-51
b. Identify ways people have historically grouped stars in the night sky.	Astronomy Activity 7	Pages 61-68
c. Recognize that stars in a constellation are not all the same distance from Earth.	Astronomy Activity 8	Pages 69-75
d. Relate the seasonal change in the appearance of the night sky to earth's position.	Astronomy Activity 4	Pages 35-42
e. Describe ways that familiar groups of stars may be used for navigation and calendars.	Astronomy Activity 3	Pages 25-34

STANDARD FIVE

Students will understand that microorganisms range from simple to complex, are found almost everywhere, and are both helpful and harmful.

Objective 1: Observe and summarize information about microorganisms.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Examine and illustrate size, shape, and structure of organisms found in an environment such as pond water.	Pond Life Activity 5-7 Fungi-Small World Activity 2, 4	Pages 35-55 Pages 13-18, 25-29
b. Compare characteristics common in observed organisms (e.g., color, movement, appendages, shape) and infer their function (e.g., green color found in organisms that are producers, appendages help movement).	Pond Life Activity 5-7 Fungi-Small World Activity 2, 4	Pages 35-55 Pages 13-18, 25-29
c. Research and report on a microorganism's requirements (i.e., food, water, air, waste disposal, temperature of environment, reproduction).	Fungi-Small World Activity 5-7	Pages 31-49

Objective 2: Demonstrate the skills needed to plan and conduct an experiment to determine a microorganism's requirements in a specific environment.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Formulate a question about microorganisms that can be answered with a student experiment.	Fungi-Small World Activity 5-7, 11	Pages 31-49, 69-74
b. Develop a hypothesis for a question about microorganisms based on observations and prior	Fungi-Small World Activity 5-7, 11	Pages 31-49, 69-74

knowledge.		
c. Plan and carry out an investigation on microorganisms {Note: Teacher must examine plans and procedures to assure the safety of students; for additional information, you may wish to read microwave safety information on Utah Science Home Page.}	Pond Life Activity 12	Pages 81-86
d. Display results in an appropriate format (e.g., graphs, tables, diagrams).	Pond Life Activity 12	Pages 81-86
e. Prepare a written summary or conclusion to describe the results in terms of the hypothesis for the investigation on microorganisms.	Pond Life Activity 12	Pages 81-86

Objective 3: Identify positive and negative effects of microorganisms and how science has developed positive uses for some microorganisms and overcome the negative effects of others.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Describe in writing how microorganisms serve as decomposers in the environment.	Fungi-Small World Activity 5, Science Extension Activity 6, Science Extension	Page 35 Page 44
b. Identify how microorganisms are used as food or in the production of food (e.g., yeast helps bread rise, fungi flavor cheese, algae are used in ice cream, bacteria are used to make cheese and yogurt).	Fungi-Small World Activity 10, 12	Pages 63-68, 75-79
c. Identify helpful uses of microorganisms (e.g., clean up oil spills, purify water, digest food in digestive tract, antibiotics) and the role of science in the development of understanding that led to positive uses (i.e., Pasteur established the existence, growth, and control of bacteria; Fleming isolated and developed penicillin).	Fungi-Small World Activity 12 Activity 2, Science and Health	Pages 75-79 Page 18
d. Relate several diseases caused by microorganisms to the organism causing the disease (e.g., athlete's foot – fungi, streptococcus throat – bacteria, giardia – protozoa).	Fungi-Small World Activity 12 Activity 6, Science and Health Pond Life Activity 7, Science and Health	Pages 75-79 Page 44 Page 55
e. Observe and report on microorganisms' harmful effects on food (e.g., causes fruits and vegetables to rot, destroys food bearing plants, makes milk sour).	Fungi-Small World Activity 12	Pages 75-79

STANDARD SIX

Students will understand properties and behavior of heat, light, and sound.

Objective 1: Investigate the movement of heat between objects by conduction, convection, and radiation.

INDICATORS	DSM	PAGE(S)
a. Compare materials that conduct heat to materials that insulate the transfer of heat energy.	Solar Energy Activity 11-12 Famous Scientists Activity 7	Pages 71-82 Pages 65-75
b. Describe the movement of heat from warmer objects to cooler objects by conduction and convection.	Earth Processes Activity 12	Pages 89-93
c. Describe the movement of heat across space from the sun to Earth by radiation.	Solar Energy Activity 1-2	Pages 7-19
d. Observe and describe, with the use of models, heat energy being transferred through a fluid medium (liquid and/or gas) by convection currents.	Earth Processes Activity 12	Pages 89-93
e. Design and conduct an investigation on the movement of heat energy.	Famous Scientists Activity 7	Pages 65-75

Objective 2: Describe how light can be produced, reflected, refracted, and separated into visible light of various colors.

INDICATORS	DSM	PAGE(S)
a. Compare light from various sources (e.g., intensity, direction, color).	Color and Light Reader	Pages 2-3
b. Compare the reflection of light from various surfaces (e.g., loss of light, angle of reflection, reflected color).	Color and Light Reader Lenses and Mirrors Activity 1, 4-7	Page 4 Pages 7-12, 27-54
c. Investigate and describe the refraction of light passing through various materials (e.g., prisms, water).	Color and Light Reader Lenses and Mirrors Activity 8-10	Pages 5-6 Pages 55-87
d. Predict and test the behavior of light interacting with various fluids (e.g., light transmission through fluids, refraction of light).	Color and Light Reader Lenses and Mirrors Activity 8	Pages 5-7 Pages 55-65
e. Predict and test the appearance of various materials when light of different colors is shone on the material.	Color and Light Activity 7 Reader	Pages 61-67 Page 12

Objective 3: Describe the production of sound in terms of vibration of objects that create vibrations in other materials.

INDICATORS	DSM	PAGE(S)
a. Describe how sound is made from vibration and moves in all directions from the source in	Famous Scientists Activity 6	Pages 55-64

waves.		
b. Explain the relationship of the size and shape of a vibrating object to the pitch of the sound produced.		
c. Relate the volume of a sound to amount of energy used to create the vibration of the object producing the sound.	Famous Scientists Activity 6	Pages 55-64
d. Make a musical instrument and report on how it produces sound.		

Grade Seven

Intended Learning Outcomes

The Intended Learning Outcomes describe the skills and attitudes students should learn as a result of science instruction.

1. Use Science Process and Thinking Skills.

DSM modules are inquiry based and stress process and thinking skills. See for example:

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Observe objects and events for patterns and record both qualitative and quantitative information.	Plants in Our World Activity 1-2 Astronomy Activity 1-4 Earth, Moon and Sun Activity 1-2	Pages 7-18 Pages 7-42 Pages 7-21
b. Sort and sequence data according to a given criteria.	Famous Scientists Activity 7-9 If Shipwrecks Could Talk Activity 4 Matter and Change Activity 1-2	Pages 65-93 Pages 35-45 Pages 7-21
c. Develop and use categories to classify subjects studied.	Matter and Change Activity 3, 10 Astronomy Activity 11 Earth, Moon and Sun Activity 10-11	Pages 23-28, 73-79 Pages 93-99 Pages 79-93
d. Select the appropriate instrument; measure, calculate, and record in metric units, length, volume, temperature and mass, to the accuracy of instruments used.	Matter and Change Activity 1-2 Newton's Toy Box Activity 7-9 Famous Scientists Activity 7	Pages 7-21 Pages 39-54 Pages 65-75
e. When given a problem, plan and conduct experiments in which they: <ul style="list-style-type: none"> • Form research questions. • Discuss possible outcomes of investigations • Identify variables • Plan procedures to control independent variable(s). • Collect data on the dependent variable(s). • Select appropriate format (e.g., graph, chart, diagram) to summarize data obtained. • Analyze data and construct reasonable conclusions. 	Plants in Our World Activity 3 Famous Scientists Activity 7 Matter and Change Activity 12	Pages 19-24 Pages 65-75 Pages 87-92

<ul style="list-style-type: none"> Prepare written and oral reports of their investigation. 		
f. Distinguish between factual statements and inferences.	Famous Scientists Activity 2 Plants in Our World Activity 9 If Shipwrecks Could Talk Activity 8	Pages 21-28 Pages 57-61 Pages 77-88
g. Use field guides or other keys to assist in the identification of subjects studied.	Astronomy Activity 11 Matter and Change Activity 10	Pages 93-99 Pages 73-79

2. Manifest Scientific Attitudes and Interests

INDICATORS	DSM	PAGE(S)
a. Read and look at books and other science materials voluntarily.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
b. Raise questions about objects, events, and processes that can be answered through scientific investigation.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
c. Maintain an open and questioning mind toward new ideas and alternative points of view.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
d. Check reports of observations for accuracy.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
e. Accept and use scientific evidence to help resolve ecological problems.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	

3. Demonstrate understanding of Science Concepts and Principles.

INDICATORS	DSM	PAGE(S)
a. Know and explain science information specified for the grade level.	Local Activity	
b. Distinguish between examples and non-examples of concepts that have been taught.	Local Activity	
c. Compare concepts and principles based upon specific criteria.	Local Activity	
d. Solve problems appropriate to grade level by applying science principles and procedures.	Plants and Our World Activity 3, 5 Electrical Connections Activity 9-10 Famous Scientists Activity 2, 7 Matter and Change Activity 12-13	Pages 19-24, 31-36 Pages 51-70 Pages 21-28, 65-75 Pages 87-97

4. Communicate Effectively Using Science Language and Reasoning.

DSM provides the opportunity to communicate effectively. See for example:

INDICATORS	DSM	PAGE(S)
a. Provide relevant data to support their inferences and conclusions.	Famous Scientists Activity 7 Newton's Toy Box Activity 7-9 Matter and Change Activity 1-2, 12	Pages 65-75 Pages 39-54 Pages 7-21, 87-92
b. Use precise scientific language in oral and written communication.	Plants in Our World Activity 8-10 Electrical Connections Activity 7-10 Earth, Moon and Sun Activity 9-12	Pages 51-68 Pages 45-70 Pages 69-103
c. Use correct English in oral and written reports.	Local Activity	
d. Use reference sources to obtain information and cite the sources.	Astronomy Activity 9, Science and Language Arts If Shipwrecks Could Talk Activity 10, Science, Technology and Society DNA-From Genes to Proteins Activity 7, Science, Technology and Society Earth Processes Activity 4, Science, Technology and Society	Page 83 Page 101 Page 51 Page 38
e. Use mathematical reasoning to communicate information.	Newton's Toy Box Activity 7-9 Famous Scientists Activity 2, 7 Matter and Change Activity 1-2	Pages 39-54 Pages 21-28, 65-75 Pages 7-21
f. Construct models to describe concepts and principles.	Earth Processes Activity 5-9 Earth, Moon and Sun Activity 9-12 If Shipwrecks Could Talk Activity 2	Pages 39-75 Pages 69-103 Pages 19-25

5. Demonstrate Awareness of Social and Historical Aspects of Science

INDICATORS	DSM	PAGE(S)
a. Cite examples of how science affects life.	Plants in Our World Activity 12, Science, Technology and Society Matter and Change Activity 10, Science, Technology and Society Electrical Connections Activity 9, Science, Technology and Society DNA-From Genes to Proteins Activity 12, Science, Technology and Society	Page 81 Page 79 Page 64 Page 87
b. Give instances of how	If Shipwrecks Could Talk	

technological advances have influenced the progress of science and how science has influenced advances in technology.	Activity 6, Science, Technology and Society Famous Scientists Activity 4, Science, Technology and Society Astronomy Activity 9, Science, Technology and Society DNA-From Genes to Proteins Activity 12, Science, Technology and Society	Page 68 Page 43 Page 83 Page 87
c. Understand the cumulative nature of science knowledge.	DNA-From Genes to Proteins Activity 1, Science Challenge Astronomy Activity 9, Science and Language Arts Earth Processes Activity 14, Science Extension Famous Scientists Activity 4, Science and Language Arts	Page 11 Page 83 Page 112 Page 43
d. Recognize contributions to science knowledge that have been made by both men and women.	DNA-From Genes to Proteins Activity 6, Science Challenge Famous Scientists Activity 1-12 Electrical Connections Activity 11, Science and Social Studies Plants in Our World Activity 9, Science and Social Studies	Page 44 Pages 11-121 Page 76 Page 56

6. Demonstrate understanding the Nature of Science

INDICATORS	DSM	PAGE(S)
a. Science is a way of knowing that is used by many people not just scientists.	If Shipwrecks Could Talk Activity 8, Science and Careers Plants in Our World Activity 5, Science and Careers Electrical Connections Activity 3, Science and Careers	Page 88 Page 36 Page 24
b. Understand that science investigations use a variety of methods and do not always use the same set of procedures; understand that there is not just one “scientific method”.	DSM activities use a variety of inquiry techniques and research procedures.	
c. Science findings are based upon evidence.	Matter and Change Activity 12-13 Plants in Our World Activity 3 Newton’s Toy Box Activity 9 Famous Scientists Activity 7, 10	Pages 87-97 Pages 19-24 Page 51-54 Pages 65-75, 95-103
d. Understand that science conclusions are tentative and therefore never final. Understandings based upon these	DNA-From Genes to Proteins Activity 1, Science Challenge Matter and Change Activity 4, Science Extension	Page 11 Page 35

conclusions are subject to revision in light of new evidence.	Earth Processes Activity 1, Science Extension Activity 14, Science Extension	Page 14 Page 112
e. Understand that scientific conclusions are based on the assumption that natural laws operate today as they did in the past and that they will continue to do so in the future.	DNA-From Genes to Proteins Activity 4, Science Challenge Earth Processes Activity 14, Science Extension Reader Astronomy Activity 10	Page 29 Page 112 Pages 4-6, 22 Pages 85-91
f. Understand that various disciplines of science are interrelated and share common rules of evidence to explain phenomena in the natural world.	Astronomy Activity 9 Electrical Connections Activity 7, Science, Technology and Society Famous Scientists Activity 5, Science and Health Plants in Our World Activity 9, Science and Math	Pages 77-83 Page 51 Page 54 Page 61

STANDARD ONE

Students will understand the structure of matter.

Objective 1: Describe the structure of matter in terms of atoms and molecules.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Recognize that atoms are too small to see.	Matter and Change Activity 4	Pages 29-35
b. Relate atoms to molecules (e.g., atoms combine to make molecules).	Matter and Change Activity 5 Activity 7	Pages 37-42 Pages 53-57
c. Diagram the arrangement of particles in the physical states of matter (i.e., solid, liquid, gas).		
d. Describe the limitations of using models to represent atoms (e.g., distance between particles in atoms cannot be represented to scale in models, the motion of electrons cannot be described in most models).	Matter and Change Activity 4	Pages 29-35
e. Investigate and report how our knowledge of the structure of matter has been developed over time.	Matter and Change Activity 4, Science Extension Activity 4, Science and Social Studies	Page 35 Page 35

Objective 2: Accurately measure the characteristics of matter in different states.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Use appropriate instruments to determine mass and volume of solids and liquids and record data.	If Shipwrecks Could Talk Activity 4 Matter and Change Activity 1	Pages 35-45 Pages 7-13
b. Use observations to predict the relative density of various solids	If Shipwrecks Could Talk Activity 4, Science Challenge	Page 45

and liquids.	Matter and Change Activity 1	Pages 7-13
c. Calculate the density of various solids and liquids.	Matter and Change Activity 4	Pages 7-13
d. Describe the relationship between mass and volume as it relates to density.	Matter and Change Activity 4	Pages 7-13
e. Design a procedure to measure mass and volume of gases.		

Objective 3: Investigate the motion of particles.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify evidence that particles are in constant motion.	Matter and Change Activity 2, Science Extension Activity 2, Science Challenge	Page 21 Page 21
b. Compare the motion of particles at various temperatures by measuring changes in the volume of gases, liquids, or solids.	Matter and Change Activity 2, Science Extension	Page 21
c. Design and conduct an experiment investigating the diffusion of particles.	Matter and Change Activity 3, Science Extension	Pages 28
d. Formulate and test a hypothesis on the relationship between temperature and motion.	Matter and Change Activity 2, Science Extension	Page 21
e. Describe the impact of expansion and contraction of solid materials on the design of buildings, highways, and other structures.		

STANDARD TWO

Students will understand the relationship between properties of matter and Earth's structure.

Objective 1: Examine the effects of density and particle size on the behavior of materials in mixtures.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Compare the density of various objects to the density of known earth materials.		
b. Calculate the density of earth materials (e.g., rocks, water, air).	Matter and Change Activity 1	Pages 7-13
c. Observe and describe the sorting of earth materials in a mixture based on density and particle size (e.g., sorting grains of sand of the same size with different densities, sort materials of different particle size with equal densities).		
d. Relate the sorting of materials		

that can be observed in streambeds, road cuts, or beaches to the density and particle size of those materials.		
e. Design and conduct an experiment that provides data on the natural sorting of various earth materials.		

Objective 2: Analyze how density affects Earth's structure.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Compare the densities of Earth's atmosphere, water, crust, and interior layers.	Earth Processes Activity 2	Pages 15-20
b. Relate density to the relative positioning of Earth's atmosphere, water, crust, and interior.	Earth Processes Activity 2	Pages 15-20
c. Model the layering of Earth's atmosphere, water, crust, and interior due to density differences.	Earth Processes Activity 2	Pages 15-20
d. Distinguish between models of Earth with accurate and inaccurate attributes.	Earth Processes Activity 2	Pages 15-20

STANDARD THREE

Students will understand that the organs in an organism are made of cells that have structures and perform specific life functions.

Objective 1: Observe and describe cellular structures and functions.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Use appropriate instruments to observe, describe, and compare various types of cells (e.g., onion, diatoms).	Plants in Our World Activity 1	Pages 7-12
b. Observe and distinguish the cell wall, cell membrane, nucleus, chloroplast, and cytoplasm of cells.	Plants in Our World Activity 1 DNA-From Genes to Proteins Activity 3-4	Pages 7-12 Pages 9-29
c. Differentiate between plant and animal cells based on cell wall and cell membrane.	Plants in Our World Activity 1	Pages 7-12
d. Model the cell processes of diffusion and osmosis and relate this motion to the motion of particles.		
e. Gather information to report on how the basic functions of organisms are carried out within cells (e.g., extract energy from food, remove waste, produce their own food).	Plants in Our World Activity 10	Pages 63-68

Objective 2: Identify and describe the function and interdependence of various organs and tissues.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Order the levels of organization from simple to complex (e.g., cells, tissue, organ, system, organism).		
b. Match a particular structure to the appropriate level (e.g., heart to organ, cactus to organism, muscle to tissue).		
c. Relate the structure of an organ to its component parts and the larger system of which it is a part.		
d. Describe how the needs of organisms at the cellular level for food, air, and waste removal are met by tissues and organs (e.g., lungs provide oxygen to cells, kidneys remove wastes from cells).		

STANDARD FOUR

Students will understand that offspring inherit traits that make them more or less suitable to survive in the environment.

Objective 1: Compare how sexual and asexual reproduction passes genetic information from parent to offspring.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Distinguish between inherited and acquired traits.	DNA-From Genes to Proteins Activity 1	Pages 7-11
b. Contrast the exchange of genetic information in sexual and asexual reproduction (e.g., number of parents, variation of genetic material).	DNA-From Genes to Proteins Activity 5, Science Extension	Page 35
c. Cite examples of organisms that reproduce sexually (e.g., rats, mosquitoes, salmon, sunflowers) and those that reproduce asexually (e.g., hydra, planaria, bacteria, fungi, cuttings from house plants).		
d. Compare inherited structural traits of offspring and their parents.	DNA-From Genes to Proteins Activity 3, Science Extension	Page 23

Objective 2: Relate the adaptability of organisms in an environment to their inherited traits and structures.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Predict why certain traits (e.g., structure of teeth, body structure,		

coloration) are more likely to offer an advantage for survival of an organism.		
b. Cite examples of traits that provide an advantage for survival in one environment but not other environments.	Famous Scientists Activity 9	Pages 85-93
c. Cite examples of changes in genetic traits due to natural and manmade influences (e.g., mimicry in insects, plant hybridization to develop a specific trait, breeding of dairy cows to produce more milk).	DNA-From Genes to Proteins Activity 10 Activity 10, Science Challenge	Pages 69-74 Page 74
d. Relate the structure of organs to an organism's ability to survive in a specific environment (e.g., hollow bird bones allow them to fly in air, hollow structure of hair insulates animals from hot or cold, dense root structure allows plants to grow in compact soil, fish fins aid fish in moving in water).	Plants in Our World Activity 2, 4	Pages 13-18, 25-30

STANDARD FIVE

Students will understand that structure is used to develop classification systems.

Objective 1: Classify based on observable properties.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Categorize nonliving objects based on external properties.		
b. Compare living, once living, and nonliving things.	Famous Scientist Activity 9	Pages 85-93
c. Defend the importance of observation in scientific classification.	Astronomy Activity 11	Pages 93-99
d. Demonstrate that there are many ways to classify things.		

Objective 2: Use and develop a simple classification system.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Using a provided classification scheme, classify things (e.g., shells, leaves, rocks, bones, fossils, weather, clouds, stars, planets).	Astronomy Activity 11	Pages 93-99
b. Develop a classification system based on observed structural characteristics.		
c. Generalize rules for classification.		
d. Relate the importance of classification systems to the development of science		

knowledge.		
e. Recognize that classification is a tool made by science to describe perceived patterns in nature.		

Objective 3: Classify organisms using an orderly pattern based upon structure.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify types of organisms that are not classified as either plant or animal.	DNA-From Genes to Proteins Activity 11	Pages 75-79
b. Arrange organisms according to kingdom (i.e., plant, animal, monera, fungi, protest).		
c. Use a classification key or field guide to identify organisms.		
d. Report on changes in classification systems as a result of new information or technology.		

Grade Eight

Intended Learning Outcomes

The Intended Learning Outcomes describe the skills and attitudes students should learn as a result of science instruction.

1. Use Science Process and Thinking Skills.

DSM modules are inquiry based and stress process and thinking skills. See for example:

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Observe objects and events for patterns and record both qualitative and quantitative information.	Plants in Our World Activity 1-2 Astronomy Activity 1-4 Earth, Moon and Sun Activity 1-2	Pages 7-18 Pages 7-42 Pages 7-21
b. Sort and sequence data according to a given criteria.	Famous Scientists Activity 7-9 If Shipwrecks Could Talk Activity 4 Matter and Change Activity 1-2	Pages 65-93 Pages 35-45 Pages 7-21
c. Develop and use categories to classify subjects studied.	Matter and Change Activity 3, 10 Astronomy Activity 11 Earth, Moon and Sun Activity 10-11	Pages 23-28, 73-79 Pages 93-99 Pages 79-93
d. Select the appropriate instrument; measure, calculate, and record in metric units, length, volume, temperature and mass, to the accuracy of instruments used.	Matter and Change Activity 1-2 Newton's Toy Box Activity 7-9 Famous Scientists Activity 7	Pages 7-21 Pages 39-54 Pages 65-75
e. When given a problem, plan and conduct experiments in which they: <ul style="list-style-type: none"> • Form research questions. • Discuss possible outcomes of investigations • Identify variables • Plan procedures to control independent variable(s). • Collect data on the dependent variable(s). • Select appropriate format (e.g., graph, chart, diagram) to summarize data obtained. • Analyze data and construct reasonable conclusions. 	Plants in Our World Activity 3 Famous Scientists Activity 7 Matter and Change Activity 12	Pages 19-24 Pages 65-75 Pages 87-92

<ul style="list-style-type: none"> Prepare written and oral reports of their investigation. 		
f. Distinguish between factual statements and inferences.	Famous Scientists Activity 2 Plants in Our World Activity 9 If Shipwrecks Could Talk Activity 8	Pages 21-28 Pages 57-61 Pages 77-88
g. Use field guides or other keys to assist in the identification of subjects studied.	Astronomy Activity 11 Matter and Change Activity 10	Pages 93-99 Pages 73-79

2. Manifest Scientific Attitudes and Interests

INDICATORS	DSM	PAGE(S)
a. Read and look at books and other science materials voluntarily.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
b. Raise questions about objects, events, and processes that can be answered through scientific investigation.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
c. Maintain an open and questioning mind toward new ideas and alternative points of view.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
d. Check reports of observations for accuracy.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	
e. Accept and use scientific evidence to help resolve ecological problems.	DSM is an inquiry-based program and the development of scientific attitudes and interests is inherent in the program.	

3. Demonstrate understanding of Science Concepts and Principles.

INDICATORS	DSM	PAGE(S)
a. Know and explain science information specified for the grade level.	Local Activity	
b. Distinguish between examples and non-examples of concepts that have been taught.	Local Activity	
c. Compare concepts and principles based upon specific criteria.	Local Activity	
d. Solve problems appropriate to grade level by applying science principles and procedures.	Plants and Our World Activity 3, 5 Electrical Connections Activity 9-10 Famous Scientists Activity 2, 7 Matter and Change Activity 12-13	Pages 19-24, 31-36 Pages 51-70 Pages 21-28, 65-75 Pages 87-97

4. Communicate Effectively Using Science Language and Reasoning.

DSM provides the opportunity to communicate effectively. See for example:

INDICATORS	DSM	PAGE(S)
a. Provide relevant data to support their inferences and conclusions.	Famous Scientists Activity 7 Newton's Toy Box Activity 7-9 Matter and Change Activity 1-2, 12	Pages 65-75 Pages 39-54 Pages 7-21, 87-92
b. Use precise scientific language in oral and written communication.	Plants in Our World Activity 8-10 Electrical Connections Activity 7-10 Earth, Moon and Sun Activity 9-12	Pages 51-68 Pages 45-70 Pages 69-103
c. Use correct English in oral and written reports.	Local Activity	
d. Use reference sources to obtain information and cite the sources.	Astronomy Activity 9, Science and Language Arts If Shipwrecks Could Talk Activity 10, Science, Technology and Society DNA-From Genes to Proteins Activity 7, Science, Technology and Society Earth Processes Activity 4, Science, Technology and Society	Page 83 Page 101 Page 51 Page 38
e. Use mathematical reasoning to communicate information.	Newton's Toy Box Activity 7-9 Famous Scientists Activity 2, 7 Matter and Change Activity 1-2	Pages 39-54 Pages 21-28, 65-75 Pages 7-21
f. Construct models to describe concepts and principles.	Earth Processes Activity 5-9 Earth, Moon and Sun Activity 9-12 If Shipwrecks Could Talk Activity 2	Pages 39-75 Pages 69-103 Pages 19-25

5. Demonstrate Awareness of Social and Historical Aspects of Science

INDICATORS	DSM	PAGE(S)
a. Cite examples of how science affects life.	Plants in Our World Activity 12, Science, Technology and Society Matter and Change Activity 10, Science, Technology and Society Electrical Connections Activity 9, Science, Technology and Society DNA-From Genes to Proteins Activity 12, Science, Technology and Society	Page 81 Page 79 Page 64 Page 87
b. Give instances of how	If Shipwrecks Could Talk	

technological advances have influenced the progress of science and how science has influenced advances in technology.	Activity 6, Science, Technology and Society Famous Scientists Activity 4, Science, Technology and Society Astronomy Activity 9, Science, Technology and Society DNA-From Genes to Proteins Activity 12, Science, Technology and Society	Page 68 Page 43 Page 83 Page 87
c. Understand the cumulative nature of science knowledge.	DNA-From Genes to Proteins Activity 1, Science Challenge Astronomy Activity 9, Science and Language Arts Earth Processes Activity 14, Science Extension Famous Scientists Activity 4, Science and Language Arts	Page 11 Page 83 Page 112 Page 43
d. Recognize contributions to science knowledge that have been made by both men and women.	DNA-From Genes to Proteins Activity 6, Science Challenge Famous Scientists Activity 1-12 Electrical Connections Activity 11, Science and Social Studies Plants in Our World Activity 9, Science and Social Studies	Page 44 Pages 11-121 Page 76 Page 56

6. Demonstrate understanding the Nature of Science

INDICATORS	DSM	PAGE(S)
a. Science is a way of knowing that is used by many people not just scientists.	If Shipwrecks Could Talk Activity 8, Science and Careers Plants in Our World Activity 5, Science and Careers Electrical Connections Activity 3, Science and Careers	Page 88 Page 36 Page 24
b. Understand that science investigations use a variety of methods and do not always use the same set of procedures; understand that there is not just one “scientific method”.	DSM activities use a variety of inquiry techniques and research procedures.	
c. Science findings are based upon evidence.	Matter and Change Activity 12-13 Plants in Our World Activity 3 Newton’s Toy Box Activity 9 Famous Scientists Activity 7, 10	Pages 87-97 Pages 19-24 Pages 51-54 Pages 65-75, 95-103
d. Understand that science conclusions are tentative and therefore never final. Understandings based upon these	DNA-From Genes to Proteins Activity 1, Science Challenge Matter and Change Activity 4, Science Extension	Page 11 Page 35

conclusions are subject to revision in light of new evidence.	Earth Processes Activity 1, Science Extension Activity 14, Science Extension	Page 14 Page 112
e. Understand that scientific conclusions are based on the assumption that natural laws operate today as they did in the past and that they will continue to do so in the future.	DNA-From Genes to Proteins Activity 4, Science Challenge Earth Processes Activity 14, Science Extension Reader Astronomy Activity 10	Page 29 Page 112 Pages 4-6, 22 Pages 85-91
f. Understand that various disciplines of science are interrelated and share common rules of evidence to explain phenomena in the natural world.	Astronomy Activity 9 Electrical Connections Activity 7, Science, Technology and Society Famous Scientists Activity 5, Science and Health Plants in Our World Activity 9, Science and Math	Pages 77-83 Page 51 Page 54 Page 61

STANDARD ONE

Students will understand the nature of changes in matter.

Objective 1: Describe the chemical and physical properties of various substances.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Differentiate between chemical and physical properties.		
b. Classify substances based on their chemical and physical properties (e.g., reacts with water, does not react with water, flammable or nonflammable, hard or soft, flexible or nonflexible, evaporates or melts at room temperature).	Matter And Change Activity 3, 10	Pages 23-28, 73-79
c. Investigate and report on the chemical and physical properties of a particular substance.		

Objective 2: Observe and evaluate evidence of chemical and physical change.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Identify observable evidence of a physical change (e.g., change in shape, size, phase).	Matter And Change Activity 2-3	Pages 15-28
b. Identify observable evidence of a chemical change (e.g., color change, heat or light given off, change in odor, gas given off).	Matter And Change Activity 12-13	Pages 87-97
c. Observe and describe chemical reactions involving atmospheric oxygen (e.g., rust, fire, respiration, photosynthesis).	Matter and Change Activity 12	Pages 87-92
d. Investigate the effects of chemical change on physical	Matter and Change Activity 12	Pages 87-92

properties of substances (e.g., cooking a raw egg, iron rusting, polymerization of a resin).		
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Objective 3: Investigate and measure the effects of increasing or decreasing the amount of energy in a physical or chemical change, and relate the kind of energy added to the motion of the particles.

INDICATORS	DSM	PAGE(S)
a. Identify the kinds of energy (e.g., heat, light, sound) given off or taken in when a substance undergoes a chemical or physical change.		
b. Relate the amount of energy added or taken away from a substance to the motion of molecules in the substance.		
c. Measure and graph the relationship between the states of water and changes in its temperature.		
d. Cite evidence showing that heat may be given off or taken in during a chemical change) e.g., striking a match, mixing vinegar and antacid, mixing ammonium chloride and water).	Matters and Change Activity 7, Science Challenge	Page 57
e. Plan and conduct an experiment, and report the effect of adding or removing energy on the chemical and physical changes.		

Objective 4: Identify the observable features of chemical reactions.

INDICATORS	DSM	PAGE(S)
a. Identify the reactants and products in a given chemical change and describe the presence of the same atoms in both the reactants and products.	Matter and Change Activity 7, 11-13	Pages 53-57, 81-97
b. Cite examples of common significant chemical reactions (e.g., photosynthesis, respiration, combustion, rusting) in daily life.	Plants in Our World Activity 9-10 Matter and Change Activity 11-12	Pages 57-68 Pages 81-92
c. Demonstrate that mass is conserved in a chemical reaction (e.g., mix two solutions that result in a color change or formation of a precipitate and weigh the solutions before and after mixing).		
d. Experiment with variables affecting the relative rates of chemical changes (e.g., heating, cooling, stirring, crushing, concentration).	Matter and Change Activity 12	Pages 87-92
e. Research and report on how engineers have applied principles	Matter and Change Activity 9, Science, Technology	

of chemistry to an application encountered in daily life (e.g., heat-resistant plastic handles on pans, rust-resistant paints on highway bridges).	and Society Activity 10, Science, Technology and Society	Page 71 Page 79
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STANDARD TWO

Students will understand that energy from sunlight is changed to chemical energy in plants, transfers between living organisms, and that changing the environment may alter the amount of energy provided to living organisms.

Objective 1: Compare ways that plants and animals obtain and use energy.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Recognize the importance of photosynthesis in using light energy as part of the chemical process that builds plant materials.	Plants in Our World Activity 9	Pages 57-61
b. Explain how respiration in animals is a process that converts food energy into mechanical and heat energy.	Plants in Our World Activity 10, Science and Health	Page 68
c. Trace the paths of energy from the sun to mechanical energy in an organism (e.g., sunlight – light energy to plants by photosynthesis to sugars – stored chemical energy to respiration in muscle cell – usable chemical energy to muscle contraction – mechanical energy).		

Objective 2: Generalize the dependent relationships between organisms.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Categorize the relationships between organisms (i.e., producer/consumer, predator/prey, mutualism, parasitism) and provide examples of each.		
b. Use models to trace the flow of energy in food chains and food webs.		
c. Formulate and test a hypothesis on the effects of air, temperature, water, or light on plants (e.g., seed germination, growth rates, seasonal adaptations).	Plants in Our World Activity 3	Pages 19-24
d. Research multiple ways that different scientists have investigated the same ecosystem.		

Objective 3: Analyze human influence on the capacity of an environment to sustain living things.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Describe specific examples of how humans have changed the capacity of an environment to support specific life forms (e.g., people create wetlands and nesting boxes that increase the number and range of wood ducks, acid rain damages amphibian eggs and reduces population of frogs, clear cutting forests affects squirrel populations, suburban sprawl reduces mule deer winter range thus decreasing numbers of deer).		
b. Distinguish between inference and evidence in a newspaper or magazine article relating to the effect of humans on the environment.		
c. Infer the potential effects of humans on a specific food web.		
d. Evaluate and present arguments for and against allowing a specific species of plant or animal to become extinct, and relate the argument to the flow of energy in an ecosystem.		

STANDARD THREE

Students will understand the processes of rock and fossil formation.

Objective 1: Compare rocks and minerals and describe how they are related.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Recognize that most rocks are composed of minerals.	Earth Processes Reader	Page 16
b. Observe and describe the minerals found in rocks (e.g., shape, color, luster, texture, hardness).		
c. Categorize rock samples as sedimentary, metamorphic, or igneous.	Earth Processes Activity 4-6 Reader	Pages 31-53 Pages 16-18

Objective 2: Describe the nature of the changes that rocks undergo over long periods of time.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Diagram and explain the rock cycle.	Earth Processes Activity 6 Reader	Pages 47-53 Pages 18

b. Describe the role of energy in the processes that change rock materials over time.	Earth Processes Activity 6 Reader	Pages 47-53 Pages 11-12, 17
c. Use a model to demonstrate how erosion changes the surface of Earth.		
d. Relate gravity to changes in Earth's surface.	Earth Processes Reader	Page 15
e. Identify the role of weathering or rocks in soil formation.	Earth Processes Reader	Pages 19-20
f. Describe and model the processes of fossil formation.		

Objective 3: Describe how rock and fossil evidence is used to infer Earth's history.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Describe how the deposition of rock materials produces layering of sedimentary rocks over time.	Earth Processes Activity 4	Pages 31-38
b. Identify the assumptions scientists make to determine relative ages of rock layers.	Earth Processes Reader	Page 22
c. Explain why some sedimentary rock layers may not always appear with youngest rock on top and older rocks below(e.g., folding, faulting).	Earth Processes Reader	Page 22
d. Research how fossils show evidence of the changing surface of the Earth.		
e. Propose why more recently deposited rock layers are more likely to contain fossils resembling existing species than older rock layers.	Earth Processes Reader	Page 22

Objective 4: Compare rapid and gradual changes to Earth's surface.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Describe how energy from the Earth's interior causes changes to earth's surface (i.e., earthquakes, volcanoes).	Earth Processes Activity 5, 8 Reader	Pages 39-46, 61-68 Pages 9-10
b. Describe how earthquakes and volcanoes transfer energy from Earth's interior to the surface (e.g., seismic waves transfer mechanical energy, flowing magma transfers heat and mechanical energy).	Earth Processes Activity 5, 8 Reader	Pages 39-46, 61-68 Pages 9-10
c. Model the process of energy buildup and release in earthquakes.	Earth Processes Activity 8 Reader	Pages 61-68 Pages 9

d. Investigate and report possible reasons why the best engineering or ecological practices are not always followed in making decisions about building road, dams, and other structures.	Earth Processes Activity 8, Science, Technology and Society	Page 68
e. Model how small changes over time add up to major changes to Earth's surface.	Earth Processes Activity 1, 4, 13	Pages 7-14, 31-38, 95-103

STANDARD FOUR

Students will understand the relationships among energy, force, and motion.

Objective 1: Investigate the transfer of energy through various materials.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Relate the energy of a wave to wavelength.		
b. Compare the transfer of energy (i.e., sound, light, earthquake waves, heat) through various mediums.		
c. Describe the spread of energy away from an energy-producing source.	Earth Processes Activity 8 Reader	Pages 61-68 Page 9
d. Compare the transfer of heat by conduction, convection, and radiation and provide examples of each.	Earth Processes Activity 12, Science Challenge	Page 93
e. Demonstrate how white light can be separated into the visible color spectrum.		

Objective 2: Examine the force exerted on objects by gravity.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Distinguish between mass and weight.	Newton's Toy Box Activity 3	Pages 19-24
b. Cite examples of how Earth's gravitational force on an object depends upon the mass of the object.	Newton's Toy Box Activity 3	Pages 19-24
c. Describe how Earth's gravitational force on an object depends upon the distance of the object from Earth.		
d. Design and build structures to support a load.		
e. Engineer (design and build) a machine that uses gravity to accomplish a task.		

Objective 3: Investigate the application of forces that act on objects, and the resulting motion.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Calculate the mechanical advantage created by a lever.	Famous Scientists Activity 2	Pages 21-28
b. Engineer a device that uses levers or incline planes to create a mechanical advantage.		
c. Engineer a device that uses friction to control the motion of an object.		
d. Design and build a complex machine capable of doing a specified task.		
e. Investigate the principles used to engineer changes in forces and motion.		

Objective 4: Analyze various forms of energy and how living organisms sense and respond to energy.

<i>INDICATORS</i>	<i>DSM</i>	<i>PAGE(S)</i>
a. Analyze the cyclic nature of potential and kinetic energy (e.g., a bouncing ball, a pendulum).	Newton's Toy Box Activity 10-13	Pages 55-70
b. Trace the conversion of energy from one form of energy to another (e.g., light to chemical to mechanical).	Electrical Connections Activity 2-3, 11 Famous Scientists Activity 5-6	Pages 13-24, 71-76 Pages 45-64
c. Cite examples of how organisms sense various types of energy.		
d. Investigate and report the response of various organisms to changes in energy (e.g., plant response to light, human response to motion, sound, light, insects' response to changes in light intensity).	Plants in Our World Activity 3, Science Challenge	Page 24
e. Investigate and describe how engineers have developed devices to help us sense various types of energy (e.g., seismographs, eyeglasses, telescopes, hearing aids).	Earth Processes Activity 9 Famous Scientists Activity 4, 6 Astronomy Activity 9	Pages 69-75 Pages 35-44, 55-64 Pages 77-85