

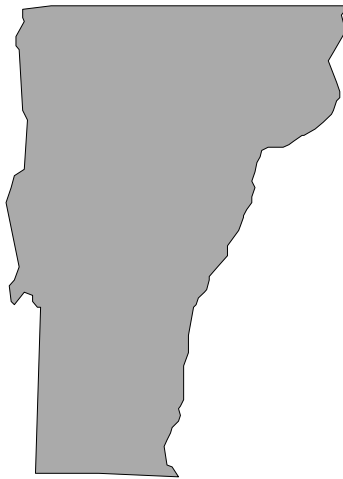
# **DSM II™**

## **DELTA SCIENCE MODULE II (DSM II™)**

Correlation with

### **VERMONT**

### **STANDARDS FOR SCIENCE**



May 2002

# Vermont Grade Prek-4

This correlation is for the science portion of the Vermont Science, Mathematics, and Technology Standards for grades Prek-4 and 5-8.

The Delta Science Module program is inquiry-based. The fundamentals of scientific inquiry are imbedded in all modules. Examples of activities and investigations are listed. A citation does not reflect all of the investigations or activities from the program that might apply.

## Inquiry, Experimentation, and Theory

### Scientific Method

7.1 Students use scientific methods to describe, investigate, and explain phenomena and raise questions in order to:

- Generate alternative explanations - hypotheses - based on observations and prior knowledge
- Design inquiry that allows these explanations to be tested;
- Deduce the expected results;
- Gather and analyze data to compare the actual results to the expected outcomes; and
- Make and communicate conclusions, generating new questions raised by observations and readings.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
7.1.a. Ask questions about objects, organisms, and events in the world around them;	<b>Investigating Water</b> Activity 4, 5 <b>Sink or Float</b> Activity 1-3 <b>Soil Science</b> Activity 3 <b>Insect Life</b> Activity 4, 8 <b>Sound</b> Activity 1, 6
7.1.b. Use reliable information obtained from scientific knowledge, observation, and exploration;	<b>Finding the Moon</b> Activity 9, 10 <b>Plant and Animal Populations</b> Activity 9-11 <b>Weather Watching</b> Activity 4, 5 <b>Food Chains and Webs</b> Activity 8, 9 <b>Powders and Crystals</b> Activity 10,12
7.1.c. Create hypotheses for problems, design a "fair test" of their hypothesis, collect data through observation and instrumentation, and analyze data to draw conclusions; use conclusions to clarify understanding and generate new questions to be explored;	<b>Sink or Float</b> Activity 9 <b>Soil Science</b> Activity 10 <b>Classroom Plants</b> Activity 5 <b>Animal Behavior</b> Activity 3, 6 <b>Water Cycle</b> Activity 12
7.1.d. Use evidence to construct an explanation, including principles they already	<b>From Seed to Plant</b> Activity 11, 12 <b>Amazing Air</b> Activity 2, 3

<p>know and observations they make;</p> <p>7.1.e. Explain a variety of observations and phenomena using concepts that have been learned;</p> <p>7.1.f. Use either deductive or inductive reasoning to explain observations and phenomena, or to predict answers to questions;</p> <p>7.1.g. Recognize other points of view, and others' explanations against experiences, observations, and knowledge;</p> <p>7.1.h. Identify problems, propose and implement solutions, and evaluate products and designs; and</p> <p>7.1.i. Work individually and in teams to collect and share information and ideas.</p>	<p><b>States of Matter</b> Activity 4, 5  <b>Electrical Connections</b> Activity 6, 7  <b>Dinosaur Classification</b> Activity 8</p> <p><b>Sunshine and Shadows</b> Activity 6, 12  <b>Using Your Senses</b> Activity 3, 4  <b>Sink or Float</b> Activity 8-10  <b>Food Chains and Webs</b> Activity 10  <b>Looking at Liquids</b> Activity 9</p> <p><b>Properties</b> Activity 10, 13  <b>Force and Motion</b> Activity 4, 5, 7  <b>Soil Science</b> Activity 2, 11  <b>Magnets</b> Activity 3  <b>Powders and Crystals</b> Activity 10, 12</p> <p><b>Observing an aquarium</b> Activity 8, 9  <b>Butterflies and Moths</b> Activity 7  <b>Dinosaur Classification</b> Activity 8, 11  <b>Solar System</b> Activity 9  <b>Electrical Connections</b> Activity 1, 9</p> <p><b>Sunshine and Shadows</b> Activity 12  <b>Sink or Float</b> Activity 9, 12  <b>Amazing Air</b> Activity 12  <b>Weather instruments</b> Activity 5  <b>Magnets</b> Activity 11</p> <p><b>Investigating Water</b> Activity 10, 11  <b>Plant and Animal Populations</b> Activity 1, 10  <b>Soil Science</b> Activity 1, 12  <b>Water Cycle</b> Activity 2, 9  <b>Small Things and Microscopes</b> Activity 1, 12</p>
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## Investigation

7.2 Students design and conduct a variety of their own investigations and projects. These should include:

- Questions that can be studied using the resources available;
- Procedures that are safe, humane, and ethical;
- Data that are collected and recorded in ways that others can verify;
- Data and results that are represented in ways that address the questions at hand;
- Recommendations, decisions, and conclusions that are based on evidence, and that acknowledge references and contributions of others;
- Results that are communicated appropriately to audiences; and
- Reflections and defense of conclusions and recommendations from other sources, and peer review.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
7.2.a. Design and conduct an experiment (a "fair test");	<b>Sink or Float</b> Activity 9 <b>Soil Science</b> Activity 10 <b>Animal Behavior</b> Activity 3, 6 <b>Classroom Plants</b> Activity 5 <b>Water Cycle</b> Activity 12
7.2.b. Design and conduct a systematic observation;	<b>Observing an Aquarium</b> Activity 2-6 <b>Weather Watching</b> Activity 3, 6 <b>Butterflies and Moths</b> Activity 1, 6, 9 <b>Plant and Animal Life Cycles</b> Activity 2, 3, 6 <b>Powders and Crystals</b> Activity 10, 12
7.2.c. Complete design of a physical structure or technological system (e.g., simple machines and measurement devices);	<b>Amazing Air</b> Activity 12 <b>Weather Watching</b> Activity 4 <b>Sink or Float</b> Activity 9 <b>Measuring</b> Activity 13 <b>Weather Instruments</b> Activity 5
7.2.d. Complete a data study;	<b>Plant and Animal Populations</b> Activity 8, 9 <b>Dinosaur Classification</b> Activity 6 <b>Magnets</b> Activity 4
7.2.e. Plan and manage a schedule;	<b>Classroom Plants</b> Activity 5 <b>Weather Watching</b> Activity 3 <b>Weather Instruments</b> Activity 10
7.2.f. Complete a pure mathematics investigation; or	<b>Weather Watching</b> Activity 2 Science and Math <b>Dinosaur Classification</b> Activity 6 <b>Weather Instruments</b> Activity 1 Science and Math <b>Solar System</b> Activity 5, 6

7.2.g. Complete research.	<b>Soil Science</b> Activity 3 Science and Language Arts <b>Food Chains and Webs</b> Activity 10 Science and Language Arts <b>Earth Movements</b> Activity 12 Science and Social Studies <b>Water Cycle</b> Activity 9 Science, Technology, and Society
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## Theory

7.3 Students understand the nature of mathematical, scientific, and technological theory.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
7.3.a. Show understanding that concepts form the foundation for theories;	<b>Dinosaur Classification</b> Activity 1 Science Challenge <b>Earth Movements</b> Activity 5, 6
7.3.b. Look for evidence that explains why things happen; and	<b>Soil Science</b> Activity 10 <b>Water Cycle</b> Activity 12 <b>Insect Life</b> Activity 9 <b>Electrical Connections</b> Activity 9 <b>Magnets</b> Activity 11
7.3.c. Modify explanations when new observations are made or new knowledge is gained.	<b>Amazing Air</b> Activity 12 <b>Food Chains and Webs</b> Activity 10 <b>Small Things and Microscopes</b> Activity 13 <b>Earth Movements</b> Activity 12

## History of Science, Mathematics, and Technology

7.4 Students understand the history of science, mathematics, and technology.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
7.4.a. Investigate contributions made to science, technology, and mathematics by many different kinds of people, and explain their importance.	<b>Amazing Air</b> Activity 11 <b>Butterflies and Moths</b> Activity 2 Science and Social Studies <b>Electrical Connections</b> Activity 9 Science and Social Studies

## Roles and Responsibilities

7.5 Students analyze the roles and responsibilities of scientists, mathematicians, and technologists in social, economic, cultural, and political systems.

This is evident when:

<b>STANDARD</b>	<b>DSM</b>
7.5.a. Explain how discoveries or inventions can help or hurt people (e.g., the environmental impact of energy consumption).	<b>Force and Motion</b> Activity 11 Science and Social Studies <b>Electrical Connections</b> Activity 9 Science and Social Studies <b>Insect Life</b> Activity 4 Science and Social Studies <b>Water Cycle</b> Activity 3 Science, Technology, and Society

# Systems

## Analysis

7.11 Students analyze and understand living and non-living systems (e.g., biological, chemical, electrical, mechanical, optical) as collections of interrelated parts and interconnected systems.

This is evident when:

<b>STANDARD</b>	<b>DSM</b>
7.11.A. Demonstrate understanding that systems are made of interrelated parts that influence one another;	<b>Observing an Aquarium</b> Activity 2-7 <b>Force and Motion</b> Activity 7, 12 <b>Amazing Air</b> Activity 3, 12 <b>Electrical Connections</b> Activity 1, 3, 4 <b>Weather Instruments</b> Activity 1, 6
7.11.b. Demonstrate understanding that systems include inputs, processes and outputs; and	<b>Amazing Air</b> Activity 3 <b>Force and Motion</b> Activity 7 <b>Magnets</b> Activity 10, 11 <b>Electrical Connections</b> Activity 1, 3, 4 <b>Weather Instruments</b> Activity 1, 6
7.11.c. Use physical and mathematical models to show how, in a system, inputs affect outputs.	<b>Force and Motion</b> Activity 7-9 <b>States of Matter</b> Activity 6 <b>Electrical Connections</b> Activity 3, 4 <b>Weather Instruments</b> Activity 3, 6 <b>Magnets</b> Activity 12

# Space, Time, and Matter

## Matter, Motion, Forces, and Energy

7.12 Students understand forces and motion, the properties and composition of matter, and energy sources and transformations.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
7.12.a. Sort objects and materials according to observations of similarities and differences of properties (e.g., size, weight, color, shape, temperature);	<b>Properties</b> Activity 1-11 <b>Investigating Water</b> Activity 7, 8 <b>Sink or Float</b> Activity 1, 7 <b>Looking at Liquids</b> Activity 1, 2, 8 <b>Magnets</b> Activity 2, 3 <b>Powders and Crystals</b> Activity 1-9
7.12.b. Observe and describe changes of states of matter (e.g., in water);	<b>Investigating Water</b> Activity 9-11 <b>States of Matter</b> Activity 4, 8-12 <b>Looking at Liquids</b> Activity 11 <b>Water Cycle</b> Activity 4, 5, 8, 9, 11-13 <b>Weather Instruments</b> Activity 9, 11
7.12.c. Observe and describe the behavior of gases in containers (e.g., pumps, balloons);	<b>Amazing Air</b> Activity 1-6 <b>Weather Instruments</b> Activity 2, 9
7.12.d. Apply forces to objects (e.g., inertia, gravity, friction, push and pull), and observe the objects in motion;	<b>Properties</b> Activity 11 <b>Force and Motion</b> Activity 1-12 <b>Amazing Air</b> Activity 1-3, 5 <b>Weather Watching</b> Activity 4, 5 <b>Weather Instruments</b> Activity 4, 5
7.12.e. Identify and describe several common forms of energy (e.g., light, heat, and sound) and provide examples of sources, as well as some characteristics of the transmission (e.g., light travels in straight lines until reflected, refracted, or absorbed);	<b>Weather Watching</b> Activity 4 <b>Electrical Circuits</b> Activity 1, 9 <b>Powders and Crystals</b> Activity 9 <b>Sound</b> Activity 1-11 <b>Weather Instruments</b> Activity 9
7.12.f. Observe and record the effects of electrical charge (e.g., charges repel, batteries); investigate magnetic and non-magnetic materials, and materials that are conductors and non-conductors of electricity.	<b>Properties</b> Activity 11 <b>Magnets</b> Activity 1-5, 10, 11 <b>Electrical Circuits</b> Activity 1, 3, 7, 8 Activity 2 Science Extension

# The Living World

## Organisms, Evolution, and Interdependence

7.13 Students understand the characteristics of organisms, see patterns of similarity and differences among living organisms, understand the role of evolution, and recognize the interdependence of all systems that support life.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
7.13.a. Identify characteristics of organisms (e.g., needs, environments that meet them; structures, especially senses; variation and behaviors, inherited and learned);	<b>Observing an Aquarium</b> Activity 3-6 <b>Butterflies and Moths</b> Activity 1-3, 6, 9, 12 <b>Classroom Plants</b> Activity 2, 5-9 <b>Food Chains and Webs</b> Activity 4-7 <b>Small Things and Microscopes</b> Activity 10, 11
7.13.b. Categorize living organisms (e.g., plants; fruits, vegetables);	<b>From Seed to Plant</b> Activity 1 <b>Butterflies and Moths</b> Activity 1, 6, 9 <b>Plant and Animal Populations</b> Activity 1, 2, 10, 11 <b>Dinosaur Classification</b> Activity 9, 10 <b>Insect Life</b> Activity 1, 6
7.13.c. Describe and show examples of the interdependence of all systems that support life (e.g., family, community, food chains, populations, life cycles, effects on the environment), and apply them to local systems; and	<b>Observing an Aquarium</b> Activity 7 <b>Plant and Animal Populations</b> Activity 10-12 <b>Food Chains and Webs</b> Activity 8-12 <b>Insect Life</b> Activity 10 <b>Plant and Animal Life Cycles</b> Activity 8, 9, 10
7.13.d. Provide examples of change over time (e.g., extinction, changes in organisms).	<b>From Seed to Plant</b> Activity 6, 7 <b>Butterflies and Moths</b> Activity 1, 6, 9, 11 <b>Classroom Plants</b> Activity 5, 10 <b>Plant and Animal Populations</b> Activity 8, 9, 12 <b>Small Things and Microscopes</b> Activity 12, 13

## The Human Body

7.14 Students demonstrate understanding of the human body, heredity, body systems, and individual development and understand the impact of the environment on the human body.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
<p>7.14.a. Recognize that there are many similarities between parents and their children, some inherited and some learned;</p> <p>7.14.b. Identify the parts of the human body, and demonstrate understanding of how the parts work together to perform functions that satisfy common needs;</p> <p>7.14.c. Identify and describe environmental factors that can influence human health (e.g., exposure to microbes, pollution); and</p> <p>7.14.d. Identify the pattern of human development.</p>	<p><b>Using Your Senses</b> Activity 1, 2, 5, 8, 10, 11  <b>You and Your Body*</b> Activity 1-8, 13, 14</p> <p><b>Small Things and Microscopes</b>            Activity 12 Science and Health            Activity 13 Science and Health  <b>You and Your Body*</b>            Activity 6 Science and Health            Activity 7 Science and Health</p> <p>* <b>You and Your Body</b> is designated as a grade 5-6 unit</p>

# The Universe, Earth, and the Environment

## Theories, Systems, and Forces

7.15 Students demonstrate understanding of the earth and its environment, the solar system, and the universe in terms of the systems that characterize them, the forces that affect and shape them over time, and the theories that currently explain their evolution.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
7.15.a. Identify and record evidence of change over time (e.g., erosion, weathering, fossilization);	<b>Finding the Moon</b> Activity 3, 4 <b>Dinosaur Classification</b> Activity 1, 2 <b>Soil Science</b> Activity 5, 6, 12 <b>Earth Movements</b> Activity 3, 5-7 <b>Solar System</b> Activity 9, 10
7.15.b. Identify and record patterns and forces that shape the earth (e.g., geological, atmospheric);	<b>Soil Science</b> Activity 5, 6, 12 <b>Earth Movements</b> Activity 4, 7-11 <b>Water Cycle</b> Activity 12 <b>Weather Instruments</b> Activity 2, 4, 5, 12
7.15.c. Identify and record the interrelated parts of earth systems (seasons, time, weather, etc.);	<b>Earth Movements</b> Activity 4-7 <b>Solar System</b> Activity 2, 9 Activity 9 Science Challenge <b>Water Cycle</b> Activity 11, 13 <b>Weather Instruments</b> Activity 6 Science Challenge
7.15.d. Identify and record characteristics of our solar system (e.g., nine planets, order from sun, and movement of planets in relationship to the sun and moon; calendar); and	<b>Finding the Moon</b> Activity 2, 9, 10 <b>Solar System</b> Activity 1, 2, 6, 8-10
7.15.e. Analyze and explain natural resource management (e.g., properties and uses of earth materials: rocks, soils, water, fish, wildlife, plants, trees, and gases).	<b>Soils Science</b> Activity 1-4, 8, 10 Activity 7 Science, Technology, and Society <b>Food Chains and Webs</b> Activity 1 Activity 1 Science, Technology, and Society <b>Water Cycle</b> Activity 9 Science, Technology, and Society Activity 9 Science and Health <b>Earth Movements</b> Activity 3 Science and Health Activity 10 Science, Technology, and Society

## Vermont Grade 5-8

The Delta Science Module program is inquiry-based. The fundamentals of scientific inquiry are imbedded in all modules. Examples of activities and investigations are listed. A citation does not reflect all of the investigations or activities from the program that might apply.

### Inquiry, Experimentation, and Theory

#### Scientific Method

Students use scientific methods to describe, investigate, and explain phenomena and raise questions in order to:

- Generate alternative explanations - hypotheses - based on observations and prior knowledge
- Design inquiry that allows these explanations to be tested;
- Deduce the expected results;
- Gather and analyze data to compare the actual results to the expected outcomes; and
- Make and communicate conclusions, generating new questions raised by observations and readings.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
<p><i>Evidence Prek-4 applies plus-</i></p> <p>7.1.aa. Frame questions in a way that distinguishes causes and effects; identify variables that influence the situation and can be controlled;</p> <p>7.1.bb. Seek, record, and use information from reliable sources, including scientific knowledge, observation, and experimentation;</p> <p>7.1.cc. Create hypotheses to problems, design their own experiments to test their hypothesis, collect data through observation and instrumentation, and analyze data to draw conclusions; use conclusions to clarify understanding and generate new questions to be explored;</p>	<p><b>Sound</b> Activity 10, 11  <b>Small Things and Microscopes</b> Activity 13  <b>Pollution</b> Activity 10  <b>Chemical Interactions</b> Activity 12  <b>Famous Scientists</b> Activity 7</p> <p><b>Powders and Crystals</b> Activity 6-8  <b>Flight and Rocketry</b> Activity 10  <b>Weather Forecasting</b> Activity 5  <b>Astronomy</b> Activity 4  <b>Earth Processes</b> Activity 10, 12</p> <p><b>Animal Behavior</b> Activity 7  <b>Solar Energy</b> Activity 6  <b>Pond Life</b> Activity 12  <b>Chemical Interactions</b> Activity 12  <b>Plants in Our World</b> Activity 3</p>

<p>7.1.dd. Describe, explain, and model, using evidence that includes scientific principles and observations;</p>	<p><b>Earth Movements</b> Activity 9, 10  <b>Water Cycle</b> Activity 9, 11  <b>Erosion</b> Activity 10, 11  <b>Oceans</b> Activity 8, 9  <b>Earth, Moon, and Sun</b> Activity 6, 8</p>
<p>7.1.gg. Propose, recognize, and analyze alternative explanations; and</p>	<p><b>Earth Movements</b> Activity 3  <b>Electrical Circuits</b> Activity 1  <b>Flight and Rocketry</b> Activity 6  <b>Newton's Toy Box</b> Activity 10  <b>Earth Processes</b> Activity 1</p>
<p>7.1.ii. Work individually and in teams to collect, share, and present information and ideas.</p>	<p><b>Looking at Liquids</b> Activity 1, 7  <b>Oceans</b> Activity 3, 12  <b>Lenses and Mirrors</b> Activity 4, 12  <b>If Shipwrecks Could Talk</b> Activity 4  <b>Electrical Connections</b> Activity 1-3</p>

## Investigation

7.2 Students design and conduct a variety of their own investigations and projects. These should include:

- Questions that can be studied using the resources available;
- Procedures that are safe, humane, and ethical;
- Data that are collected and recorded in ways that others can verify;
- Data and results that are represented in ways that address the questions at hand;
- Recommendations, decisions, and conclusions that are based on evidence, and that acknowledge references and contributions of others;
- Results that are communicated appropriately to audiences; and
- Reflections and defense of conclusions and recommendations from other sources, and peer review.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
<p>7.2.aa. Design and conduct a controlled experiment;</p>	<p><b>Animal Behavior</b> Activity 7  <b>Pollution</b> Activity 10  <b>Pond Life</b> activity 12  <b>Solar Energy</b> activity 6  <b>Chemical Interaction</b> Activity 12</p>
<p>7.2.bb. Design and conduct field work;</p>	<p><b>Insect Life</b> Activity 4  <b>Small Things and Microscopes</b> Activity 7 Science Challenge  <b>Pond Life</b> Activity 3  <b>Rocks and Minerals</b> Activity 12</p>

<p>7.2.cc. Completely design a physical structure or technological system (e.g., spring scales, bicycle gear shifts, timing of traffic lights);</p> <p>7.2.dd. Complete a data study based on civic, economic, or social issues;</p> <p>7.2.ee. Design a resource or system management plan; or</p> <p>7.2.ff. Illustrate mathematical models of a physical phenomenon.</p>	<p><b>Simple Machines</b> Activity 7 Science Challenge</p> <p><b>Electromagnetism</b> Activity 10</p> <p><b>Flight and Rocketry</b> Activity 5 Science and Math</p> <p><b>Newton's Toy Box</b> Activity 10 Science Challenge</p> <p><b>Electrical Connections</b> Activity 12 Science Challenge</p>
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## Theory

7.3 Students understand the nature of mathematical, scientific, and technological theory.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
<p>7.3.aa. Explain theories based upon observations, concepts, principles, and historical perspective;</p> <p>7.3.bb. Determine the validity of a theory by examining the principles on which it was founded, the constraints that apply to its application, and the body of physical evidence that supports it; and</p> <p>7.3.cc. Show understanding that new theories develop when phenomena are observed that are not fully explained by old theories.</p>	<p><b>Earth Movements</b> Activity 6</p> <p><b>Famous Scientists</b> Activity 11</p> <p><b>Earth Processes</b> Activity 1, 14</p> <p><b>Earth Processes</b> Activity 1, 14</p> <p><b>Earth Processes</b> Activity 1, 14</p>

## History of Science, Mathematics, and Technology

7.4 Students understand the history of science, mathematics, and technology.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
7.4.aa. Examine important contributions made to the advancement of science, technology, and mathematics, and respond to their impact on past, present, and future understanding.	<b>Small Things and Microscopes</b> Activity 12 Science and Health <b>Flight and Rocketry</b> Activity 6 Science and Language Arts Activity 12 Science, Technology, and Society <b>Astronomy</b> Activity 9 Science and Language Arts <b>Famous Scientists</b> Activity 1, 3, 5, 7, 9, 11

## Roles and Responsibilities

7.5 Students analyze the roles and responsibilities of scientists, mathematicians, and technologists in social, economic, cultural, and political systems.

This is evident when:

<b>STANDARD</b>	<b>DSM</b>
7.5.aa. Analyze the roles and responsibilities of scientists, mathematicians, and technologists in relation to ongoing research and discoveries that impact society (e.g., the dangers and benefits of nuclear energy).	<b>Pollution</b> Activity 10 Science and Social Studies <b>DNA-From Genes to Proteins</b> Activity 12 Science, Technology, and Society

# Systems

## Analysis

7.11 Students analyze and understand living and non-living systems (e.g., biological, chemical, electrical, mechanical, optical) as collections of interrelated parts and interconnected systems.

This is evident when:

<b>STANDARD</b>	<b>DSM</b>
7.11.aa. Demonstrate understanding that systems are connected to other systems, and that one system affects how others work;	<b>Solar System</b> Activity 9 <b>Simple Machines</b> Activity 8, 12 <b>You and Your Body</b> Activity 1-3, 6 <b>Electrical Connections</b> Activity 9-11 <b>Earth, Moon, and Sun</b> Activity 9-11
7.11.bb. Demonstrate understanding that systems are effectively designed when specifications and constraints are understood; and	<b>Simple Machines</b> Activity 12
7.11.cc. Use physical and mathematical models to express how systems behave given a set of inputs and outputs.	<b>You and Your Body</b> Activity 3 <b>Simple Machines</b> Activity 7, 8

# Space, Time, and Matter

## Matter, Motion, Forces, and Energy

7.12 Students understand forces and motion, the properties and composition of matter, and energy sources and transformations.

This is evident when students:

<b>STANDARDS</b>	<b>DSM</b>
7.12.aa. Observe and measure characteristic properties of matter (e.g., boiling point, melting point, density, buoyancy, simple chemical reactions), and use them to distinguish one substance from another;	<b>Powders and Crystals</b> Activity 9 <b>Oceans</b> Activity 3 <b>Rocks and Minerals</b> Activity 4-6 <b>Chemical Interactions</b> Activity 1, 10
7.12.bb. Provide examples of substances reacting chemically to form new substances with different characteristics, and describe and model the phenomenon with reference to elements and compounds;	<b>Chemical Interactions</b> Activity 11-13
7.12.cc. Explain the relationships between pressure, volume, and the amount of gas (e.g., soda bottles, auto tires);	<b>Chemical Interactions</b> Activity 2
7.12.dd. Observe and demonstrate a qualitative understanding of the relationship between mass, the magnitude of an applied net force, and the resulting change in speed and direction;	<b>Simple Machines</b> Activity 1, 2, 8 <b>Newton's Toy Box</b> Activity 3, 8
7.12.ee. Identify and describe common forms of energy (e.g., light, heat, sound, electricity, electromagnetic waves) and their attributes, sources, and transmission characteristics (e.g., radiation, convection, conduction of heat); and	<b>Sound</b> Activity 1-3, 7 <b>Electrical Circuits</b> Activity 1, 2 Science Extension <b>Color and Light</b> Activity 1 <b>Electrical Connections</b> Activity 1, 2 <b>Famous Scientists</b> Activity 5
7.12.ff. Investigate the relationship between electricity and magnetism (e.g., in electric motors).	<b>Magnets</b> Activity 10, 11 <b>Electromagnetism</b> Activity 5-10 <b>Electrical Connections</b> Activity 4, 11

# The Living World

## Organisms, Evolution, and Interdependence

7.13 Students understand the characteristics of organisms, see patterns of similarity and differences among living organisms, understand the role of evolution, and recognize the interdependence of all systems that support life.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
7.13.aa. Identify, model, and explain the structure and function (e.g., cells, tissues, organs, systems) of organisms (e.g., plants, animals, microbes), both as individual entities and as components of larger systems;	<b>Food Chains and Webs</b> Activity 4-6 <b>Insect Life</b> Activity 9, 12 <b>Fungi-Small Wonders</b> Activity 1, 2, 4 <b>You and Your Body</b> Activity 1, 2, 4, 6 <b>Plants in Our world</b> Activity 1, 2, 4
7.13.bb. Identify and use anatomical structures to classify organisms (e.g., plants, animals, fungi);	<b>Insect Life</b> Activity 6 <b>Dinosaur Classification</b> Activity 10 <b>Fungi-Small Wonders</b> Activity 1, 2
7.13.cc. Describe, model, and explain the principles of the interdependence of all systems that support life (e.g., food chains, webs, life cycles, energy levels, populations, oxygen-carbon dioxide cycles), and apply them to local, regional, and global systems; and	<b>Plant and Animal Life Cycles</b> Activity 9, 10 <b>Food Chains and Webs</b> Activity 10-12 <b>Insect Life</b> Activity 10 <b>Pond Life</b> Activity 4, 11 <b>Plants in Our World</b> Activity 5, 6
7.13. dd. Describe evolution in terms of diversity, extinction, and natural selection.	<b>Dinosaur Classification</b> Activity 1 Science Challenge <b>DNA-From Genes to Proteins</b> Activity 2 Science Challenge

## The Human Body

7.14 Students demonstrate understanding of the human body, heredity, body systems, and individual development and understand the impact of the environment on the human body.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
7.14.aa. Describe how genetic information is passed through reproduction (e.g., genes, traits, chromosomes);	<b>DNA-From Genes to Proteins</b> Activity 1-9
7.14.bb. Demonstrate an understanding of the human body systems for obtaining and providing energy, defense, reproduction, hormones, immunity, and coordination of physical functions;	<b>You and Your Body</b> Activity 1-8, 13, 14 <b>DNA-From Genes to Proteins</b> Activity 5 Science Extension

<p>7.14.cc. Provide examples of how the health of human beings is affected by their genetic makeup and environmental factors (e.g., exposure to microbes, pollution); and</p> <p>7.14.dd. Identify and explain the human body's pattern of development.</p>	<p><b>You and Your Body</b>  Activity 6 Science and Health  <b>Pollution</b> Activity 4 Science and Health  <b>Fungi-Small Wonders</b>  Activity 6 Science and Health  Activity 12  <b>DNA-From Genes to Proteins</b>  Activity 7 Science and Health  Activity 13 Science and Social Studies</p>
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# The Universe, Earth, and the Environment

## Theories, Systems, and Forces

7.15 Students demonstrate understanding of the earth and its environment, the solar system, and the universe in terms of the systems that characterize them, the forces that affect and shape them over time, and the theories that currently explain their evolution.

This is evident when students:

<b>STANDARD</b>	<b>DSM</b>
7.15.aa. Identify, record, and model evidence of change over time (e.g., earth's history; biological, geological);	<b>Dinosaur Classification</b> Activity 1, 2 <b>Earth Movements</b> Activity 5, 6 <b>Erosion</b> Activity 1, 2, 10, 12 <b>Rocks and Minerals</b> Activity 2 <b>Earth Processes</b> Activity 1, 3-6, 14
7.15.bb. Identify evidence of, model, and explain the patterns and forces that shape the earth (e.g., atmospheric, geological);	<b>Earth Movements</b> Activity 7-11 <b>Erosion</b> Activity 1, 2, 6 <b>Oceans</b> Activity 5, 6 <b>Rocks and Minerals</b> Activity 10 <b>Earth Processes</b> Activity 3-8, 11-14
7.15.cc. Identify, record, model, and explain the interrelated parts and connections between earth systems (e.g., crustal plates and land forms, atmosphere, water cycle, weather, and oceans);	<b>Earth Movements</b> Activity 6-9 <b>Water Cycle</b> Activity 13 <b>Erosion</b> Activity 10-12 <b>Oceans</b> Activity 5, 8, 9 <b>Earth Processes</b> Activity 11-14
7.15.dd. Identify, record, model, and explain the relationship of our solar system to the universe (day, year, season; sun, stars, galaxies; gravity, energy, orbits; planet characteristics);	<b>Solar System</b> Activity 9 <b>Weather Instruments</b> Activity 6 Science Challenge <b>Earth, Moon, and Sun</b> Activity 8-12 <b>Astronomy</b> Activity 1-6, 10, 11 <b>Famous Scientists</b> Activity 11, 12
7.15.ee. Analyze and explain natural resource management and demonstrate an understanding of the ecological interactions and interdependence between humans and their resource demands on environmental systems (e.g., waste disposal, energy resources, recycling, pollution reduction); and	<b>Pollution</b> Activity 3, 3 Science Extension Activity 9 Science, Technology, and Society <b>Rocks and Minerals</b> Activity 10 Science and Social Studies Activity 11 <b>Earth Processes</b> Activity 4 Science, Technology, and Society
7.15.ff. Explain how modern views of the universe emerged (e.g., scientific theories, improved instrumentation).	<b>Solar System</b> Activity 2 Science and Social Studies <b>Earth, Moon, and Sun</b> Activity 3 Science and Social Studies <b>Astronomy</b> Activity 2 Science and Social Studies Activity 9 Science, Technology, and Society <b>Famous Scientists</b> Activity 11, 12